Project:

20220502 Kattiharju extension

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Main Result

Calculation: 16 x WTG : 2 x N175 + 14 x N163

Assumptions for shadow calculations

Maximum distance for influence
Calculate only when more than 20 % of sun is covered by the blade
Please look in WTG table

Minimum sun height over horizon for influence	3 °
Day step for calculation	1 days
Time step for calculation	1 minutes

Sunshine probability S (Average daily sunshine hours) []

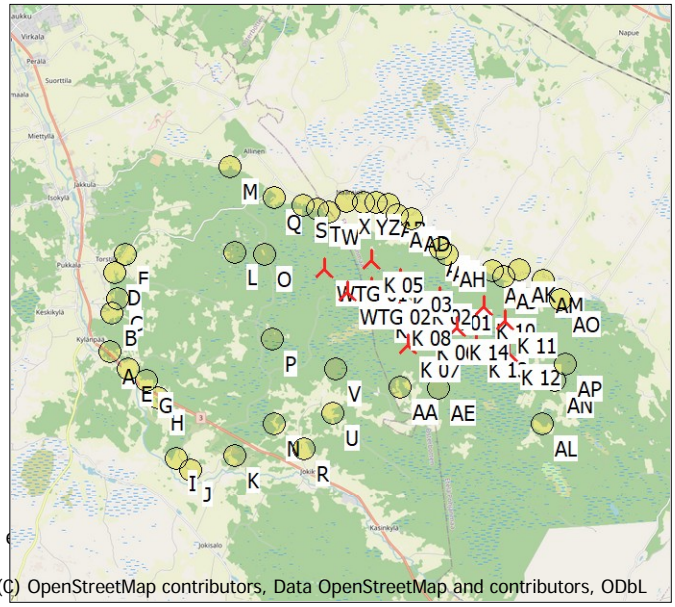
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

Monthly aggregation of real case reduction
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: CONTOURLINE_20220502 Kattiharju
Receptor grid resolution: 1,0 m

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89



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Scale 1:200 000

New WTG Shadow receptor

WTGs

	East	North	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Shadow data Calculation distance	RPM
			[m]					[kW]	[m]	[m]	[m]	[RPM]
K 01	258 892,0	6 984 359,0	45,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 02	258 361,0	6 984 512,0	52,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	149,5	1 786	10,0
K 03	257 878,0	6 984 922,0	48,3	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 04	257 087,0	6 984 720,0	50,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 05	257 163,0	6 985 462,0	49,2	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 06	258 414,0	6 983 575,0	52,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	148,5	1 786	10,0
K 07	257 962,0	6 983 145,0	54,9	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	149,5	1 786	10,0
K 08	257 766,0	6 984 006,0	52,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	149,5	1 786	10,0
K 09	257 382,0	6 984 262,0	50,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 10	260 052,0	6 984 010,0	50,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 11	260 574,0	6 983 589,0	45,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 12	260 637,0	6 982 769,0	47,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 13	259 773,0	6 983 040,0	51,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 14	259 278,0	6 983 511,0	52,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
WTG 01	255 892,0	6 985 353,0	50,0	NORDEX N175/6.X-6...	Yes	NORDEX	N175/6.X-6800-6 800	6 800	175,0	171,5	1 900	9,0
WTG 02	256 462,0	6 984 661,0	50,0	NORDEX N175/6.X-6...	Yes	NORDEX	N175/6.X-6800-6 800	6 800	175,0	171,5	1 900	9,0

Shadow receptor-Input

No.	East	North	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
A	250 049,0	6 983 575,0	30,7	5,0	5,0	2,0	90,0	"Green house mode"	7,0
B	250 198,0	6 984 576,0	26,7	5,0	5,0	2,0	90,0	"Green house mode"	7,0
C	250 341,0	6 984 961,0	25,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
D	250 343,0	6 985 667,0	26,2	5,0	5,0	2,0	90,0	"Green house mode"	7,0
E	250 494,0	6 983 108,0	30,4	5,0	5,0	2,0	90,0	"Green house mode"	7,0
F	250 645,0	6 986 141,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
G	250 968,0	6 982 726,0	35,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
H	251 226,0	6 982 266,0	32,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
I	251 592,0	6 980 644,0	35,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
J	251 960,0	6 980 299,0	35,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
K	253 131,0	6 980 587,0	42,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
L	253 546,0	6 985 931,0	45,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
M	253 607,0	6 988 208,0	22,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0

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SHADOW - Main Result

Calculation: 16 x WTG : 2 x N175 + 14 x N163

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No.	East	North	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
N	254 248,0	6 981 332,0	42,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
O	254 339,0	6 985 826,0	55,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
P	254 373,0	6 983 560,0	45,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
Q	254 693,0	6 987 302,0	28,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
R	255 007,0	6 980 631,0	40,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
S	255 437,0	6 987 054,0	29,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
T	255 814,0	6 986 908,0	28,4	5,0	5,0	2,0	90,0	"Green house mode"	7,0
U	255 826,0	6 981 493,0	40,8	5,0	5,0	2,0	90,0	"Green house mode"	7,0
V	255 991,0	6 982 694,0	43,4	5,0	5,0	2,0	90,0	"Green house mode"	7,0
W	256 145,0	6 986 833,0	25,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
X	256 601,0	6 987 078,0	25,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
Y	257 040,0	6 987 001,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
Z	257 405,0	6 986 979,0	28,1	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AA	257 676,0	6 982 066,0	49,8	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AB	257 698,0	6 986 934,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AC	257 931,0	6 986 612,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AD	258 308,0	6 986 493,0	29,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AE	258 674,0	6 981 951,0	52,2	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AF	258 840,0	6 985 771,0	30,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AG	259 027,0	6 985 623,0	32,1	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AH	259 178,0	6 985 473,0	37,3	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AI	260 319,0	6 984 939,0	44,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AJ	260 630,0	6 984 768,0	35,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AK	261 049,0	6 984 913,0	35,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AL	261 344,0	6 980 808,0	48,3	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AM	261 661,0	6 984 584,0	36,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AN	261 796,0	6 981 916,0	47,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AO	262 098,0	6 984 032,0	39,6	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AP	262 110,0	6 982 324,0	50,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0

Calculation Results

Shadow receptor

	Shadow, worst case			**Shadow, expected values**
No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	0:00	0	0:00	0:00
B	0:00	0	0:00	0:00
C	0:00	0	0:00	0:00
D	0:00	0	0:00	0:00
E	0:00	0	0:00	0:00
F	0:00	0	0:00	0:00
G	0:00	0	0:00	0:00
H	0:00	0	0:00	0:00
I	0:00	0	0:00	0:00
J	0:00	0	0:00	0:00
K	0:00	0	0:00	0:00
L	0:00	0	0:00	0:00
M	0:00	0	0:00	0:00
N	0:00	0	0:00	0:00
O	10:20	32	0:25	2:12
P	0:00	0	0:00	0:00
Q	0:00	0	0:00	0:00
R	0:00	0	0:00	0:00
S	17:07	53	0:25	1:44
T	25:02	72	0:28	2:30
U	0:00	0	0:00	0:00
V	0:00	0	0:00	0:00
W	36:16	96	0:32	4:14
X	31:22	58	0:48	3:13
Y	26:32	80	0:27	2:30
Z	27:41	79	0:27	2:37
AA	0:00	0	0:00	0:00

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29/11/2024 10.34/4.0.552

SHADOW - Main Result

Calculation: 16 x WTG : 2 x N175 + 14 x N163

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No.	Shadow, worst case			Shadow, expected values
	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
AB	20:54	62	0:26	2:05
AC	43:11	108	0:36	4:40
AD	37:40	116	0:26	4:21
AE	9:01	37	0:21	2:36
AF	81:03	164	0:58	10:10
AG	71:58	147	0:58	8:53
AH	80:00	142	1:21	10:45
AI	91:42	131	1:31	11:04
AJ	79:06	163	0:55	10:44
AK	42:01	112	0:30	5:14
AL	0:00	0	0:00	0:00
AM	22:02	69	0:27	3:46
AN	23:11	66	0:29	6:26
AO	9:31	31	0:25	1:54
AP	11:04	36	0:26	2:37

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
K 01	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)	119:38	13:44
K 02	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)	65:55	8:22
K 03	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)	94:31	12:33
K 04	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (145)	0:00	0:00
K 05	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)	140:29	16:31
K 06	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 148,5 m (TOT: 230,0 m) (151)	0:00	0:00
K 07	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (150)	0:00	0:00
K 08	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (158)	0:00	0:00
K 09	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (157)	0:00	0:00
K 10	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)	111:05	16:04
K 11	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)	116:25	13:25
K 12	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (154)	34:15	9:04
K 13	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (153)	9:01	2:36
K 14	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (152)	11:14	1:18
WTG 01	NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)	94:11	10:45
WTG 02	NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (140)	0:00	0:00

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** A - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (93)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.56	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.18	09.42
	15.12	16.39	18.02	20.30	21.57	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.40	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.41	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	21.59	20.17	18.36	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.26	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.16	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.07	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.11	21.40	19.56	18.16	15.42	14.52
17	09.43	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.03
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	09.00	10.05
	15.47	17.21	18.42	21.10	22.38	23.41	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.57	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.11	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.41	15.16	14.57
28	09.17	07.43	06.10	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** B - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (92)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	22.00	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.45	14.53
16	09.46	08.22	06.50	06.05	04.30	03.27	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.43	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.24	03.27	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.06
	15.50	17.24	18.45	21.12	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.42	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.41	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.05	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.10	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	556	601	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** C - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (91)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.38	22.27	20.47	19.06	16.25	15.08
2	10.06	09.04	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	22.00	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.06	23.27	23.28	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.57	08.40	07.10	06.26	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	22.00	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.57
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.54
14	09.50	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.47	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.45	14.53
16	09.46	08.22	06.50	06.05	04.30	03.27	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.44	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.24	03.26	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.06
	15.50	17.24	18.45	21.13	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.42	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.42	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.15		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.53	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** D - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (90)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.19	21.45	23.13	23.38	22.27	20.47	19.06	16.25	15.08
2	10.06	09.04	07.37	06.53	05.13	03.47	03.34	04.50	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.37	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.22	23.33	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	22.00	23.24	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.26	23.29	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.57	08.27	09.49
	15.18	16.48	18.11	20.38	22.06	23.27	23.28	22.06	20.24	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.20	16.51	18.14	20.41	22.09	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.57	08.40	07.10	06.26	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	22.00	20.17	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.17	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.33	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.57
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.54
14	09.50	08.28	06.57	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.16	21.47	20.03	18.22	15.47	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.44	20.00	18.19	15.45	14.53
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.44	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.40	23.09	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.24	03.26	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.39	07.05	08.28	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.07
	15.50	17.24	18.45	21.13	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.06	10.07
	15.53	17.27	18.48	21.15	22.44	23.42	22.58	21.24	19.39	17.59	15.30	14.52
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.05	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.42	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.00	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.05	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.03	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.15		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.53	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** E - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (89)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.11	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	18.00	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.40	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.25	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.26	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.11	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.03
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.25	08.56	10.04
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.10	22.38	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.41	22.56	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.52	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.11	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.19	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.40	22.42	21.04	19.19	16.41	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.34	08.00	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.07
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** F - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (88)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.13	23.38	22.27	20.47	19.06	16.25	15.08
2	10.06	09.04	07.37	06.53	05.13	03.47	03.34	04.50	06.19	07.40	08.09	09.36
	15.06	16.29	17.54	20.21	21.48	23.15	23.37	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.05	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	17.59	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.22	23.33	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.41	18.05	20.33	22.00	23.24	23.31	22.12	20.30	18.49	16.10	15.00
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.26	23.29	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.06	23.28	23.28	22.06	20.24	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.34	03.47	05.11	06.38	07.59	08.30	09.51
	15.20	16.51	18.14	20.41	22.09	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.57	08.40	07.10	06.25	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.12	23.31	23.24	22.00	20.17	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.33	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.57
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.53
14	09.50	08.28	06.57	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.16	21.47	20.03	18.22	15.47	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.44	20.00	18.19	15.45	14.52
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.57	08.19	08.51	10.03
	15.38	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.44	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.40	23.09	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.59	04.24	03.26	04.08	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.05	08.27	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.07
	15.50	17.24	18.45	21.13	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.16	05.45	07.10	08.33	09.06	10.07
	15.53	17.27	18.48	21.15	22.44	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.05	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.42	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.00	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.29	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.03	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.15		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.40	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.53	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** G - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (87)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.05	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.11	09.38
	15.08	16.32	17.57	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	18.00	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.23	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.29	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.53
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.54
	15.26	16.57	18.20	20.47	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.11	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.53	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.38	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.52	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.19	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.44	21.07	19.22	16.44	15.18	14.56
27	09.20	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.40	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.27	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** H - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (86)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.34	04.48	06.16	07.37	08.05	09.33
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.11	09.37
	15.08	16.32	17.57	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.23	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.29	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.53
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.20	20.47	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.41	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.53	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.11	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	17.59	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.17	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.19	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.44	21.07	19.22	16.44	15.18	14.56
27	09.20	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	22.59	23.40	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.08
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.56	09.27	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	15.00
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** I - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (85)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.50	03.34	04.48	06.16	07.37	08.05	09.32
	15.05	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.37	04.54	06.21	07.43	08.11	09.37
	15.08	16.32	17.57	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.42	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.01	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.36	04.57	03.38	03.44	05.05	06.32	07.54	08.23	09.46
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.37	03.46	05.08	06.35	07.56	08.26	09.48
	15.19	16.48	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.48	05.11	06.38	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.17	18.35	15.59	14.56
11	09.54	08.37	07.07	06.22	04.45	03.33	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.57	05.22	06.49	08.10	08.41	09.58
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.29	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.28	03.27	04.06	05.34	06.59	08.22	08.53	10.03
	15.42	17.15	18.36	21.04	22.31	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.12	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.36	08.09	06.36	05.52	04.19	03.27	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.43	18.03	15.32	14.53
21	09.34	08.06	06.33	05.49	04.16	03.27	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.02	06.30	05.46	04.14	03.27	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.53	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.55
25	09.24	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.29	04.31	05.59	07.24	07.48	09.19	10.08
	16.08	17.42	19.02	21.30	22.57	23.40	22.44	21.07	19.22	16.44	15.19	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.34	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.33	22.59	23.40	22.41	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.59	03.30	04.36	06.05	07.29	07.53	09.25	10.08
	16.14	17.48	19.07	21.36	23.02	23.39	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	15.00
30	09.11		07.03	05.20	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.41	23.07	23.38	22.33	20.54	19.09	16.31	15.11	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.03
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** J - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (84)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.50	03.34	04.48	06.16	07.37	08.05	09.32
	15.05	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.06	09.03	07.36	06.52	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.37	04.54	06.21	07.43	08.11	09.37
	15.08	16.32	17.57	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.44	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.42	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.52	07.23	06.39	05.01	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.36	04.57	03.38	03.44	05.05	06.32	07.54	08.23	09.46
	15.16	16.45	18.08	20.35	22.02	23.25	23.28	22.08	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.37	03.46	05.08	06.35	07.56	08.26	09.48
	15.19	16.48	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.48	05.11	06.38	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.16	18.35	15.59	14.56
11	09.54	08.37	07.07	06.22	04.45	03.33	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.57	05.22	06.49	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.50	20.06	18.25	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.29	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.12	21.43	20.00	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.28	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.42	17.15	18.36	21.04	22.31	23.39	23.08	21.37	19.53	18.12	15.40	14.53
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.12	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.36	08.09	06.36	05.52	04.19	03.27	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.43	18.03	15.32	14.53
21	09.34	08.06	06.33	05.49	04.16	03.27	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.30	05.46	04.14	03.27	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.55
25	09.24	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.29	04.31	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.02	21.30	22.57	23.40	22.44	21.07	19.22	16.44	15.19	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.34	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.33	22.59	23.40	22.41	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.59	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.36	20.57	19.12	16.34	15.12	15.00
30	09.11		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.41	23.07	23.38	22.33	20.54	19.09	16.31	15.11	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.03
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** K - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (83)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.34	04.48	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.05	09.03	07.36	06.52	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.18	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.54	07.27	06.42	05.04	03.42	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.52	07.23	06.39	05.00	03.40	03.42	05.02	06.29	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.45	18.08	20.35	22.02	23.25	23.28	22.08	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.37	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.48	18.11	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.48	05.11	06.38	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.16	18.35	15.59	14.56
11	09.54	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.24	06.53	06.09	04.33	03.29	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.56	08.19	08.50	10.02
	15.39	17.12	18.33	21.01	22.28	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.11	05.39	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.42	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.30	05.45	04.14	03.27	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.24	07.53	06.19	05.36	04.06	03.28	04.28	05.56	07.21	07.44	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.31	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.01	21.30	22.57	23.40	22.44	21.07	19.22	16.44	15.18	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.07	07.32	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.36	20.57	19.12	16.34	15.12	15.00
30	09.11		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.13	21.41	23.07	23.38	22.33	20.53	19.09	16.31	15.10	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** L - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (82)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.06
3	10.05	09.01	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.38
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.17	09.42
	15.11	16.38	18.02	20.30	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.45
	15.13	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.47
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.33	09.53
	15.23	16.54	18.16	20.44	22.11	23.31	23.24	21.59	20.16	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.57	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.19	04.42	03.30	03.53	05.19	06.46	08.07	08.39	09.56
	15.28	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.29	03.56	05.22	06.48	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.57	06.12	04.36	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.47	14.53
15	09.47	08.25	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.44	14.52
16	09.45	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.51	10.02
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.22	08.54	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.05	08.27	08.59	10.06
	15.47	17.21	18.42	21.09	22.38	23.41	23.03	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.36	05.52	04.18	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.02	15.32	14.52
21	09.34	08.06	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.10	03.26	04.22	05.51	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.22	14.54
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.54	23.42	22.47	21.10	19.26	16.46	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.48	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.51	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.26	03.58	03.29	04.36	06.05	07.29	07.54	09.25	10.09
	16.13	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.39	06.07	07.32	07.56	09.28	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.08
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** M - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (81)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.48	03.32	04.47	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.13	23.38	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.37	06.52	05.13	03.46	03.34	04.50	06.18	07.40	08.09	09.36
	15.05	16.29	17.53	20.21	21.48	23.15	23.37	22.24	20.44	19.02	16.22	15.06
3	10.06	09.01	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.43	08.12	09.38
	15.07	16.32	17.56	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.04
4	10.05	08.58	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.15	09.40
	15.09	16.35	17.59	20.27	21.54	23.20	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.40	03.39	04.59	06.27	07.48	08.18	09.43
	15.11	16.38	18.02	20.30	21.57	23.22	23.33	22.15	20.34	18.52	16.13	15.01
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.21	09.45
	15.13	16.41	18.05	20.32	22.00	23.24	23.31	22.12	20.30	18.49	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.42	05.05	06.32	07.54	08.24	09.47
	15.15	16.44	18.08	20.35	22.03	23.26	23.30	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.35	03.44	05.07	06.35	07.56	08.27	09.49
	15.18	16.47	18.11	20.38	22.06	23.28	23.28	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.46	05.10	06.37	07.59	08.30	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.38	16.01	14.56
10	09.57	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.33	09.53
	15.22	16.53	18.16	20.44	22.11	23.31	23.24	21.59	20.17	18.35	15.58	14.55
11	09.55	08.37	07.07	06.22	04.44	03.31	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.57	18.19	20.47	22.14	23.33	23.22	21.56	20.13	18.32	15.55	14.54
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.46	08.07	08.39	09.57
	15.27	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.36	23.18	21.50	20.06	18.25	15.50	14.53
14	09.50	08.28	06.57	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.16	21.47	20.03	18.22	15.47	14.52
15	09.48	08.25	06.53	06.08	04.33	03.27	04.00	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.44	14.52
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.51	10.03
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.44	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.22	08.54	10.04
	15.41	17.15	18.36	21.04	22.32	23.40	23.09	21.37	19.53	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.41	23.06	21.34	19.49	18.09	15.37	14.51
19	09.39	08.12	06.40	05.55	04.21	03.25	04.11	05.39	07.04	08.27	09.00	10.06
	15.46	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.51
20	09.37	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.03	10.07
	15.49	17.24	18.45	21.12	22.41	23.42	23.01	21.27	19.43	18.02	15.32	14.52
21	09.35	08.06	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.48	21.15	22.44	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.03	06.30	05.45	04.13	03.25	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.52
23	09.30	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.39	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.22	14.53
25	09.25	07.53	06.19	05.35	04.05	03.26	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.55	23.42	22.48	21.10	19.26	16.46	15.20	14.54
26	09.22	07.50	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.48	09.20	10.09
	16.07	17.42	19.01	21.30	22.57	23.42	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.51	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.54	09.25	10.09
	16.13	17.48	19.07	21.36	23.03	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.15		07.06	05.22	03.55	03.30	04.38	06.07	07.32	07.57	09.28	10.09
	16.16		20.10	21.39	23.05	23.40	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.41	06.10	07.34	08.00	09.30	10.08
	16.19		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.03		10.08
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	184	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** N - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.35	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.54	07.26	06.42	05.03	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.52	07.23	06.39	05.00	03.40	03.41	05.02	06.29	07.51	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.52	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.27	06.56	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.56	08.19	08.50	10.02
	15.39	17.12	18.33	21.01	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.59	04.24	03.27	04.09	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.42	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.23	14.54
25	09.24	07.53	06.19	05.35	04.06	03.28	04.28	05.56	07.21	07.44	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.25	16.47	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.01	21.29	22.57	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.13	21.41	23.07	23.38	22.33	20.53	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** O - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March		April	May	June	July	August	September		October		November	December
1	10.07	09.06	07.40		06.56	05.16	03.49	03.33	04.47	06.16		07.37	08.12 (WTG 01)	08.05	09.33
	15.04	16.26	17.50		20.18	21.44	23.12	23.37	22.27	20.47		19.05 11	08.23 (WTG 01)	16.25	15.08
2	10.06	09.03	07.36		06.52	05.13	03.47	03.34	04.50	06.18		07.40	08.15 (WTG 01)	08.08	09.35
	15.06	16.29	17.53		20.21	21.47	23.15	23.36	22.24	20.44		19.02 5	08.20 (WTG 01)	16.22	15.06
3	10.05	09.00	07.33		06.49	05.09	03.45	03.36	04.53	06.21		07.42		08.11	09.38
	15.07	16.32	17.56		20.24	21.50	23.17	23.35	22.21	20.40		18.59		16.19	15.05
4	10.04	08.58	07.30		06.45	05.06	03.43	03.37	04.56	06.24		07.45		08.14	09.40
	15.09	16.35	17.59		20.27	21.53	23.19	23.34	22.18	20.37		18.55		16.16	15.03
5	10.03	08.55	07.27		06.42	05.03	03.41	03.39	04.59	06.27		07.48		08.17	09.42
	15.11	16.38	18.02		20.29	21.56	23.21	23.32	22.15	20.33		18.52		16.13	15.02
6	10.02	08.52	07.23		06.39	05.00	03.39	03.41	05.02	06.29		07.51		08.20	09.45
	15.13	16.41	18.05		20.32	21.59	23.23	23.31	22.12	20.30		18.48		16.10	15.00
7	10.01	08.49	07.20		06.35	04.57	03.37	03.43	05.05	06.32		07.53		08.23	09.47
	15.16	16.44	18.08		20.35	22.02	23.25	23.29	22.09	20.27		18.45		16.07	14.59
8	09.59	08.46	07.17		06.32	04.54	03.36	03.45	05.08	06.35		07.56		08.26	09.49
	15.18	16.47	18.11		20.38	22.05	23.27	23.27	22.06	20.23		18.42		16.04	14.58
9	09.58	08.43	07.13		06.29	04.51	03.34	03.47	05.10	06.37		07.59		08.29	09.51
	15.20	16.50	18.14		20.41	22.08	23.29	23.26	22.02	20.20		18.38		16.01	14.57
10	09.56	08.40	07.10		06.25	04.48	03.33	03.49	05.13	06.40		08.02		08.32	09.53
	15.23	16.54	18.16		20.44	22.11	23.31	23.24	21.59	20.16		18.35		15.58	14.56
11	09.55	08.37	07.07	07.38 (WTG 01)	06.22	04.45	03.32	03.51	05.16	06.43		08.05		08.35	09.55
	15.25	16.57	18.19 2	07.40 (WTG 01)	20.46	22.14	23.32	23.22	21.56	20.13		18.32		15.55	14.55
12	09.53	08.34	07.03	07.34 (WTG 01)	06.18	04.42	03.30	03.53	05.19	06.46		08.07		08.38	09.56
	15.28	17.00	18.22 9	07.43 (WTG 01)	20.49	22.17	23.34	23.20	21.53	20.10		18.29		15.53	14.54
13	09.51	08.31	07.00	07.31 (WTG 01)	06.15	04.39	03.29	03.56	05.22	06.48		08.10		08.41	09.58
	15.30	17.03	18.25 14	07.45 (WTG 01)	20.52	22.20	23.35	23.17	21.50	20.06		18.25		15.50	14.53
14	09.49	08.28	06.56	07.27 (WTG 01)	06.12	04.36	03.28	03.58	05.25	06.51		08.13		08.44	09.59
	15.33	17.06	18.28 19	07.46 (WTG 01)	20.55	22.23	23.36	23.15	21.46	20.03		18.22		15.47	14.53
15	09.47	08.25	06.53	07.25 (WTG 01)	06.08	04.33	03.28	04.01	05.28	06.54		08.16		08.47	10.01
	15.35	17.09	18.31 22	07.47 (WTG 01)	20.58	22.26	23.37	23.13	21.43	19.59		18.19		15.44	14.52
16	09.45	08.21	06.50	07.24 (WTG 01)	06.05	04.30	03.27	04.03	05.31	06.56		08.19		08.50	10.02
	15.38	17.12	18.33 24	07.48 (WTG 01)	21.01	22.29	23.38	23.11	21.40	19.56		18.15		15.42	14.52
17	09.43	08.18	06.46	07.23 (WTG 01)	06.02	04.27	03.26	04.06	05.33	06.59	08.15 (WTG 01)	08.21		08.53	10.03
	15.41	17.15	18.36 25	07.48 (WTG 01)	21.04	22.32	23.39	23.08	21.37	19.53 11	08.26 (WTG 01)	18.12		15.39	14.52
18	09.41	08.15	06.43	07.23 (WTG 01)	05.58	04.24	03.26	04.08	05.36	07.02	08.13 (WTG 01)	08.24		08.56	10.05
	15.44	17.18	18.39 25	07.48 (WTG 01)	21.06	22.35	23.40	23.06	21.33	19.49 15	08.28 (WTG 01)	18.09		15.37	14.52
19	09.39	08.12	06.40	07.22 (WTG 01)	05.55	04.21	03.26	04.11	05.39	07.04	08.10 (WTG 01)	08.27		08.59	10.05
	15.47	17.21	18.42 25	07.47 (WTG 01)	21.09	22.38	23.41	23.03	21.30	19.46 19	08.29 (WTG 01)	18.06		15.34	14.52
20	09.37	08.09	06.36	07.22 (WTG 01)	05.52	04.18	03.26	04.13	05.42	07.07	08.09 (WTG 01)	08.30		09.02	10.06
	15.49	17.24	18.45 25	07.47 (WTG 01)	21.12	22.40	23.41	23.01	21.27	19.42 21	08.30 (WTG 01)	18.02		15.32	14.52
21	09.34	08.06	06.33	07.21 (WTG 01)	05.48	04.16	03.25	04.16	05.45	07.10	08.08 (WTG 01)	08.33		09.05	10.07
	15.52	17.27	18.47 25	07.46 (WTG 01)	21.15	22.43	23.41	22.58	21.24	19.39 23	08.31 (WTG 01)	17.59		15.29	14.52
22	09.32	08.02	06.29	07.22 (WTG 01)	05.45	04.13	03.26	04.19	05.48	07.13	08.06 (WTG 01)	08.36		09.08	10.08
	15.55	17.30	18.50 23	07.45 (WTG 01)	21.18	22.46	23.42	22.56	21.20	19.36 25	08.31 (WTG 01)	17.56		15.27	14.52
23	09.30	07.59	06.26	07.23 (WTG 01)	05.42	04.10	03.26	04.22	05.50	07.15	08.06 (WTG 01)	08.39		09.11	10.08
	15.58	17.33	18.53 22	07.45 (WTG 01)	21.21	22.49	23.42	22.53	21.17	19.32 25	08.31 (WTG 01)	17.53		15.24	14.53
24	09.27	07.56	06.23	07.23 (WTG 01)	05.39	04.08	03.26	04.24	05.53	07.18	08.06 (WTG 01)	08.42		09.14	10.08
	16.01	17.36	18.56 20	07.43 (WTG 01)	21.24	22.52	23.42	22.50	21.14	19.29 25	08.31 (WTG 01)	17.50		15.22	14.54
25	09.25	07.53	06.19	07.25 (WTG 01)	05.35	04.05	03.27	04.27	05.56	07.21	08.06 (WTG 01)	07.45		09.17	10.09
	16.04	17.39	18.59 16	07.41 (WTG 01)	21.27	22.54	23.41	22.47	21.10	19.26 25	08.31 (WTG 01)	16.46		15.20	14.54
26	09.22	07.50	06.16	07.26 (WTG 01)	05.32	04.03	03.27	04.30	05.59	07.23	08.05 (WTG 01)	07.48		09.19	10.09
	16.07	17.42	19.01 12	07.38 (WTG 01)	21.30	22.57	23.41	22.45	21.07	19.22 25	08.30 (WTG 01)	16.43		15.18	14.55
27	09.20	07.46	06.13		05.29	04.00	03.28	04.33	06.02	07.26	08.05 (WTG 01)	07.50		09.22	10.09
	16.10	17.45	19.04		21.33	23.00	23.41	22.42	21.04	19.19 24	08.29 (WTG 01)	16.40		15.16	14.56
28	09.17	07.43	06.09		05.25	03.58	03.29	04.36	06.04	07.29	08.06 (WTG 01)	07.53		09.25	10.09
	16.13	17.48	19.07		21.36	23.02	23.40	22.39	21.00	19.15 22	08.28 (WTG 01)	16.37		15.14	14.58
29	09.14		07.06		05.22	03.55	03.30	04.39	06.07	07.31	08.07 (WTG 01)	07.56		09.28	10.08
	16.16		20.10		21.39	23.05	23.39	22.36	20.57	19.12 20	08.27 (WTG 01)	16.34		15.12	14.59
30	09.12		07.02		05.19	03.53	03.31	04.41	06.10	07.34	08.09 (WTG 01)	07.59		09.30	10.08
	16.20		20.13		21.42	23.07	23.38	22.33	20.54	19.09 16	08.25 (WTG 01)	16.31		15.10	15.00
31	09.09		06.59			03.51		04.44	06.13			08.02			10.08
	16.23		20.15			23.10		22.30	20.50			16.28			15.02
Potential sun hours	185	243	364		446	557	601	591	501	391		308		208	154
Total, worst case				308							296		16		
Sun reduction				0,40							0,36		0,26		
Oper. time red.				0,97							0,97		0,97		
Wind dir. red.				0,58							0,58		0,58		
Total reduction				0,23							0,20		0,15		
Total, real				70							60		2		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** P - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (78)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.26	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.47
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.51
	15.20	16.51	18.14	20.41	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.53
	15.23	16.54	18.16	20.44	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	19.59	18.19	15.45	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.50	10.02
	15.38	17.12	18.33	21.01	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.26	04.22	05.51	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.42	09.14	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.22	14.54
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.16	10.08
	16.04	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.13	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.09
	16.10	17.45	19.04	21.33	22.59	23.40	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.25	10.08
	16.14	17.48	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.41	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** Q - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (77)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.48	03.32	04.47	06.15	07.37	08.05	09.33
	15.04	16.26	17.50	20.18	21.45	23.12	23.38	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.46	03.34	04.50	06.18	07.40	08.08	09.35
	15.05	16.29	17.53	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.06
3	10.05	09.01	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11	09.38
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.19	15.04
4	10.04	08.58	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.01
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.45
	15.13	16.41	18.05	20.32	21.59	23.24	23.31	22.12	20.30	18.48	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23	09.47
	15.15	16.44	18.08	20.35	22.02	23.26	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.35	03.44	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.28	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.47	05.10	06.37	07.59	08.30	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.02	08.33	09.53
	15.22	16.53	18.16	20.44	22.11	23.31	23.24	21.59	20.16	18.35	15.58	14.55
11	09.55	08.37	07.07	06.22	04.44	03.31	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	14.54
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.46	08.07	08.39	09.56
	15.27	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.15	21.47	20.03	18.22	15.47	14.52
15	09.48	08.25	06.53	06.08	04.33	03.27	04.00	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	19.59	18.19	15.44	14.52
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.19	08.51	10.02
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.22	08.54	10.04
	15.41	17.15	18.36	21.04	22.32	23.40	23.08	21.37	19.53	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.49	18.09	15.36	14.51
19	09.39	08.12	06.40	05.55	04.21	03.25	04.11	05.39	07.04	08.27	08.59	10.06
	15.46	17.21	18.42	21.09	22.38	23.41	23.03	21.30	19.46	18.06	15.34	14.51
20	09.37	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.45	21.12	22.41	23.41	23.01	21.27	19.42	18.02	15.31	14.52
21	09.35	08.06	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.25	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.52
23	09.30	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.49	15.22	14.53
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.55	23.42	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.50	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.48	09.20	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.51	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.09
	16.13	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.28	10.09
	16.16		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.08
	16.22		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	184	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** R - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (76)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.05	09.03	07.36	06.52	05.13	03.47	03.35	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.58	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.39
	15.10	16.35	17.59	20.26	21.53	23.18	23.33	22.18	20.37	18.55	16.16	15.04
5	10.02	08.54	07.26	06.42	05.03	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.20	23.31	22.14	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.39	05.00	03.40	03.41	05.02	06.29	07.51	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.01
7	10.00	08.48	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.48	18.11	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.34	03.49	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.52	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.56	14.55
12	09.52	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.29	15.53	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.27	06.56	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.35	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.25	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.56	08.18	08.50	10.02
	15.39	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.38	23.08	21.36	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.27	04.09	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.40	05.55	04.22	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.10	10.07
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.41	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.23	14.54
25	09.24	07.53	06.19	05.35	04.06	03.28	04.28	05.56	07.21	07.44	09.16	10.08
	16.05	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.47	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.12	21.41	23.07	23.37	22.33	20.53	19.09	16.31	15.10	15.01
31	09.08		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** S - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07			09.06		11.15 (WTG 01)	07.40	06.56	05.16	03.48
	15.04			16.26	15	11.30 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06			09.03		11.18 (WTG 01)	07.36	06.52	05.12	03.46
	15.05			16.29	10	11.28 (WTG 01)	17.53	20.21	21.47	23.15
3	10.05			09.00			07.33	06.49	05.09	03.44
	15.07			16.32			17.56	20.24	21.50	23.17
4	10.04			08.58			07.30	06.45	05.06	03.42
	15.09			16.35			17.59	20.27	21.53	23.19
5	10.03			08.55			07.26	06.42	05.03	03.40
	15.11			16.38			18.02	20.29	21.56	23.21
6	10.02			08.52			07.23	06.39	05.00	03.39
	15.13			16.41			18.05	20.32	21.59	23.23
7	10.01			08.49			07.20	06.35	04.57	03.37
	15.15			16.44			18.08	20.35	22.02	23.25
8	09.59		11.12 (WTG 01)	08.46			07.17	06.32	04.54	03.35
	15.18	7	11.19 (WTG 01)	16.47			18.11	20.38	22.05	23.27
9	09.58		11.10 (WTG 01)	08.43			07.13	06.28	04.50	03.34
	15.20	11	11.21 (WTG 01)	16.50			18.13	20.41	22.08	23.29
10	09.56		11.09 (WTG 01)	08.40			07.10	06.25	04.47	03.33
	15.22	13	11.22 (WTG 01)	16.53			18.16	20.44	22.11	23.31
11	09.55		11.09 (WTG 01)	08.37			07.06	06.22	04.44	03.31
	15.25	15	11.24 (WTG 01)	16.56			18.19	20.46	22.14	23.32
12	09.53		11.08 (WTG 01)	08.34			07.03	06.18	04.41	03.30
	15.27	17	11.25 (WTG 01)	17.00			18.22	20.49	22.17	23.34
13	09.51		11.08 (WTG 01)	08.31			07.00	06.15	04.38	03.29
	15.30	18	11.26 (WTG 01)	17.03			18.25	20.52	22.20	23.35
14	09.49		11.08 (WTG 01)	08.28			06.56	06.12	04.35	03.28
	15.33	19	11.27 (WTG 01)	17.06			18.28	20.55	22.23	23.36
15	09.47		11.08 (WTG 01)	08.25			06.53	06.08	04.32	03.27
	15.35	20	11.28 (WTG 01)	17.09			18.31	20.58	22.26	23.38
16	09.45		11.08 (WTG 01)	08.21			06.50	06.05	04.30	03.27
	15.38	22	11.30 (WTG 01)	17.12			18.33	21.01	22.29	23.39
17	09.43		11.07 (WTG 01)	08.18			06.46	06.02	04.27	03.26
	15.41	23	11.30 (WTG 01)	17.15			18.36	21.04	22.32	23.39
18	09.41		11.07 (WTG 01)	08.15			06.43	05.58	04.24	03.26
	15.44	23	11.30 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		11.08 (WTG 01)	08.12			06.40	05.55	04.21	03.25
	15.46	23	11.31 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		11.07 (WTG 01)	08.09			06.36	05.52	04.18	03.25
	15.49	24	11.31 (WTG 01)	17.24			18.45	21.12	22.40	23.41
21	09.34		11.07 (WTG 01)	08.06			06.33	05.48	04.15	03.25
	15.52	25	11.32 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		11.08 (WTG 01)	08.02			06.29	05.45	04.13	03.25
	15.55	25	11.33 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		11.09 (WTG 01)	07.59			06.26	05.42	04.10	03.26
	15.58	24	11.33 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		11.08 (WTG 01)	07.56			06.23	05.38	04.07	03.26
	16.01	25	11.33 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		11.09 (WTG 01)	07.53			06.19	05.35	04.05	03.27
	16.04	24	11.33 (WTG 01)	17.39			18.59	21.27	22.54	23.42
26	09.22		11.09 (WTG 01)	07.49			06.16	05.32	04.02	03.27
	16.07	24	11.33 (WTG 01)	17.42			19.01	21.30	22.57	23.41
27	09.20		11.10 (WTG 01)	07.46			06.12	05.29	04.00	03.28
	16.10	23	11.33 (WTG 01)	17.45			19.04	21.33	23.00	23.41
28	09.17		11.11 (WTG 01)	07.43			06.09	05.25	03.57	03.29
	16.13	22	11.33 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		11.11 (WTG 01)				07.06	05.22	03.55	03.30
	16.16	21	11.32 (WTG 01)				20.10	21.39	23.05	23.39
30	09.12		11.12 (WTG 01)				07.02	05.19	03.53	03.31
	16.19	20	11.32 (WTG 01)				20.13	21.42	23.07	23.39
31	09.09		11.13 (WTG 01)				06.59		03.51	
	16.22	18	11.31 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		486			25					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,67			0,67					
Total reduction		0,11			0,19					
Total, real		51			5					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** S - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November			December		
1	03.32	04.47	06.15	07.37	08.05			09.33		10.51 (WTG 01)
	23.38	22.27	20.47	19.05	16.25			15.08	15	11.06 (WTG 01)
2	03.34	04.50	06.18	07.40	08.08			09.35		10.53 (WTG 01)
	23.36	22.24	20.43	19.02	16.21			15.06	13	11.06 (WTG 01)
3	03.35	04.53	06.21	07.42	08.11			09.38		10.54 (WTG 01)
	23.35	22.21	20.40	18.58	16.18			15.04	11	11.05 (WTG 01)
4	03.37	04.56	06.24	07.45	08.14			09.40		10.56 (WTG 01)
	23.34	22.18	20.37	18.55	16.15			15.03	7	11.03 (WTG 01)
5	03.39	04.59	06.26	07.48	08.17			09.42		
	23.32	22.15	20.33	18.52	16.12			15.01		
6	03.41	05.02	06.29	07.51	08.20			09.45		
	23.31	22.12	20.30	18.48	16.10			15.00		
7	03.42	05.04	06.32	07.53	08.23			09.47		
	23.29	22.09	20.27	18.45	16.07			14.59		
8	03.44	05.07	06.35	07.56	08.26		10.52 (WTG 01)	09.49		
	23.27	22.06	20.23	18.42	16.04	2	10.54 (WTG 01)	14.57		
9	03.46	05.10	06.37	07.59	08.29		10.48 (WTG 01)	09.51		
	23.26	22.02	20.20	18.38	16.01	11	10.59 (WTG 01)	14.56		
10	03.49	05.13	06.40	08.02	08.32		10.46 (WTG 01)	09.53		
	23.24	21.59	20.16	18.35	15.58	15	11.01 (WTG 01)	14.55		
11	03.51	05.16	06.43	08.05	08.35		10.45 (WTG 01)	09.55		
	23.22	21.56	20.13	18.32	15.55	18	11.03 (WTG 01)	14.54		
12	03.53	05.19	06.45	08.07	08.38		10.44 (WTG 01)	09.56		
	23.20	21.53	20.10	18.28	15.52	20	11.04 (WTG 01)	14.54		
13	03.55	05.22	06.48	08.10	08.41		10.43 (WTG 01)	09.58		
	23.18	21.50	20.06	18.25	15.50	21	11.04 (WTG 01)	14.53		
14	03.58	05.25	06.51	08.13	08.45		10.43 (WTG 01)	10.00		
	23.15	21.46	20.03	18.22	15.47	22	11.05 (WTG 01)	14.52		
15	04.00	05.28	06.54	08.16	08.48		10.43 (WTG 01)	10.01		
	23.13	21.43	19.59	18.19	15.44	23	11.06 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19	08.50		10.43 (WTG 01)	10.02		
	23.11	21.40	19.56	18.15	15.42	24	11.07 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21	08.53		10.42 (WTG 01)	10.04		
	23.08	21.37	19.53	18.12	15.39	24	11.06 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24	08.56		10.42 (WTG 01)	10.05		
	23.06	21.33	19.49	18.09	15.36	25	11.07 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27	08.59		10.43 (WTG 01)	10.06		
	23.03	21.30	19.46	18.05	15.34	24	11.07 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30	09.02		10.43 (WTG 01)	10.06		
	23.01	21.27	19.42	18.02	15.31	25	11.08 (WTG 01)	14.52		
21	04.16	05.45	07.10	08.33	09.05		10.43 (WTG 01)	10.07		
	22.58	21.24	19.39	17.59	15.29	25	11.08 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36	09.08		10.43 (WTG 01)	10.08		
	22.56	21.20	19.36	17.56	15.27	24	11.07 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39	09.11		10.44 (WTG 01)	10.08		
	22.53	21.17	19.32	17.53	15.24	23	11.07 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42	09.14		10.44 (WTG 01)	10.09		
	22.50	21.14	19.29	17.49	15.22	24	11.08 (WTG 01)	14.53		
25	04.27	05.56	07.21	07.45	09.17		10.45 (WTG 01)	10.09		
	22.47	21.10	19.25	16.46	15.20	23	11.08 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.48	09.19		10.46 (WTG 01)	10.09		
	22.45	21.07	19.22	16.43	15.18	22	11.08 (WTG 01)	14.55		
27	04.33	06.02	07.26	07.50	09.22		10.47 (WTG 01)	10.09		
	22.42	21.04	19.19	16.40	15.16	21	11.08 (WTG 01)	14.56		
28	04.36	06.04	07.29	07.53	09.25		10.48 (WTG 01)	10.09		
	22.39	21.00	19.15	16.37	15.14	20	11.08 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56	09.28		10.48 (WTG 01)	10.09		
	22.36	20.57	19.12	16.34	15.12	18	11.06 (WTG 01)	14.59		
30	04.41	06.10	07.34	07.59	09.30		10.50 (WTG 01)	10.08		
	22.33	20.54	19.09	16.31	15.10	16	11.06 (WTG 01)	15.00		
31	04.44	06.13		08.02				10.08		
	22.30	20.50		16.28				15.01		
Potential sun hours	591	501	391	308	208			154		
Total, worst case						470			46	
Sun reduction						0,15			0,11	
Oper. time red.						0,97			0,97	
Wind dir. red.						0,67			0,67	
Total reduction						0,10			0,07	
Total, real						45			3	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** T - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07		11.58 (WTG 01)	09.06		12.07 (WTG 01)	07.40	06.55	05.16	03.48
	15.04	11	12.09 (WTG 01)	16.26	14	12.21 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06		11.58 (WTG 01)	09.03		12.10 (WTG 01)	07.36	06.52	05.12	03.46
	15.05	12	12.10 (WTG 01)	16.29	8	12.18 (WTG 01)	17.53	20.21	21.47	23.15
3	10.05		11.58 (WTG 01)	09.00			07.33	06.49	05.09	03.44
	15.07	14	12.12 (WTG 01)	16.32			17.56	20.24	21.50	23.17
4	10.04		11.57 (WTG 01)	08.58			07.30	06.45	05.06	03.42
	15.09	16	12.13 (WTG 01)	16.35			17.59	20.27	21.53	23.19
5	10.03		11.56 (WTG 01)	08.55			07.26	06.42	05.03	03.40
	15.11	17	12.13 (WTG 01)	16.38			18.02	20.29	21.56	23.21
6	10.02		11.57 (WTG 01)	08.52			07.23	06.39	05.00	03.39
	15.13	18	12.15 (WTG 01)	16.41			18.05	20.32	21.59	23.23
7	10.01		11.56 (WTG 01)	08.49			07.20	06.35	04.57	03.37
	15.15	20	12.16 (WTG 01)	16.44			18.08	20.35	22.02	23.25
8	09.59		11.56 (WTG 01)	08.46			07.16	06.32	04.54	03.35
	15.18	21	12.17 (WTG 01)	16.47			18.11	20.38	22.05	23.27
9	09.58		11.56 (WTG 01)	08.43			07.13	06.28	04.50	03.34
	15.20	21	12.17 (WTG 01)	16.50			18.13	20.41	22.08	23.29
10	09.56		11.56 (WTG 01)	08.40			07.10	06.25	04.47	03.33
	15.22	22	12.18 (WTG 01)	16.53			18.16	20.44	22.11	23.31
11	09.55		11.56 (WTG 01)	08.37			07.06	06.22	04.44	03.31
	15.25	23	12.19 (WTG 01)	16.56			18.19	20.46	22.14	23.32
12	09.53		11.56 (WTG 01)	08.34			07.03	06.18	04.41	03.30
	15.27	24	12.20 (WTG 01)	16.59			18.22	20.49	22.17	23.34
13	09.51		11.56 (WTG 01)	08.31			07.00	06.15	04.38	03.29
	15.30	25	12.21 (WTG 01)	17.03			18.25	20.52	22.20	23.35
14	09.49		11.56 (WTG 01)	08.28			06.56	06.12	04.35	03.28
	15.33	26	12.22 (WTG 01)	17.06			18.28	20.55	22.23	23.36
15	09.47		11.56 (WTG 01)	08.25			06.53	06.08	04.32	03.27
	15.35	27	12.23 (WTG 01)	17.09			18.30	20.58	22.26	23.38
16	09.45		11.56 (WTG 01)	08.21			06.50	06.05	04.30	03.27
	15.38	26	12.22 (WTG 01)	17.12			18.33	21.01	22.29	23.39
17	09.43		11.56 (WTG 01)	08.18			06.46	06.02	04.27	03.26
	15.41	27	12.23 (WTG 01)	17.15			18.36	21.04	22.32	23.39
18	09.41		11.56 (WTG 01)	08.15			06.43	05.58	04.24	03.26
	15.44	28	12.24 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		11.57 (WTG 01)	08.12			06.40	05.55	04.21	03.25
	15.46	28	12.25 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		11.56 (WTG 01)	08.09			06.36	05.52	04.18	03.25
	15.49	28	12.24 (WTG 01)	17.24			18.45	21.12	22.40	23.41
21	09.34		11.57 (WTG 01)	08.06			06.33	05.48	04.15	03.25
	15.52	28	12.25 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		11.58 (WTG 01)	08.02			06.29	05.45	04.13	03.25
	15.55	28	12.26 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		11.57 (WTG 01)	07.59			06.26	05.42	04.10	03.26
	15.58	28	12.25 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		11.58 (WTG 01)	07.56			06.23	05.38	04.07	03.26
	16.01	28	12.26 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		11.59 (WTG 01)	07.53			06.19	05.35	04.05	03.26
	16.04	27	12.26 (WTG 01)	17.39			18.59	21.27	22.54	23.42
26	09.22		11.59 (WTG 01)	07.49			06.16	05.32	04.02	03.27
	16.07	26	12.25 (WTG 01)	17.42			19.01	21.30	22.57	23.41
27	09.20		12.00 (WTG 01)	07.46			06.12	05.29	04.00	03.28
	16.10	25	12.25 (WTG 01)	17.44			19.04	21.33	23.00	23.41
28	09.17		12.01 (WTG 01)	07.43			06.09	05.25	03.57	03.29
	16.13	24	12.25 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		12.02 (WTG 01)				07.06	05.22	03.55	03.30
	16.16	22	12.24 (WTG 01)				20.10	21.39	23.05	23.39
30	09.12		12.03 (WTG 01)				07.02	05.19	03.53	03.31
	16.19	21	12.24 (WTG 01)				20.12	21.41	23.07	23.38
31	09.09		12.04 (WTG 01)				06.59		03.51	
	16.22	18	12.22 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		709			22					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,68			0,68					
Total reduction		0,11			0,19					
Total, real		77			4					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** T - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November			December		
1	03.32	04.47	06.15	07.37	08.05			09.33		11.38 (WTG 01)
	23.37	22.27	20.47	19.05	16.24			15.08	24	12.02 (WTG 01)
2	03.34	04.50	06.18	07.40	08.08			09.35		11.39 (WTG 01)
	23.36	22.24	20.43	19.02	16.21			15.06	23	12.02 (WTG 01)
3	03.35	04.53	06.21	07.42	08.11			09.38		11.39 (WTG 01)
	23.35	22.21	20.40	18.58	16.18			15.04	22	12.01 (WTG 01)
4	03.37	04.56	06.24	07.45	08.14			09.40		11.40 (WTG 01)
	23.34	22.18	20.37	18.55	16.15			15.03	21	12.01 (WTG 01)
5	03.39	04.59	06.26	07.48	08.17			09.42		11.42 (WTG 01)
	23.32	22.15	20.33	18.52	16.12			15.01	19	12.01 (WTG 01)
6	03.40	05.02	06.29	07.51	08.20			09.45		11.42 (WTG 01)
	23.31	22.12	20.30	18.48	16.10			15.00	18	12.00 (WTG 01)
7	03.42	05.04	06.32	07.53	08.23			09.47		11.44 (WTG 01)
	23.29	22.09	20.27	18.45	16.07			14.59	17	12.01 (WTG 01)
8	03.44	05.07	06.35	07.56	08.26			09.49		11.44 (WTG 01)
	23.27	22.06	20.23	18.42	16.04			14.57	16	12.00 (WTG 01)
9	03.46	05.10	06.37	07.59	08.29		11.40 (WTG 01)	09.51		11.46 (WTG 01)
	23.26	22.02	20.20	18.38	16.01	9	11.49 (WTG 01)	14.56	14	12.00 (WTG 01)
10	03.49	05.13	06.40	08.02	08.32		11.37 (WTG 01)	09.53		11.47 (WTG 01)
	23.24	21.59	20.16	18.35	15.58	15	11.52 (WTG 01)	14.55	13	12.00 (WTG 01)
11	03.51	05.16	06.43	08.04	08.35		11.36 (WTG 01)	09.55		11.48 (WTG 01)
	23.22	21.56	20.13	18.32	15.55	18	11.54 (WTG 01)	14.54	11	11.59 (WTG 01)
12	03.53	05.19	06.45	08.07	08.38		11.35 (WTG 01)	09.56		11.49 (WTG 01)
	23.20	21.53	20.10	18.28	15.52	20	11.55 (WTG 01)	14.54	10	11.59 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41		11.33 (WTG 01)	09.58		11.51 (WTG 01)
	23.18	21.50	20.06	18.25	15.50	23	11.56 (WTG 01)	14.53	7	11.58 (WTG 01)
14	03.58	05.25	06.51	08.13	08.44		11.33 (WTG 01)	10.00		11.54 (WTG 01)
	23.15	21.46	20.03	18.22	15.47	24	11.57 (WTG 01)	14.52	3	11.57 (WTG 01)
15	04.00	05.28	06.54	08.16	08.47		11.33 (WTG 01)	10.01		
	23.13	21.43	19.59	18.19	15.44	25	11.58 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19	08.50		11.33 (WTG 01)	10.02		
	23.11	21.40	19.56	18.15	15.42	26	11.59 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21	08.53		11.32 (WTG 01)	10.03		
	23.08	21.37	19.53	18.12	15.39	27	11.59 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24	08.56		11.32 (WTG 01)	10.05		
	23.06	21.33	19.49	18.09	15.36	27	11.59 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27	08.59		11.32 (WTG 01)	10.06		
	23.03	21.30	19.46	18.05	15.34	28	12.00 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30	09.02		11.33 (WTG 01)	10.06		
	23.01	21.27	19.42	18.02	15.31	28	12.01 (WTG 01)	14.52		
21	04.16	05.45	07.10	08.33	09.05		11.33 (WTG 01)	10.07		
	22.58	21.24	19.39	17.59	15.29	28	12.01 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36	09.08		11.32 (WTG 01)	10.08		
	22.56	21.20	19.36	17.56	15.27	28	12.00 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39	09.11		11.33 (WTG 01)	10.08		
	22.53	21.17	19.32	17.53	15.24	28	12.01 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42	09.14		11.33 (WTG 01)	10.09		
	22.50	21.14	19.29	17.49	15.22	28	12.01 (WTG 01)	14.53		
25	04.27	05.56	07.21	07.45	09.17		11.34 (WTG 01)	10.09		
	22.47	21.10	19.25	16.46	15.20	27	12.01 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.47	09.19		11.35 (WTG 01)	10.09		
	22.45	21.07	19.22	16.43	15.18	27	12.02 (WTG 01)	14.55		
27	04.33	06.02	07.26	07.50	09.22		11.35 (WTG 01)	10.09		
	22.42	21.04	19.19	16.40	15.16	27	12.02 (WTG 01)	14.56		
28	04.36	06.04	07.29	07.53	09.25		11.36 (WTG 01)	10.09		
	22.39	21.00	19.15	16.37	15.14	26	12.02 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56	09.28		11.36 (WTG 01)	10.08		12.01 (WTG 01)
	22.36	20.57	19.12	16.34	15.12	25	12.01 (WTG 01)	14.59	1	12.02 (WTG 01)
30	04.41	06.10	07.34	07.59	09.30		11.37 (WTG 01)	10.08		12.00 (WTG 01)
	22.33	20.54	19.08	16.31	15.10	24	12.01 (WTG 01)	15.00	6	12.06 (WTG 01)
31	04.44	06.13		08.02				10.08		11.59 (WTG 01)
	22.30	20.50		16.28				15.01	8	12.07 (WTG 01)
Potential sun hours	591	501	391	308	208			154		
Total, worst case						538			233	
Sun reduction						0,15			0,11	
Oper. time red.						0,97			0,97	
Wind dir. red.						0,68			0,68	
Total reduction						0,10			0,07	
Total, real						53			17	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** U - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (73)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.05	09.03	07.36	06.52	05.13	03.47	03.35	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.58	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.39
	15.10	16.35	17.59	20.26	21.53	23.18	23.33	22.18	20.37	18.55	16.16	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.01
7	10.00	08.48	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.47	18.11	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.52	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.42	03.31	03.54	05.19	06.45	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.53	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.30	20.58	22.25	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.09	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.44	21.12	22.40	23.40	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.42	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.12	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.04	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.01
31	09.08		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** V - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (72)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.06
3	10.05	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.58	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.41	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.42	03.31	03.54	05.19	06.45	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.53	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.19	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.42	19.01	21.29	22.57	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.12	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.10	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.25	03.58	03.30	04.36	06.04	07.29	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** W - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07		12.53 (WTG 01)	09.06		09.49 (K 05)	07.40	06.55	05.16	03.48
	15.04	6	12.59 (WTG 01)	16.25	31	13.16 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06		12.52 (WTG 01)	09.03		09.47 (K 05)	07.36	06.52	05.12	03.46
	15.05	9	13.01 (WTG 01)	16.29	32	13.15 (WTG 01)	17.53	20.21	21.47	23.15
3	10.05		12.51 (WTG 01)	09.00		09.46 (K 05)	07.33	06.49	05.09	03.44
	15.07	11	13.02 (WTG 01)	16.32	30	13.13 (WTG 01)	17.56	20.24	21.50	23.17
4	10.04		12.51 (WTG 01)	08.58		09.45 (K 05)	07.30	06.45	05.06	03.42
	15.09	13	13.04 (WTG 01)	16.35	20	10.05 (K 05)	17.59	20.27	21.53	23.19
5	10.03		12.50 (WTG 01)	08.55		09.44 (K 05)	07.26	06.42	05.03	03.40
	15.11	15	13.05 (WTG 01)	16.38	21	10.05 (K 05)	18.02	20.29	21.56	23.21
6	10.02		12.51 (WTG 01)	08.52		09.44 (K 05)	07.23	06.39	05.00	03.39
	15.13	16	13.07 (WTG 01)	16.41	22	10.06 (K 05)	18.05	20.32	21.59	23.23
7	10.01		12.50 (WTG 01)	08.49		09.44 (K 05)	07.20	06.35	04.57	03.37
	15.15	18	13.08 (WTG 01)	16.44	22	10.06 (K 05)	18.08	20.35	22.02	23.25
8	09.59		12.50 (WTG 01)	08.46		09.44 (K 05)	07.16	06.32	04.54	03.35
	15.18	19	13.09 (WTG 01)	16.47	23	10.07 (K 05)	18.11	20.38	22.05	23.27
9	09.58		12.49 (WTG 01)	08.43		09.43 (K 05)	07.13	06.28	04.50	03.34
	15.20	21	13.10 (WTG 01)	16.50	24	10.07 (K 05)	18.13	20.41	22.08	23.29
10	09.56		12.49 (WTG 01)	08.40		09.44 (K 05)	07.10	06.25	04.47	03.33
	15.22	22	13.11 (WTG 01)	16.53	23	10.07 (K 05)	18.16	20.43	22.11	23.31
11	09.55		12.49 (WTG 01)	08.37		09.45 (K 05)	07.06	06.22	04.44	03.31
	15.25	23	13.12 (WTG 01)	16.56	22	10.07 (K 05)	18.19	20.46	22.14	23.32
12	09.53		12.49 (WTG 01)	08.34		09.45 (K 05)	07.03	06.18	04.41	03.30
	15.27	24	13.13 (WTG 01)	16.59	21	10.06 (K 05)	18.22	20.49	22.17	23.34
13	09.51		12.49 (WTG 01)	08.31		09.46 (K 05)	07.00	06.15	04.38	03.29
	15.30	25	13.14 (WTG 01)	17.03	20	10.06 (K 05)	18.25	20.52	22.20	23.35
14	09.49		12.49 (WTG 01)	08.28		09.46 (K 05)	06.56	06.12	04.35	03.28
	15.32	26	13.15 (WTG 01)	17.06	19	10.05 (K 05)	18.28	20.55	22.23	23.36
15	09.47		12.49 (WTG 01)	08.24		09.48 (K 05)	06.53	06.08	04.32	03.27
	15.35	27	13.16 (WTG 01)	17.09	16	10.04 (K 05)	18.30	20.58	22.26	23.38
16	09.45		12.49 (WTG 01)	08.21		09.49 (K 05)	06.50	06.05	04.30	03.27
	15.38	27	13.16 (WTG 01)	17.12	12	10.01 (K 05)	18.33	21.01	22.29	23.39
17	09.43		12.49 (WTG 01)	08.18		09.53 (K 05)	06.46	06.02	04.27	03.26
	15.41	28	13.17 (WTG 01)	17.15	5	09.58 (K 05)	18.36	21.03	22.32	23.39
18	09.41		12.49 (WTG 01)	08.15			06.43	05.58	04.24	03.26
	15.44	28	13.17 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		12.50 (WTG 01)	08.12			06.40	05.55	04.21	03.25
	15.46	28	13.18 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		12.49 (WTG 01)	08.09			06.36	05.52	04.18	03.25
	15.49	29	13.18 (WTG 01)	17.24			18.44	21.12	22.40	23.41
21	09.34		12.50 (WTG 01)	08.06			06.33	05.48	04.15	03.25
	15.52	29	13.19 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		12.50 (WTG 01)	08.02			06.29	05.45	04.13	03.25
	15.55	29	13.19 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		12.50 (WTG 01)	07.59			06.26	05.42	04.10	03.26
	15.58	29	13.19 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		12.51 (WTG 01)	07.56			06.23	05.38	04.07	03.26
	16.01	28	13.19 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		12.51 (WTG 01)	07.53			06.19	05.35	04.05	03.26
	16.04	29	13.20 (WTG 01)	17.39			18.58	21.27	22.54	23.41
26	09.22		12.51 (WTG 01)	07.49			06.16	05.32	04.02	03.27
	16.07	28	13.19 (WTG 01)	17.42			19.01	21.30	22.57	23.41
27	09.20		12.52 (WTG 01)	07.46			06.12	05.29	04.00	03.28
	16.10	27	13.19 (WTG 01)	17.44			19.04	21.33	23.00	23.41
28	09.17		12.53 (WTG 01)	07.43			06.09	05.25	03.57	03.29
	16.13	27	13.20 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		12.53 (WTG 01)				07.06	05.22	03.55	03.30
	16.16	26	13.19 (WTG 01)				20.10	21.38	23.05	23.39
30	09.12		12.55 (WTG 01)				07.02	05.19	03.53	03.31
	16.19	23	13.18 (WTG 01)				20.12	21.41	23.07	23.38
31	09.09		09.52 (K 05)				06.59		03.51	
	16.22	28	13.17 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		718			363					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,69			0,64					
Total reduction		0,11			0,18					
Total, real		79			66					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** W - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		09.13 (K 05)	09.33		12.31 (WTG 01)
	23.37	22.27	20.47	19.05			16.24	24	09.37 (K 05)	15.08	23	12.54 (WTG 01)
2	03.34	04.50	06.18	07.40			08.08		09.14 (K 05)	09.35		12.32 (WTG 01)
	23.36	22.24	20.43	19.02			16.21	23	09.37 (K 05)	15.06	22	12.54 (WTG 01)
3	03.35	04.53	06.21	07.42			08.11		09.13 (K 05)	09.38		12.33 (WTG 01)
	23.35	22.21	20.40	18.58			16.18	24	09.37 (K 05)	15.04	20	12.53 (WTG 01)
4	03.37	04.56	06.24	07.45			08.14		09.14 (K 05)	09.40		12.34 (WTG 01)
	23.34	22.18	20.37	18.55			16.15	23	09.37 (K 05)	15.03	20	12.54 (WTG 01)
5	03.39	04.59	06.26	07.48			08.17		09.14 (K 05)	09.42		12.35 (WTG 01)
	23.32	22.15	20.33	18.52			16.12	22	09.36 (K 05)	15.01	19	12.54 (WTG 01)
6	03.40	05.01	06.29	07.51			08.20		09.15 (K 05)	09.45		12.36 (WTG 01)
	23.31	22.12	20.30	18.48			16.09	21	09.36 (K 05)	15.00	17	12.53 (WTG 01)
7	03.42	05.04	06.32	07.53			08.23		09.15 (K 05)	09.47		12.38 (WTG 01)
	23.29	22.09	20.26	18.45			16.07	20	09.35 (K 05)	14.59	15	12.53 (WTG 01)
8	03.44	05.07	06.35	07.56			08.26		09.16 (K 05)	09.49		12.38 (WTG 01)
	23.27	22.06	20.23	18.42			16.04	29	12.43 (WTG 01)	14.57	14	12.52 (WTG 01)
9	03.46	05.10	06.37	07.59			08.29		09.18 (K 05)	09.51		12.40 (WTG 01)
	23.26	22.02	20.20	18.38			16.01	32	12.46 (WTG 01)	14.56	12	12.52 (WTG 01)
10	03.49	05.13	06.40	08.02			08.32		09.20 (K 05)	09.53		12.42 (WTG 01)
	23.24	21.59	20.16	18.35			15.58	31	12.47 (WTG 01)	14.55	9	12.51 (WTG 01)
11	03.51	05.16	06.43	08.04			08.35		09.24 (K 05)	09.55		12.43 (WTG 01)
	23.22	21.56	20.13	18.32			15.55	28	12.49 (WTG 01)	14.54	7	12.50 (WTG 01)
12	03.53	05.19	06.45	08.07			08.38		12.26 (WTG 01)	09.56		
	23.20	21.53	20.10	18.28			15.52	24	12.50 (WTG 01)	14.54		
13	03.55	05.22	06.48	08.10			08.41		12.25 (WTG 01)	09.58		
	23.17	21.50	20.06	18.25			15.50	25	12.50 (WTG 01)	14.53		
14	03.58	05.25	06.51	08.13			08.44		12.25 (WTG 01)	09.59		
	23.15	21.46	20.03	18.22			15.47	26	12.51 (WTG 01)	14.52		
15	04.00	05.28	06.54	08.16			08.47		12.25 (WTG 01)	10.01		
	23.13	21.43	19.59	18.18			15.44	27	12.52 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19			08.50		12.24 (WTG 01)	10.02		
	23.11	21.40	19.56	18.15			15.42	28	12.52 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21			08.53		12.24 (WTG 01)	10.03		
	23.08	21.37	19.53	18.12			15.39	29	12.53 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24			08.56		12.24 (WTG 01)	10.05		
	23.06	21.33	19.49	18.09			15.36	29	12.53 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27			08.59		12.25 (WTG 01)	10.05		
	23.03	21.30	19.46	18.05			15.34	29	12.54 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30			09.02		12.25 (WTG 01)	10.06		
	23.01	21.27	19.42	18.02			15.31	29	12.54 (WTG 01)	14.51		
21	04.16	05.45	07.10	08.33			09.05		12.26 (WTG 01)	10.07		
	22.58	21.24	19.39	17.59			15.29	29	12.55 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36			09.08		12.25 (WTG 01)	10.08		
	22.56	21.20	19.36	17.56			15.27	29	12.54 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39			09.11		12.26 (WTG 01)	10.08		
	22.53	21.17	19.32	17.53			15.24	28	12.54 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42			09.14		12.26 (WTG 01)	10.08		
	22.50	21.14	19.29	17.49			15.22	29	12.55 (WTG 01)	14.53		
25	04.27	05.56	07.21	07.45		09.22 (K 05)	09.17		12.27 (WTG 01)	10.09		
	22.47	21.10	19.25	16.46	8	09.30 (K 05)	15.20	28	12.55 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.47		09.19 (K 05)	09.19		12.28 (WTG 01)	10.09		
	22.45	21.07	19.22	16.43	13	09.32 (K 05)	15.18	27	12.55 (WTG 01)	14.55		
27	04.33	06.01	07.26	07.50		09.17 (K 05)	09.22		12.28 (WTG 01)	10.09		
	22.42	21.04	19.19	16.40	16	09.33 (K 05)	15.16	27	12.55 (WTG 01)	14.56		
28	04.35	06.04	07.29	07.53		09.15 (K 05)	09.25		12.28 (WTG 01)	10.09		
	22.39	21.00	19.15	16.37	19	09.34 (K 05)	15.13	26	12.54 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56		09.15 (K 05)	09.28		12.29 (WTG 01)	10.08		
	22.36	20.57	19.12	16.34	21	09.36 (K 05)	15.12	25	12.54 (WTG 01)	14.59		
30	04.41	06.10	07.34	07.59		09.14 (K 05)	09.30		12.30 (WTG 01)	10.08		
	22.33	20.54	19.08	16.31	22	09.36 (K 05)	15.10	24	12.54 (WTG 01)	15.00		
31	04.44	06.13		08.02		09.14 (K 05)				10.08		
	22.30	20.50		16.28	23	09.37 (K 05)				15.01		
Potential sun hours	591	501	391	308			208			154		
Total, worst case					122			795			178	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,63			0,67			0,69	
Total reduction					0,16			0,10			0,07	
Total, real					19			78			13	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** X - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07			09.06		10.56 (K 05)	07.40	06.55	05.16	03.48
	15.03			16.25	20	14.02 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06			09.03		10.58 (K 05)	07.36	06.52	05.12	03.46
	15.05			16.29	14	11.12 (K 05)	17.53	20.21	21.47	23.15
3	10.05			09.00		11.00 (K 05)	07.33	06.49	05.09	03.44
	15.07			16.32	9	11.09 (K 05)	17.56	20.24	21.50	23.17
4	10.04			08.57			07.30	06.45	05.06	03.42
	15.09			16.35			17.59	20.26	21.53	23.19
5	10.03			08.55			07.26	06.42	05.03	03.40
	15.11			16.38			18.02	20.29	21.56	23.21
6	10.02		13.50 (WTG 01)	08.52			07.23	06.38	05.00	03.39
	15.13	5	13.55 (WTG 01)	16.41			18.05	20.32	21.59	23.23
7	10.01		13.48 (WTG 01)	08.49			07.20	06.35	04.57	03.37
	15.15	9	13.57 (WTG 01)	16.44			18.08	20.35	22.02	23.25
8	09.59		13.47 (WTG 01)	08.46			07.16	06.32	04.53	03.35
	15.17	12	13.59 (WTG 01)	16.47			18.11	20.38	22.05	23.27
9	09.58		13.47 (WTG 01)	08.43			07.13	06.28	04.50	03.34
	15.20	13	14.00 (WTG 01)	16.50			18.13	20.41	22.08	23.29
10	09.56		13.46 (WTG 01)	08.40			07.10	06.25	04.47	03.32
	15.22	15	14.01 (WTG 01)	16.53			18.16	20.43	22.11	23.31
11	09.55		10.58 (K 05)	08.37			07.06	06.22	04.44	03.31
	15.25	21	14.03 (WTG 01)	16.56			18.19	20.46	22.14	23.32
12	09.53		10.55 (K 05)	08.34			07.03	06.18	04.41	03.30
	15.27	27	14.04 (WTG 01)	16.59			18.22	20.49	22.17	23.34
13	09.51		10.53 (K 05)	08.31			07.00	06.15	04.38	03.29
	15.30	32	14.05 (WTG 01)	17.02			18.25	20.52	22.20	23.35
14	09.49		10.53 (K 05)	08.28			06.56	06.12	04.35	03.28
	15.32	35	14.06 (WTG 01)	17.06			18.28	20.55	22.23	23.36
15	09.47		10.52 (K 05)	08.24			06.53	06.08	04.32	03.27
	15.35	38	14.07 (WTG 01)	17.09			18.30	20.58	22.26	23.38
16	09.45		10.51 (K 05)	08.21			06.50	06.05	04.29	03.27
	15.38	40	14.07 (WTG 01)	17.12			18.33	21.01	22.29	23.39
17	09.43		10.51 (K 05)	08.18			06.46	06.01	04.27	03.26
	15.41	42	14.08 (WTG 01)	17.15			18.36	21.03	22.32	23.39
18	09.41		10.51 (K 05)	08.15			06.43	05.58	04.24	03.26
	15.43	43	14.08 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		10.51 (K 05)	08.12			06.39	05.55	04.21	03.25
	15.46	45	14.09 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		10.50 (K 05)	08.09			06.36	05.52	04.18	03.25
	15.49	46	14.09 (WTG 01)	17.24			18.44	21.12	22.40	23.41
21	09.34		10.51 (K 05)	08.06			06.33	05.48	04.15	03.25
	15.52	47	14.10 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		10.51 (K 05)	08.02			06.29	05.45	04.13	03.25
	15.55	46	14.10 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		10.50 (K 05)	07.59			06.26	05.42	04.10	03.25
	15.58	48	14.10 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		10.51 (K 05)	07.56			06.23	05.38	04.07	03.26
	16.01	47	14.10 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		10.52 (K 05)	07.53			06.19	05.35	04.05	03.26
	16.04	45	14.10 (WTG 01)	17.39			18.58	21.27	22.54	23.41
26	09.22		10.51 (K 05)	07.49			06.16	05.32	04.02	03.27
	16.07	46	14.10 (WTG 01)	17.41			19.01	21.30	22.57	23.41
27	09.20		10.52 (K 05)	07.46			06.12	05.28	04.00	03.28
	16.10	44	14.10 (WTG 01)	17.44			19.04	21.33	23.00	23.41
28	09.17		10.53 (K 05)	07.43			06.09	05.25	03.57	03.29
	16.13	42	14.10 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		10.53 (K 05)				07.06	05.22	03.55	03.30
	16.16	39	14.08 (WTG 01)				20.10	21.38	23.05	23.39
30	09.12		10.54 (K 05)				07.02	05.19	03.53	03.31
	16.19	36	14.08 (WTG 01)				20.12	21.41	23.07	23.38
31	09.09		10.55 (K 05)				06.59		03.50	
	16.22	29	14.05 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		892			43					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,67			0,67					
Total reduction		0,11			0,19					
Total, real		95			8					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** X - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November			December		
1	03.32	04.47	06.15	07.37	08.05			09.33		10.40 (K 05)
	23.37	22.27	20.47	19.05	16.24			15.08	21	13.45 (WTG 01)
2	03.34	04.50	06.18	07.40	08.08			09.35		13.29 (WTG 01)
	23.36	22.24	20.43	19.02	16.21			15.06	16	13.45 (WTG 01)
3	03.35	04.53	06.21	07.42	08.11			09.38		13.30 (WTG 01)
	23.35	22.21	20.40	18.58	16.18			15.04	14	13.44 (WTG 01)
4	03.37	04.56	06.24	07.45	08.14			09.40		13.31 (WTG 01)
	23.34	22.18	20.37	18.55	16.15			15.03	12	13.43 (WTG 01)
5	03.39	04.59	06.26	07.48	08.17			09.42		13.33 (WTG 01)
	23.32	22.15	20.33	18.52	16.12			15.01	10	13.43 (WTG 01)
6	03.40	05.01	06.29	07.51	08.20			09.45		13.35 (WTG 01)
	23.31	22.12	20.30	18.48	16.09			15.00	6	13.41 (WTG 01)
7	03.42	05.04	06.32	07.53	08.23			09.47		
	23.29	22.09	20.26	18.45	16.07			14.59		
8	03.44	05.07	06.35	07.56	08.26		10.30 (K 05)	09.49		
	23.27	22.06	20.23	18.42	16.04	10	10.40 (K 05)	14.57		
9	03.46	05.10	06.37	07.59	08.29		10.28 (K 05)	09.51		
	23.26	22.02	20.20	18.38	16.01	14	10.42 (K 05)	14.56		
10	03.49	05.13	06.40	08.02	08.32		10.27 (K 05)	09.53		
	23.24	21.59	20.16	18.35	15.58	22	13.34 (WTG 01)	14.55		
11	03.51	05.16	06.43	08.04	08.35		10.26 (K 05)	09.55		
	23.22	21.56	20.13	18.32	15.55	30	13.37 (WTG 01)	14.54		
12	03.53	05.19	06.45	08.07	08.38		10.26 (K 05)	09.56		
	23.20	21.53	20.09	18.28	15.52	36	13.40 (WTG 01)	14.54		
13	03.55	05.22	06.48	08.10	08.41		10.25 (K 05)	09.58		
	23.17	21.50	20.06	18.25	15.50	39	13.40 (WTG 01)	14.53		
14	03.58	05.25	06.51	08.13	08.44		10.25 (K 05)	09.59		
	23.15	21.46	20.03	18.22	15.47	43	13.42 (WTG 01)	14.52		
15	04.00	05.27	06.53	08.16	08.47		10.25 (K 05)	10.01		
	23.13	21.43	19.59	18.18	15.44	44	13.43 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19	08.50		10.24 (K 05)	10.02		
	23.11	21.40	19.56	18.15	15.41	46	13.43 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21	08.53		10.25 (K 05)	10.03		
	23.08	21.37	19.52	18.12	15.39	45	13.43 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24	08.56		10.25 (K 05)	10.05		
	23.06	21.33	19.49	18.09	15.36	47	13.44 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27	08.59		10.25 (K 05)	10.05		
	23.03	21.30	19.46	18.05	15.34	48	13.45 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30	09.02		10.26 (K 05)	10.06		
	23.01	21.27	19.42	18.02	15.31	46	13.45 (WTG 01)	14.51		
21	04.16	05.45	07.10	08.33	09.05		10.27 (K 05)	10.07		
	22.58	21.23	19.39	17.59	15.29	47	13.46 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36	09.08		10.26 (K 05)	10.08		
	22.56	21.20	19.36	17.56	15.27	46	13.45 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39	09.11		10.27 (K 05)	10.08		
	22.53	21.17	19.32	17.53	15.24	45	13.45 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42	09.14		10.28 (K 05)	10.08		
	22.50	21.14	19.29	17.49	15.22	44	13.46 (WTG 01)	14.53		
25	04.27	05.56	07.20	07.44	09.17		10.29 (K 05)	10.09		
	22.47	21.10	19.25	16.46	15.20	43	13.46 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.47	09.19		10.30 (K 05)	10.09		
	22.45	21.07	19.22	16.43	15.18	40	13.46 (WTG 01)	14.55		
27	04.33	06.01	07.26	07.50	09.22		10.31 (K 05)	10.09		
	22.42	21.04	19.19	16.40	15.15	38	13.46 (WTG 01)	14.56		
28	04.35	06.04	07.29	07.53	09.25		10.33 (K 05)	10.09		
	22.39	21.00	19.15	16.37	15.13	35	13.46 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56	09.27		10.33 (K 05)	10.08		
	22.36	20.57	19.12	16.34	15.11	32	13.45 (WTG 01)	14.58		
30	04.41	06.10	07.34	07.59	09.30		10.36 (K 05)	10.08		
	22.33	20.53	19.08	16.31	15.10	28	13.45 (WTG 01)	15.00		
31	04.44	06.13		08.02				10.08		
	22.30	20.50		16.27				15.01		
Potential sun hours	591	501	391	308	208			154		
Total, worst case						868			79	
Sun reduction						0,15			0,11	
Oper. time red.						0,97			0,97	
Wind dir. red.						0,67			0,67	
Total reduction						0,10			0,07	
Total, real						84			6	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** Y - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February	March	April	May	June	July	August	September	October	November			December		
1	10.07		11.48 (K 05)	09.06	07.40	06.55	05.16	03.48	03.32	04.47	06.15	07.37	08.05			09.33		11.30 (K 05)
	15.03	16	12.04 (K 05)	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24			15.08	25	11.55 (K 05)
2	10.06		11.48 (K 05)	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08			09.35		11.31 (K 05)
	15.05	17	12.05 (K 05)	16.28	17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21			15.06	24	11.55 (K 05)
3	10.05		11.47 (K 05)	09.00	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11			09.38		11.31 (K 05)
	15.07	19	12.06 (K 05)	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18			15.04	23	11.54 (K 05)
4	10.04		11.48 (K 05)	08.57	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14			09.40		11.32 (K 05)
	15.09	19	12.07 (K 05)	16.35	17.59	20.26	21.53	23.19	23.34	22.18	20.37	18.55	16.15			15.03	23	11.55 (K 05)
5	10.03		11.47 (K 05)	08.55	07.26	06.42	05.03	03.40	03.39	04.59	06.26	07.48	08.17			09.42		11.33 (K 05)
	15.11	21	12.08 (K 05)	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12			15.01	22	11.55 (K 05)
6	10.02		11.48 (K 05)	08.52	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20			09.45		11.33 (K 05)
	15.13	21	12.09 (K 05)	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.09			15.00	21	11.54 (K 05)
7	10.01		11.48 (K 05)	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23			09.47		11.35 (K 05)
	15.15	22	12.10 (K 05)	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.26	18.45	16.06			14.59	20	11.55 (K 05)
8	09.59		11.48 (K 05)	08.46	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26			09.49		11.35 (K 05)
	15.17	22	12.10 (K 05)	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04			14.57	19	11.54 (K 05)
9	09.58		11.48 (K 05)	08.43	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29			09.51		11.36 (K 05)
	15.20	23	12.11 (K 05)	16.50	18.13	20.41	22.08	23.29	23.26	22.02	20.20	18.38	16.01			14.56	19	11.55 (K 05)
10	09.56		11.48 (K 05)	08.40	07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.02	08.32			09.53		11.37 (K 05)
	15.22	24	12.12 (K 05)	16.53	18.16	20.43	22.11	23.31	23.24	21.59	20.16	18.35	15.58			14.55	18	11.55 (K 05)
11	09.55		11.48 (K 05)	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35			09.55		11.38 (K 05)
	15.25	24	12.12 (K 05)	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55			14.54	17	11.55 (K 05)
12	09.53		11.48 (K 05)	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38		11.32 (K 05)	09.56		11.39 (K 05)
	15.27	25	12.13 (K 05)	16.59	18.22	20.49	22.17	23.34	23.20	21.53	20.09	18.28	15.52	10	11.42 (K 05)	14.54	16	11.55 (K 05)
13	09.51		11.48 (K 05)	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41		11.30 (K 05)	09.58		11.40 (K 05)
	15.30	26	12.14 (K 05)	17.02	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.50	15	11.45 (K 05)	14.53	15	11.55 (K 05)
14	09.49		11.49 (K 05)	08.28	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44		11.29 (K 05)	09.59		11.41 (K 05)
	15.32	26	12.15 (K 05)	17.05	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	18	11.47 (K 05)	14.52	14	11.55 (K 05)
15	09.47		11.49 (K 05)	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.16	08.47		11.28 (K 05)	10.01		11.41 (K 05)
	15.35	26	12.15 (K 05)	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	20	11.48 (K 05)	14.52	14	11.55 (K 05)
16	09.45		11.48 (K 05)	08.21	06.50	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50		11.27 (K 05)	10.02		11.42 (K 05)
	15.38	27	12.15 (K 05)	17.12	18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.41	21	11.48 (K 05)	14.51	12	11.54 (K 05)
17	09.43		11.49 (K 05)	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53		11.27 (K 05)	10.03		11.43 (K 05)
	15.41	26	12.15 (K 05)	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	23	11.50 (K 05)	14.51	11	11.54 (K 05)
18	09.41		11.50 (K 05)	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56		11.26 (K 05)	10.04		11.44 (K 05)
	15.43	26	12.16 (K 05)	17.18	18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36	25	11.51 (K 05)	14.51	11	11.55 (K 05)
19	09.39		11.50 (K 05)	08.12	06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59		11.26 (K 05)	10.05		11.45 (K 05)
	15.46	27	12.17 (K 05)	17.21	18.42	21.09	22.37	23.41	23.03	21.30	19.46	18.05	15.34	25	11.51 (K 05)	14.51	10	11.55 (K 05)
20	09.37		11.50 (K 05)	08.09	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02		11.27 (K 05)	10.06		11.45 (K 05)
	15.49	26	12.16 (K 05)	17.24	18.44	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31	25	11.52 (K 05)	14.51	11	11.56 (K 05)
21	09.34		11.51 (K 05)	08.05	06.33	05.48	04.15	03.25	04.16	05.45	07.10	08.33	09.05		11.27 (K 05)	10.07		11.46 (K 05)
	15.52	26	12.17 (K 05)	17.27	18.47	21.15	22.43	23.42	22.58	21.23	19.39	17.59	15.29	26	11.53 (K 05)	14.52	10	11.56 (K 05)
22	09.32		11.52 (K 05)	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08		11.26 (K 05)	10.08		11.46 (K 05)
	15.55	25	12.17 (K 05)	17.30	18.50	21.18	22.46	23.42	22.55	21.20	19.35	17.56	15.26	26	11.52 (K 05)	14.52	10	11.56 (K 05)
23	09.30		11.51 (K 05)	07.59	06.26	05.42	04.10	03.25	04.21	05.50	07.15	08.39	09.11		11.26 (K 05)	10.08		11.46 (K 05)
	15.58	25	12.16 (K 05)	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.52	15.24	27	11.53 (K 05)	14.53	10	11.56 (K 05)
24	09.27		11.52 (K 05)	07.56	06.23	05.38	04.07	03.26	04.24	05.53	07.18	08.42	09.14		11.27 (K 05)	10.08		11.47 (K 05)
	16.01	25	12.17 (K 05)	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.49	15.22	26	11.53 (K 05)	14.53	10	11.57 (K 05)
25	09.25		11.54 (K 05)	07.53	06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.17		11.27 (K 05)	10.09		11.47 (K 05)
	16.04	23	12.17 (K 05)	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	27	11.54 (K 05)	14.54	11	11.58 (K 05)
26	09.22		11.54 (K 05)	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19		11.28 (K 05)	10.09		11.47 (K 05)
	16.07	22	12.16 (K 05)	17.41	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.18	26	11.54 (K 05)	14.55	12	11.59 (K 05)
27	09.19		11.55 (K 05)	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22		11.28 (K 05)	10.09		11.47 (K 05)
	16.10	20	12.15 (K 05)	17.44	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.15	26	11.54 (K 05)	14.56	13	12.00 (K 05)
28	09.17		11.57 (K 05)	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.29	07.53	09.25		11.28 (K 05)	10.09		11.48 (K 05)
	16.13	18	12.15 (K 05)	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.13	26	11.54 (K 05)	14.57	13	12.01 (K 05)
29	09.14		11.58 (K 05)		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27		11.29 (K 05)	10.08		11.47 (K 05)
	16.16	15	12.13 (K 05)		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.11	25	11.54 (K 05)	14.58	14	12.01 (K 05)
30	09.11		12.01 (K 05)		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30		11.29 (K 05)	10.08		11.48 (K 05)
	16.19	10	12.11 (K 05)		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	25	11.54 (K 05)	15.00	15	12.03 (K 05)
31	09.09				06.59		03.50		04.44	06.13		08.02				10.08		11.48 (K 05)
	16.22				20.15		23.10		22.30	20.50		16.27				15.01	15	12.03 (K 05)
Potential sun hours	184			243	364	446	557	601	591	501	391	308	208			154		
Total, worst case		672												442			478	
Sun reduction		0,16												0,15			0,11	
Oper. time red.		0,97												0,97			0,97	
Wind dir. red.		0,68												0,68			0,68	
Total reduction		0,11												0,10			0,07	
Total, real		72												43			35	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** Z - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February	March	April	May	June	July	August	September	October	November			December		
1	10.07		12.44 (K 05)	09.06	07.40	06.55	05.15	03.48	03.32	04.47	06.15	07.37	08.05			09.33		12.28 (K 05)
	15.03	19	13.03 (K 05)	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24			15.08	25	12.53 (K 05)
2	10.06		12.45 (K 05)	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08			09.35		12.28 (K 05)
	15.05	19	13.04 (K 05)	16.28	17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21			15.06	25	12.53 (K 05)
3	10.05		12.44 (K 05)	09.00	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11			09.38		12.28 (K 05)
	15.07	21	13.05 (K 05)	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18			15.04	25	12.53 (K 05)
4	10.04		12.45 (K 05)	08.57	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14			09.40		12.29 (K 05)
	15.09	21	13.06 (K 05)	16.35	17.59	20.26	21.53	23.19	23.34	22.18	20.37	18.55	16.15			15.03	24	12.53 (K 05)
5	10.03		12.44 (K 05)	08.55	07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.48	08.17			09.42		12.30 (K 05)
	15.11	22	13.06 (K 05)	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12			15.01	24	12.54 (K 05)
6	10.02		12.45 (K 05)	08.52	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20			09.45		12.30 (K 05)
	15.13	23	13.08 (K 05)	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.09			15.00	23	12.53 (K 05)
7	10.01		12.45 (K 05)	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23			09.47		12.32 (K 05)
	15.15	23	13.08 (K 05)	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.26	18.45	16.06			14.59	22	12.54 (K 05)
8	09.59		12.45 (K 05)	08.46	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26			09.49		12.32 (K 05)
	15.17	24	13.09 (K 05)	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04			14.57	21	12.53 (K 05)
9	09.58		12.45 (K 05)	08.43	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29			09.51		12.33 (K 05)
	15.20	25	13.10 (K 05)	16.50	18.13	20.41	22.08	23.29	23.26	22.02	20.20	18.38	16.01			14.56	21	12.54 (K 05)
10	09.56		12.45 (K 05)	08.40	07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.02	08.32			09.53		12.34 (K 05)
	15.22	25	13.10 (K 05)	16.53	18.16	20.43	22.11	23.31	23.24	21.59	20.16	18.35	15.58			14.55	20	12.54 (K 05)
11	09.55		12.45 (K 05)	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35			09.55		12.35 (K 05)
	15.25	26	13.11 (K 05)	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55			14.54	19	12.54 (K 05)
12	09.53		12.46 (K 05)	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38		12.34 (K 05)	09.56		12.35 (K 05)
	15.27	25	13.11 (K 05)	16.59	18.22	20.49	22.17	23.34	23.20	21.53	20.09	18.28	15.52	2	12.36 (K 05)	14.53	19	12.54 (K 05)
13	09.51		12.46 (K 05)	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41		12.30 (K 05)	09.58		12.36 (K 05)
	15.30	26	13.12 (K 05)	17.02	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.49	11	12.41 (K 05)	14.53	18	12.54 (K 05)
14	09.49		12.46 (K 05)	08.28	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44		12.28 (K 05)	09.59		12.37 (K 05)
	15.32	27	13.13 (K 05)	17.05	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	16	12.44 (K 05)	14.52	17	12.54 (K 05)
15	09.47		12.47 (K 05)	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.16	08.47		12.27 (K 05)	10.01		12.38 (K 05)
	15.35	26	13.13 (K 05)	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	18	12.45 (K 05)	14.52	16	12.54 (K 05)
16	09.45		12.46 (K 05)	08.21	06.50	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50		12.25 (K 05)	10.02		12.38 (K 05)
	15.38	27	13.13 (K 05)	17.12	18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.41	21	12.46 (K 05)	14.51	16	12.54 (K 05)
17	09.43		12.47 (K 05)	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53		12.25 (K 05)	10.03		12.39 (K 05)
	15.41	27	13.14 (K 05)	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	22	12.47 (K 05)	14.51	15	12.54 (K 05)
18	09.41		12.47 (K 05)	08.15	06.43	05.58	04.24	03.25	04.08	05.36	07.02	08.24	08.56		12.25 (K 05)	10.04		12.40 (K 05)
	15.43	27	13.14 (K 05)	17.18	18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36	23	12.48 (K 05)	14.51	15	12.55 (K 05)
19	09.39		12.48 (K 05)	08.12	06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59		12.25 (K 05)	10.05		12.41 (K 05)
	15.46	27	13.15 (K 05)	17.21	18.42	21.09	22.37	23.41	23.03	21.30	19.46	18.05	15.34	24	12.49 (K 05)	14.51	14	12.55 (K 05)
20	09.37		12.48 (K 05)	08.09	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02		12.25 (K 05)	10.06		12.41 (K 05)
	15.49	26	13.14 (K 05)	17.24	18.44	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31	25	12.50 (K 05)	14.51	15	12.56 (K 05)
21	09.34		12.49 (K 05)	08.05	06.33	05.48	04.15	03.25	04.16	05.45	07.10	08.33	09.05		12.24 (K 05)	10.07		12.42 (K 05)
	15.52	26	13.15 (K 05)	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	26	12.50 (K 05)	14.52	14	12.56 (K 05)
22	09.32		12.50 (K 05)	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08		12.24 (K 05)	10.08		12.42 (K 05)
	15.55	25	13.15 (K 05)	17.30	18.50	21.18	22.46	23.42	22.55	21.20	19.35	17.56	15.26	26	12.50 (K 05)	14.52	14	12.56 (K 05)
23	09.30		12.50 (K 05)	07.59	06.26	05.42	04.10	03.25	04.21	05.50	07.15	08.39	09.11		12.24 (K 05)	10.08		12.42 (K 05)
	15.58	24	13.14 (K 05)	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.52	15.24	27	12.51 (K 05)	14.53	14	12.56 (K 05)
24	09.27		12.51 (K 05)	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.14		12.25 (K 05)	10.08		12.43 (K 05)
	16.01	23	13.14 (K 05)	17.36	18.56	21.24	22.52	23.42	22.50	21.13	19.29	17.49	15.22	26	12.51 (K 05)	14.53	14	12.57 (K 05)
25	09.25		12.52 (K 05)	07.53	06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.17		12.25 (K 05)	10.09		12.43 (K 05)
	16.04	22	13.14 (K 05)	17.38	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	27	12.52 (K 05)	14.54	15	12.58 (K 05)
26	09.22		12.53 (K 05)	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19		12.25 (K 05)	10.09		12.43 (K 05)
	16.07	20	13.13 (K 05)	17.41	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.17	27	12.52 (K 05)	14.55	16	12.59 (K 05)
27	09.19		12.54 (K 05)	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22		12.26 (K 05)	10.09		12.44 (K 05)
	16.10	18	13.12 (K 05)	17.44	19.04	21.33	23.00	23.41	22.42	21.03	19.19	16.40	15.15	27	12.53 (K 05)	14.56	15	12.59 (K 05)
28	09.17		12.56 (K 05)	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.29	07.53	09.25		12.26 (K 05)	10.09		12.44 (K 05)
	16.13	16	13.12 (K 05)	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.13	26	12.52 (K 05)	14.57	16	13.00 (K 05)
29	09.14		12.58 (K 05)		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27		12.26 (K 05)	10.08		12.44 (K 05)
	16.16	11	13.09 (K 05)		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.11	26	12.52 (K 05)	14.58	17	13.01 (K 05)
30	09.11				07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30		12.27 (K 05)	10.08		12.45 (K 05)
	16.19				20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.10	26	12.53 (K 05)	15.00	17	13.02 (K 05)
31	09.09				06.59		03.50		04.44	06.13		08.02				10.07		12.45 (K 05)
	16.22				20.15		23.10		22.30	20.50		16.27				15.01	18	13.03 (K 05)
Potential sun hours	184			243	364	446	557	601	591	501	391	308	208			154		
Total, worst case		671												426			564	
Sun reduction		0,16												0,15			0,11	
Oper. time red.		0,97												0,97			0,97	
Wind dir. red.		0,69												0,69			0,69	
Total reduction		0,11												0,10			0,07	
Total, real		73												43			42	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AA - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (67)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.25	15.08
2	10.05	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.39	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.24	20.43	19.02	16.21	15.06
3	10.04	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.35	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.42	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.57
10	09.56	08.39	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.23	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.22	04.45	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.42	03.31	03.54	05.19	06.45	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.22	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.38	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.08	06.36	05.52	04.18	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.22	05.38	04.08	03.27	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.23	22.51	23.41	22.49	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.42	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.12	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.57
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AB - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January		February		March	April	May	June	July	August	September	October	November		December	
1	10.07		09.06	13.46 (K 05)	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.37	08.05		09.33	13.16 (K 05)
	15.03		16.25	10 13.56 (K 05)	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24		15.08	21 13.37 (K 05)
2	10.06	13.38 (K 05)	09.03		07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08		09.35	13.17 (K 05)
	15.05	5 13.43 (K 05)	16.28		17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21		15.06	20 13.37 (K 05)
3	10.05	13.36 (K 05)	09.00		07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11		09.38	13.17 (K 05)
	15.07	9 13.45 (K 05)	16.32		17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18		15.04	19 13.36 (K 05)
4	10.04	13.36 (K 05)	08.57		07.30	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14		09.40	13.19 (K 05)
	15.09	11 13.47 (K 05)	16.35		17.59	20.26	21.53	23.19	23.34	22.18	20.37	18.55	16.15		15.03	17 13.36 (K 05)
5	10.03	13.35 (K 05)	08.55		07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.48	08.17		09.42	13.20 (K 05)
	15.11	13 13.48 (K 05)	16.38		18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12		15.01	16 13.36 (K 05)
6	10.02	13.35 (K 05)	08.52		07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20		09.44	13.21 (K 05)
	15.13	15 13.50 (K 05)	16.41		18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.09		15.00	14 13.35 (K 05)
7	10.01	13.35 (K 05)	08.49		07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23		09.47	13.22 (K 05)
	15.15	16 13.51 (K 05)	16.44		18.08	20.35	22.02	23.25	23.29	22.09	20.26	18.45	16.06		14.58	13 13.35 (K 05)
8	09.59	13.34 (K 05)	08.46		07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26		09.49	13.23 (K 05)
	15.17	18 13.52 (K 05)	16.47		18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04		14.57	11 13.34 (K 05)
9	09.58	13.34 (K 05)	08.43		07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29		09.51	13.25 (K 05)
	15.20	19 13.53 (K 05)	16.50		18.13	20.41	22.08	23.29	23.25	22.02	20.20	18.38	16.01		14.56	9 13.34 (K 05)
10	09.56	13.34 (K 05)	08.40		07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.02	08.32	13.16 (K 05)	09.53	13.27 (K 05)
	15.22	20 13.54 (K 05)	16.53		18.16	20.43	22.11	23.31	23.24	21.59	20.16	18.35	15.58	11 13.27 (K 05)	14.55	6 13.33 (K 05)
11	09.55	13.34 (K 05)	08.37		07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35	13.14 (K 05)	09.55	
	15.25	21 13.55 (K 05)	16.56		18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	15 13.29 (K 05)	14.54	
12	09.53	13.34 (K 05)	08.34		07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	13.12 (K 05)	09.56	
	15.27	22 13.56 (K 05)	16.59		18.22	20.49	22.17	23.34	23.20	21.53	20.09	18.28	15.52	18 13.30 (K 05)	14.53	
13	09.51	13.34 (K 05)	08.31		07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41	13.12 (K 05)	09.58	
	15.30	23 13.57 (K 05)	17.02		18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.49	20 13.32 (K 05)	14.53	
14	09.49	13.34 (K 05)	08.27		06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44	13.11 (K 05)	09.59	
	15.32	24 13.58 (K 05)	17.05		18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	22 13.33 (K 05)	14.52	
15	09.47	13.34 (K 05)	08.24		06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.16	08.47	13.11 (K 05)	10.01	
	15.35	24 13.58 (K 05)	17.08		18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	23 13.34 (K 05)	14.52	
16	09.45	13.33 (K 05)	08.21		06.50	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50	13.10 (K 05)	10.02	
	15.38	25 13.58 (K 05)	17.12		18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.41	24 13.34 (K 05)	14.51	
17	09.43	13.34 (K 05)	08.18		06.46	06.01	04.26	03.26	04.05	05.33	06.59	08.21	08.53	13.10 (K 05)	10.03	
	15.41	25 13.59 (K 05)	17.15		18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	25 13.35 (K 05)	14.51	
18	09.41	13.34 (K 05)	08.15		06.43	05.58	04.24	03.25	04.08	05.36	07.01	08.24	08.56	13.10 (K 05)	10.04	
	15.43	26 14.00 (K 05)	17.18		18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36	25 13.35 (K 05)	14.51	
19	09.39	13.35 (K 05)	08.12		06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59	13.10 (K 05)	10.05	
	15.46	26 14.01 (K 05)	17.21		18.42	21.09	22.37	23.41	23.03	21.30	19.46	18.05	15.34	26 13.36 (K 05)	14.51	
20	09.37	13.34 (K 05)	08.09		06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	13.10 (K 05)	10.06	
	15.49	26 14.00 (K 05)	17.24		18.44	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31	26 13.36 (K 05)	14.51	
21	09.34	13.35 (K 05)	08.05		06.33	05.48	04.15	03.25	04.16	05.44	07.10	08.33	09.05	13.10 (K 05)	10.07	
	15.52	26 14.01 (K 05)	17.27		18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	26 13.36 (K 05)	14.52	
22	09.32	13.35 (K 05)	08.02		06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08	13.10 (K 05)	10.08	
	15.55	26 14.01 (K 05)	17.30		18.50	21.18	22.46	23.42	22.55	21.20	19.35	17.56	15.26	26 13.36 (K 05)	14.52	
23	09.30	13.35 (K 05)	07.59		06.26	05.42	04.10	03.25	04.21	05.50	07.15	08.39	09.11	13.11 (K 05)	10.08	
	15.58	26 14.01 (K 05)	17.33		18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.52	15.24	26 13.37 (K 05)	14.53	
24	09.27	13.36 (K 05)	07.56		06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.14	13.11 (K 05)	10.08	
	16.01	25 14.01 (K 05)	17.36		18.56	21.24	22.52	23.42	22.50	21.13	19.29	17.49	15.22	26 13.37 (K 05)	14.53	
25	09.25	13.37 (K 05)	07.53		06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.17	13.12 (K 05)	10.09	
	16.04	25 14.02 (K 05)	17.38		18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	25 13.37 (K 05)	14.54	
26	09.22	13.37 (K 05)	07.49		06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	13.13 (K 05)	10.09	
	16.07	24 14.01 (K 05)	17.41		19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.17	24 13.37 (K 05)	14.55	
27	09.19	13.38 (K 05)	07.46		06.12	05.28	04.00	03.28	04.32	06.01	07.26	07.50	09.22	13.13 (K 05)	10.09	
	16.10	23 14.01 (K 05)	17.44		19.04	21.32	23.00	23.41	22.42	21.03	19.18	16.40	15.15	25 13.38 (K 05)	14.56	
28	09.17	13.38 (K 05)	07.43		06.09	05.25	03.57	03.29	04.35	06.04	07.29	07.53	09.25	13.13 (K 05)	10.09	
	16.13	22 14.00 (K 05)	17.47		19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.13	24 13.37 (K 05)	14.57	
29	09.14	13.40 (K 05)			07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	13.14 (K 05)	10.08	
	16.16	20 14.00 (K 05)			20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.11	23 13.37 (K 05)	14.58	
30	09.11	13.42 (K 05)			07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	13.15 (K 05)	10.08	
	16.19	17 13.59 (K 05)			20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.09	22 13.37 (K 05)	15.00	
31	09.09	13.43 (K 05)			06.59		03.50		04.44	06.12		08.02			10.07	
	16.22	14 13.57 (K 05)			20.15		23.10		22.30	20.50		16.27			15.01	
Potential sun hours	184		243		364	446	557	601	591	501	391	308	208		154	
Total, worst case		616		10										482		146
Sun reduction		0,16		0,29										0,15		0,11
Oper. time red.		0,97		0,97										0,97		0,97
Wind dir. red.		0,67		0,67										0,67		0,67
Total reduction		0,11		0,19										0,10		0,07
Total, real		66		2										47		11

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AC - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07		12.13 (K 03)	09.06		14.32 (K 05)	07.39	06.55	05.15	03.48
	15.03	20	12.33 (K 03)	16.25	29	15.01 (K 05)	17.50	20.18	21.44	23.12
2	10.06		12.13 (K 03)	09.03		14.32 (K 05)	07.36	06.52	05.12	03.46
	15.05	21	12.34 (K 03)	16.28	29	15.01 (K 05)	17.53	20.21	21.47	23.15
3	10.05		12.13 (K 03)	09.00		14.32 (K 05)	07.33	06.49	05.09	03.44
	15.07	21	12.34 (K 03)	16.32	29	15.01 (K 05)	17.56	20.24	21.50	23.17
4	10.04		12.14 (K 03)	08.57		14.33 (K 05)	07.30	06.45	05.06	03.42
	15.09	21	12.35 (K 03)	16.35	29	15.02 (K 05)	17.59	20.26	21.53	23.19
5	10.03		12.13 (K 03)	08.54		14.33 (K 05)	07.26	06.42	05.03	03.40
	15.11	23	12.36 (K 03)	16.38	28	15.01 (K 05)	18.02	20.29	21.56	23.21
6	10.02		12.14 (K 03)	08.52		14.33 (K 05)	07.23	06.38	05.00	03.39
	15.13	23	12.37 (K 03)	16.41	28	15.01 (K 05)	18.05	20.32	21.59	23.23
7	10.01		12.14 (K 03)	08.49		14.34 (K 05)	07.20	06.35	04.57	03.37
	15.15	23	12.37 (K 03)	16.44	26	15.00 (K 05)	18.08	20.35	22.02	23.25
8	09.59		12.14 (K 03)	08.46		14.35 (K 05)	07.16	06.32	04.53	03.35
	15.17	24	12.38 (K 03)	16.47	25	15.00 (K 05)	18.10	20.38	22.05	23.27
9	09.58		12.15 (K 03)	08.43		14.35 (K 05)	07.13	06.28	04.50	03.34
	15.20	23	12.38 (K 03)	16.50	24	14.59 (K 05)	18.13	20.40	22.08	23.29
10	09.56		12.15 (K 03)	08.40		14.37 (K 05)	07.10	06.25	04.47	03.32
	15.22	24	12.39 (K 03)	16.53	22	14.59 (K 05)	18.16	20.43	22.11	23.31
11	09.55		12.15 (K 03)	08.37		14.38 (K 05)	07.06	06.22	04.44	03.31
	15.25	24	12.39 (K 03)	16.56	19	14.57 (K 05)	18.19	20.46	22.14	23.32
12	09.53		12.16 (K 03)	08.34		14.40 (K 05)	07.03	06.18	04.41	03.30
	15.27	24	12.40 (K 03)	16.59	15	14.55 (K 05)	18.22	20.49	22.17	23.34
13	09.51		12.16 (K 03)	08.31		14.44 (K 05)	07.00	06.15	04.38	03.29
	15.30	24	12.40 (K 03)	17.02	9	14.53 (K 05)	18.25	20.52	22.20	23.35
14	09.49		12.17 (K 03)	08.27			06.56	06.11	04.35	03.28
	15.32	24	12.41 (K 03)	17.05			18.27	20.55	22.23	23.36
15	09.47		12.16 (K 03)	08.24			06.53	06.08	04.32	03.27
	15.35	24	12.40 (K 03)	17.08			18.30	20.58	22.26	23.37
16	09.45		12.17 (K 03)	08.21			06.49	06.05	04.29	03.26
	15.38	24	12.41 (K 03)	17.12			18.33	21.00	22.29	23.38
17	09.43		12.17 (K 03)	08.18			06.46	06.01	04.26	03.26
	15.41	24	12.41 (K 03)	17.15			18.36	21.03	22.32	23.39
18	09.41		12.18 (K 03)	08.15			06.43	05.58	04.24	03.25
	15.43	24	12.42 (K 03)	17.18			18.39	21.06	22.35	23.40
19	09.39		12.19 (K 03)	08.12			06.39	05.55	04.21	03.25
	15.46	23	12.42 (K 03)	17.21			18.42	21.09	22.37	23.41
20	09.37		12.19 (K 03)	08.09			06.36	05.51	04.18	03.25
	15.49	22	12.41 (K 03)	17.24			18.44	21.12	22.40	23.41
21	09.34		12.20 (K 03)	08.05			06.33	05.48	04.15	03.25
	15.52	30	14.48 (K 05)	17.27			18.47	21.15	22.43	23.41
22	09.32		12.22 (K 03)	08.02			06.29	05.45	04.13	03.25
	15.55	33	14.51 (K 05)	17.30			18.50	21.18	22.46	23.42
23	09.29		12.22 (K 03)	07.59			06.26	05.42	04.10	03.25
	15.58	36	14.53 (K 05)	17.33			18.53	21.21	22.49	23.42
24	09.27		12.24 (K 03)	07.56			06.22	05.38	04.07	03.26
	16.01	35	14.55 (K 05)	17.35			18.56	21.24	22.51	23.42
25	09.25		12.26 (K 03)	07.53			06.19	05.35	04.05	03.26
	16.04	34	14.56 (K 05)	17.38			18.58	21.27	22.54	23.41
26	09.22		12.28 (K 03)	07.49			06.16	05.32	04.02	03.27
	16.07	32	14.57 (K 05)	17.41			19.01	21.30	22.57	23.41
27	09.19		14.33 (K 05)	07.46			06.12	05.28	04.00	03.28
	16.10	25	14.58 (K 05)	17.44			19.04	21.32	23.00	23.40
28	09.17		14.32 (K 05)	07.43			06.09	05.25	03.57	03.29
	16.13	26	14.58 (K 05)	17.47			19.07	21.35	23.02	23.40
29	09.14		14.32 (K 05)				07.05	05.22	03.55	03.30
	16.16	27	14.59 (K 05)				20.10	21.38	23.05	23.39
30	09.11		14.33 (K 05)				07.02	05.19	03.53	03.31
	16.19	27	15.00 (K 05)				20.12	21.41	23.07	23.38
31	09.09		14.32 (K 05)				06.59		03.50	
	16.22	28	15.00 (K 05)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		793			312					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,68			0,67					
Total reduction		0,11			0,19					
Total, real		86			60					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AC - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		14.06 (K 05)	09.33		11.57 (K 03)
	23.37	22.27	20.47	19.05			16.24	22	14.28 (K 05)	15.08	25	12.22 (K 03)
2	03.34	04.50	06.18	07.39			08.08		14.04 (K 05)	09.35		11.58 (K 03)
	23.36	22.24	20.43	19.02			16.21	25	14.29 (K 05)	15.06	24	12.22 (K 03)
3	03.35	04.53	06.21	07.42			08.11		14.04 (K 05)	09.37		11.58 (K 03)
	23.35	22.21	20.40	18.58			16.18	26	14.30 (K 05)	15.04	24	12.22 (K 03)
4	03.37	04.56	06.23	07.45			08.14		14.03 (K 05)	09.40		11.59 (K 03)
	23.34	22.18	20.37	18.55			16.15	27	14.30 (K 05)	15.03	23	12.22 (K 03)
5	03.39	04.58	06.26	07.48			08.17		14.03 (K 05)	09.42		12.00 (K 03)
	23.32	22.15	20.33	18.52			16.12	28	14.31 (K 05)	15.01	23	12.23 (K 03)
6	03.40	05.01	06.29	07.50			08.20		14.03 (K 05)	09.44		12.00 (K 03)
	23.31	22.12	20.30	18.48			16.09	29	14.32 (K 05)	15.00	22	12.22 (K 03)
7	03.42	05.04	06.32	07.53			08.23		14.02 (K 05)	09.47		12.01 (K 03)
	23.29	22.09	20.26	18.45			16.06	29	14.31 (K 05)	14.59	22	12.23 (K 03)
8	03.44	05.07	06.34	07.56			08.26		14.03 (K 05)	09.49		12.01 (K 03)
	23.27	22.05	20.23	18.41			16.04	29	14.32 (K 05)	14.57	22	12.23 (K 03)
9	03.46	05.10	06.37	07.59			08.29		14.02 (K 05)	09.51		12.02 (K 03)
	23.25	22.02	20.20	18.38			16.01	29	14.31 (K 05)	14.56	22	12.24 (K 03)
10	03.48	05.13	06.40	08.02			08.32		14.03 (K 05)	09.53		12.02 (K 03)
	23.24	21.59	20.16	18.35			15.58	29	14.32 (K 05)	14.55	22	12.24 (K 03)
11	03.51	05.16	06.43	08.04			08.35		14.04 (K 05)	09.54		12.03 (K 03)
	23.22	21.56	20.13	18.32			15.55	28	14.32 (K 05)	14.54	21	12.24 (K 03)
12	03.53	05.19	06.45	08.07			08.38		14.03 (K 05)	09.56		12.04 (K 03)
	23.19	21.53	20.09	18.28			15.52	28	14.31 (K 05)	14.53	20	12.24 (K 03)
13	03.55	05.22	06.48	08.10			08.41		14.04 (K 05)	09.58		12.04 (K 03)
	23.17	21.49	20.06	18.25			15.49	27	14.31 (K 05)	14.53	20	12.24 (K 03)
14	03.58	05.25	06.51	08.13			08.44		14.05 (K 05)	09.59		12.05 (K 03)
	23.15	21.46	20.03	18.22			15.47	26	14.31 (K 05)	14.52	20	12.25 (K 03)
15	04.00	05.27	06.53	08.16			08.47		14.06 (K 05)	10.01		12.06 (K 03)
	23.13	21.43	19.59	18.18			15.44	25	14.31 (K 05)	14.52	18	12.24 (K 03)
16	04.03	05.30	06.56	08.18			08.50		12.01 (K 03)	10.02		12.06 (K 03)
	23.11	21.40	19.56	18.15			15.41	32	14.30 (K 05)	14.51	18	12.24 (K 03)
17	04.05	05.33	06.59	08.21			08.53		11.59 (K 03)	10.03		12.07 (K 03)
	23.08	21.37	19.52	18.12			15.39	34	14.29 (K 05)	14.51	18	12.25 (K 03)
18	04.08	05.36	07.01	08.24			08.56		11.58 (K 03)	10.04		12.07 (K 03)
	23.06	21.33	19.49	18.09			15.36	34	14.28 (K 05)	14.51	18	12.25 (K 03)
19	04.10	05.39	07.04	08.27			08.59		11.57 (K 03)	10.05		12.08 (K 03)
	23.03	21.30	19.46	18.05			15.34	36	14.28 (K 05)	14.51	18	12.26 (K 03)
20	04.13	05.42	07.07	08.30			09.02		11.57 (K 03)	10.06		12.09 (K 03)
	23.01	21.27	19.42	18.02			15.31	33	14.26 (K 05)	14.51	17	12.26 (K 03)
21	04.16	05.44	07.10	08.33			09.05		11.55 (K 03)	10.07		12.09 (K 03)
	22.58	21.23	19.39	17.59			15.29	30	14.23 (K 05)	14.52	18	12.27 (K 03)
22	04.19	05.47	07.12	08.36			09.08		11.55 (K 03)	10.08		12.09 (K 03)
	22.55	21.20	19.35	17.56			15.26	22	12.17 (K 03)	14.52	18	12.27 (K 03)
23	04.21	05.50	07.15	08.39			09.11		11.55 (K 03)	10.08		12.10 (K 03)
	22.53	21.17	19.32	17.52			15.24	23	12.18 (K 03)	14.53	17	12.27 (K 03)
24	04.24	05.53	07.18	08.41			09.14		11.55 (K 03)	10.08		12.10 (K 03)
	22.50	21.13	19.29	17.49			15.22	24	12.19 (K 03)	14.53	18	12.28 (K 03)
25	04.27	05.56	07.20	07.44			09.16		11.56 (K 03)	10.09		12.11 (K 03)
	22.47	21.10	19.25	16.46			15.20	23	12.19 (K 03)	14.54	18	12.29 (K 03)
26	04.30	05.59	07.23	07.47			09.19		11.56 (K 03)	10.09		12.11 (K 03)
	22.44	21.07	19.22	16.43			15.17	24	12.20 (K 03)	14.55	18	12.29 (K 03)
27	04.33	06.01	07.26	07.50			09.22		11.56 (K 03)	10.09		12.11 (K 03)
	22.42	21.03	19.18	16.40			15.15	25	12.21 (K 03)	14.56	19	12.30 (K 03)
28	04.35	06.04	07.29	07.53			09.25		11.56 (K 03)	10.09		12.12 (K 03)
	22.39	21.00	19.15	16.37			15.13	24	12.20 (K 03)	14.57	19	12.31 (K 03)
29	04.38	06.07	07.31	07.56		14.12 (K 05)	09.27		11.56 (K 03)	10.08		12.12 (K 03)
	22.36	20.57	19.12	16.34	11	14.23 (K 05)	15.11	25	12.21 (K 03)	14.58	19	12.31 (K 03)
30	04.41	06.10	07.34	07.59		14.09 (K 05)	09.30		11.57 (K 03)	10.08		12.13 (K 03)
	22.33	20.53	19.08	16.30	16	14.25 (K 05)	15.10	24	12.21 (K 03)	15.00	19	12.32 (K 03)
31	04.44	06.12		08.02		14.08 (K 05)				10.07		12.13 (K 03)
	22.30	20.50		16.27	19	14.27 (K 05)				15.01	20	12.33 (K 03)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					46			820			620	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,67			0,68			0,69	
Total reduction					0,17			0,10			0,07	
Total, real					8			81			46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AD - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January		February		March	April	May	June
1	10.07	13.12 (K 03)	09.06		07.39	06.55	05.15	03.48
	15.03 17	13.29 (K 03)	16.25		17.50	20.18	21.44	23.12
2	10.06	13.12 (K 03)	09.03		07.36	06.52	05.12	03.46
	15.05 18	13.30 (K 03)	16.28		17.53	20.21	21.47	23.14
3	10.05	13.12 (K 03)	09.00	15.43 (K 05)	07.33	06.49	05.09	03.44
	15.07 19	13.31 (K 03)	16.32 2	15.45 (K 05)	17.56	20.24	21.50	23.17
4	10.04	13.12 (K 03)	08.57	15.38 (K 05)	07.30	06.45	05.06	03.42
	15.09 20	13.32 (K 03)	16.35 11	15.49 (K 05)	17.59	20.26	21.53	23.19
5	10.03	13.12 (K 03)	08.54	15.36 (K 05)	07.26	06.42	05.03	03.40
	15.11 20	13.32 (K 03)	16.38 16	15.52 (K 05)	18.02	20.29	21.56	23.21
6	10.02	13.12 (K 03)	08.52	15.36 (K 05)	07.23	06.38	05.00	03.39
	15.13 21	13.33 (K 03)	16.41 18	15.54 (K 05)	18.05	20.32	21.59	23.23
7	10.00	13.13 (K 03)	08.49	15.34 (K 05)	07.20	06.35	04.56	03.37
	15.15 21	13.34 (K 03)	16.44 21	15.55 (K 05)	18.08	20.35	22.02	23.25
8	09.59	13.13 (K 03)	08.46	15.34 (K 05)	07.16	06.32	04.53	03.35
	15.17 22	13.35 (K 03)	16.47 22	15.56 (K 05)	18.10	20.38	22.05	23.27
9	09.58	13.13 (K 03)	08.43	15.33 (K 05)	07.13	06.28	04.50	03.34
	15.20 23	13.36 (K 03)	16.50 23	15.56 (K 05)	18.13	20.40	22.08	23.29
10	09.56	13.13 (K 03)	08.40	15.33 (K 05)	07.10	06.25	04.47	03.32
	15.22 23	13.36 (K 03)	16.53 24	15.57 (K 05)	18.16	20.43	22.11	23.31
11	09.54	13.13 (K 03)	08.37	15.32 (K 05)	07.06	06.21	04.44	03.31
	15.25 24	13.37 (K 03)	16.56 25	15.57 (K 05)	18.19	20.46	22.14	23.32
12	09.53	13.13 (K 03)	08.34	15.32 (K 05)	07.03	06.18	04.41	03.30
	15.27 25	13.38 (K 03)	16.59 26	15.58 (K 05)	18.22	20.49	22.17	23.34
13	09.51	13.14 (K 03)	08.31	15.31 (K 05)	07.00	06.15	04.38	03.29
	15.30 24	13.38 (K 03)	17.02 26	15.57 (K 05)	18.25	20.52	22.20	23.35
14	09.49	13.14 (K 03)	08.27	15.32 (K 05)	06.56	06.11	04.35	03.28
	15.32 25	13.39 (K 03)	17.05 25	15.57 (K 05)	18.27	20.55	22.23	23.36
15	09.47	13.13 (K 03)	08.24	15.33 (K 05)	06.53	06.08	04.32	03.27
	15.35 25	13.38 (K 03)	17.08 25	15.58 (K 05)	18.30	20.58	22.26	23.37
16	09.45	13.14 (K 03)	08.21	15.33 (K 05)	06.49	06.05	04.29	03.26
	15.38 25	13.39 (K 03)	17.11 24	15.57 (K 05)	18.33	21.00	22.29	23.38
17	09.43	13.14 (K 03)	08.18	15.34 (K 05)	06.46	06.01	04.26	03.26
	15.41 26	13.40 (K 03)	17.15 22	15.56 (K 05)	18.36	21.03	22.32	23.39
18	09.41	13.15 (K 03)	08.15	15.34 (K 05)	06.43	05.58	04.24	03.25
	15.43 25	13.40 (K 03)	17.18 21	15.55 (K 05)	18.39	21.06	22.34	23.40
19	09.39	13.15 (K 03)	08.12	15.36 (K 05)	06.39	05.55	04.21	03.25
	15.46 25	13.40 (K 03)	17.21 18	15.54 (K 05)	18.42	21.09	22.37	23.41
20	09.37	13.15 (K 03)	08.09	15.37 (K 05)	06.36	05.51	04.18	03.25
	15.49 25	13.40 (K 03)	17.24 15	15.52 (K 05)	18.44	21.12	22.40	23.41
21	09.34	13.16 (K 03)	08.05	15.40 (K 05)	06.33	05.48	04.15	03.25
	15.52 24	13.40 (K 03)	17.27 10	15.50 (K 05)	18.47	21.15	22.43	23.41
22	09.32	13.17 (K 03)	08.02		06.29	05.45	04.13	03.25
	15.55 24	13.41 (K 03)	17.30		18.50	21.18	22.46	23.42
23	09.29	13.17 (K 03)	07.59		06.26	05.41	04.10	03.25
	15.58 23	13.40 (K 03)	17.32		18.53	21.21	22.49	23.42
24	09.27	13.19 (K 03)	07.56		06.22	05.38	04.07	03.26
	16.01 21	13.40 (K 03)	17.35		18.56	21.24	22.51	23.42
25	09.24	13.20 (K 03)	07.52		06.19	05.35	04.05	03.26
	16.04 20	13.40 (K 03)	17.38		18.58	21.27	22.54	23.41
26	09.22	13.20 (K 03)	07.49		06.16	05.32	04.02	03.27
	16.07 19	13.39 (K 03)	17.41		19.01	21.29	22.57	23.41
27	09.19	13.22 (K 03)	07.46		06.12	05.28	04.00	03.28
	16.10 16	13.38 (K 03)	17.44		19.04	21.32	23.00	23.40
28	09.17	13.24 (K 03)	07.43		06.09	05.25	03.57	03.29
	16.13 12	13.36 (K 03)	17.47		19.07	21.35	23.02	23.40
29	09.14	13.28 (K 03)			07.05	05.22	03.55	03.30
	16.16 5	13.33 (K 03)			20.09	21.38	23.05	23.39
30	09.11				07.02	05.19	03.53	03.31
	16.19				20.12	21.41	23.07	23.38
31	09.09				06.59		03.50	
	16.22				20.15		23.10	
Potential sun hours	184		243		364	446	557	601
Total, worst case	617		374					
Sun reduction	0,16		0,29					
Oper. time red.	0,97		0,97					
Wind dir. red.	0,68		0,64					
Total reduction	0,11		0,18					
Total, real	67		68					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AD - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		15.02 (K 05)	09.32		12.55 (K 03)
	23.37	22.27	20.47	19.05			16.24	24	15.26 (K 05)	15.08	24	13.19 (K 03)
2	03.34	04.50	06.18	07.39			08.08		15.02 (K 05)	09.35		12.56 (K 03)
	23.36	22.24	20.43	19.02			16.21	23	15.25 (K 05)	15.06	24	13.20 (K 03)
3	03.35	04.53	06.21	07.42			08.11		15.03 (K 05)	09.37		12.56 (K 03)
	23.35	22.21	20.40	18.58			16.18	22	15.25 (K 05)	15.04	23	13.19 (K 03)
4	03.37	04.56	06.23	07.45			08.14		15.04 (K 05)	09.40		12.57 (K 03)
	23.34	22.18	20.36	18.55			16.15	20	15.24 (K 05)	15.03	22	13.19 (K 03)
5	03.39	04.58	06.26	07.48			08.17		15.05 (K 05)	09.42		12.58 (K 03)
	23.32	22.15	20.33	18.51			16.12	18	15.23 (K 05)	15.01	22	13.20 (K 03)
6	03.40	05.01	06.29	07.50			08.20		15.06 (K 05)	09.44		12.58 (K 03)
	23.31	22.12	20.30	18.48			16.09	15	15.21 (K 05)	15.00	21	13.19 (K 03)
7	03.42	05.04	06.32	07.53			08.23		15.09 (K 05)	09.47		12.59 (K 03)
	23.29	22.08	20.26	18.45			16.06	10	15.19 (K 05)	14.58	21	13.20 (K 03)
8	03.44	05.07	06.34	07.56			08.26			09.49		13.00 (K 03)
	23.27	22.05	20.23	18.41			16.03			14.57	19	13.19 (K 03)
9	03.46	05.10	06.37	07.59			08.29			09.51		13.01 (K 03)
	23.25	22.02	20.20	18.38			16.01			14.56	19	13.20 (K 03)
10	03.48	05.13	06.40	08.01			08.32			09.53		13.02 (K 03)
	23.23	21.59	20.16	18.35			15.58			14.55	18	13.20 (K 03)
11	03.51	05.16	06.43	08.04			08.35			09.54		13.02 (K 03)
	23.21	21.56	20.13	18.32			15.55			14.54	18	13.20 (K 03)
12	03.53	05.19	06.45	08.07			08.38			09.56		13.03 (K 03)
	23.19	21.53	20.09	18.28			15.52			14.53	17	13.20 (K 03)
13	03.55	05.22	06.48	08.10			08.41		12.59 (K 03)	09.58		13.04 (K 03)
	23.17	21.49	20.06	18.25			15.49	6	13.05 (K 03)	14.53	16	13.20 (K 03)
14	03.58	05.24	06.51	08.13			08.44		12.56 (K 03)	09.59		13.04 (K 03)
	23.15	21.46	20.03	18.22			15.47	13	13.09 (K 03)	14.52	15	13.19 (K 03)
15	04.00	05.27	06.53	08.16			08.47		12.55 (K 03)	10.01		13.06 (K 03)
	23.13	21.43	19.59	18.18			15.44	16	13.11 (K 03)	14.52	14	13.20 (K 03)
16	04.03	05.30	06.56	08.18			08.50		12.53 (K 03)	10.02		13.06 (K 03)
	23.10	21.40	19.56	18.15			15.41	18	13.11 (K 03)	14.51	14	13.20 (K 03)
17	04.05	05.33	06.59	08.21			08.53		12.53 (K 03)	10.03		13.07 (K 03)
	23.08	21.36	19.52	18.12			15.39	20	13.13 (K 03)	14.51	13	13.20 (K 03)
18	04.08	05.36	07.01	08.24			08.56		12.52 (K 03)	10.04		13.08 (K 03)
	23.06	21.33	19.49	18.09			15.36	22	13.14 (K 03)	14.51	12	13.20 (K 03)
19	04.10	05.39	07.04	08.27			08.59		12.52 (K 03)	10.05		13.08 (K 03)
	23.03	21.30	19.46	18.05			15.34	23	13.15 (K 03)	14.51	12	13.20 (K 03)
20	04.13	05.42	07.07	08.30		16.14 (K 05)	09.02		12.52 (K 03)	10.06		13.09 (K 03)
	23.01	21.27	19.42	18.02	3	16.17 (K 05)	15.31	24	13.16 (K 03)	14.51	12	13.21 (K 03)
21	04.16	05.44	07.10	08.33		16.09 (K 05)	09.05		12.51 (K 03)	10.07		13.09 (K 03)
	22.58	21.23	19.39	17.59	12	16.21 (K 05)	15.29	24	13.15 (K 03)	14.52	11	13.20 (K 03)
22	04.19	05.47	07.12	08.36		16.07 (K 05)	09.08		12.52 (K 03)	10.07		13.10 (K 03)
	22.55	21.20	19.35	17.56	17	16.24 (K 05)	15.26	24	13.16 (K 03)	14.52	11	13.21 (K 03)
23	04.21	05.50	07.15	08.38		16.05 (K 05)	09.11		12.52 (K 03)	10.08		13.10 (K 03)
	22.53	21.17	19.32	17.52	20	16.25 (K 05)	15.24	25	13.17 (K 03)	14.53	11	13.21 (K 03)
24	04.24	05.53	07.18	08.41		16.04 (K 05)	09.14		12.52 (K 03)	10.08		13.11 (K 03)
	22.50	21.13	19.29	17.49	21	16.25 (K 05)	15.22	25	13.17 (K 03)	14.53	12	13.23 (K 03)
25	04.27	05.56	07.20	07.44		15.03 (K 05)	09.16		12.53 (K 03)	10.09		13.11 (K 03)
	22.47	21.10	19.25	16.46	23	15.26 (K 05)	15.20	25	13.18 (K 03)	14.54	13	13.24 (K 03)
26	04.30	05.59	07.23	07.47		15.03 (K 05)	09.19		12.53 (K 03)	10.09		13.11 (K 03)
	22.44	21.07	19.22	16.43	24	15.27 (K 05)	15.17	25	13.18 (K 03)	14.55	13	13.24 (K 03)
27	04.32	06.01	07.26	07.50		15.02 (K 05)	09.22		12.53 (K 03)	10.09		13.12 (K 03)
	22.41	21.03	19.18	16.40	25	15.27 (K 05)	15.15	25	13.18 (K 03)	14.56	13	13.25 (K 03)
28	04.35	06.04	07.28	07.53		15.01 (K 05)	09.25		12.53 (K 03)	10.08		13.12 (K 03)
	22.39	21.00	19.15	16.37	26	15.27 (K 05)	15.13	25	13.18 (K 03)	14.57	14	13.26 (K 03)
29	04.38	06.07	07.31	07.56		15.02 (K 05)	09.27		12.54 (K 03)	10.08		13.12 (K 03)
	22.36	20.57	19.12	16.34	25	15.27 (K 05)	15.11	24	13.18 (K 03)	14.58	14	13.26 (K 03)
30	04.41	06.10	07.34	07.59		15.01 (K 05)	09.30		12.54 (K 03)	10.08		13.11 (K 03)
	22.33	20.53	19.08	16.30	26	15.27 (K 05)	15.09	25	13.19 (K 03)	15.00	16	13.27 (K 03)
31	04.44	06.12		08.02		15.01 (K 05)				10.07		13.12 (K 03)
	22.30	20.50		16.27	25	15.26 (K 05)				15.01	17	13.29 (K 03)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					247			521			501	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,64			0,67			0,68	
Total reduction					0,16			0,10			0,07	
Total, real					40			51			37	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AE - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June		July		August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.16	03.49		03.33	04.33 (K 13)	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.11		23.36	16 04.49 (K 13)	22.26	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.47		03.34	04.35 (K 13)	04.50	06.18	07.39	08.08	09.34
	15.06	16.29	17.53	20.21	21.47	23.14		23.35	15 04.50 (K 13)	22.23	20.43	19.02	16.21	15.06
3	10.04	09.00	07.33	06.49	05.09	03.45	04.38 (K 13)	03.36	04.36 (K 13)	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	1 04.39 (K 13)	23.34	13 04.49 (K 13)	22.20	20.40	18.58	16.18	15.05
4	10.03	08.57	07.29	06.45	05.06	03.43	04.36 (K 13)	03.37	04.37 (K 13)	04.56	06.24	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	4 04.40 (K 13)	23.33	12 04.49 (K 13)	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	04.35 (K 13)	03.39	04.38 (K 13)	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.20	6 04.41 (K 13)	23.31	10 04.48 (K 13)	22.14	20.33	18.51	16.12	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	04.34 (K 13)	03.41	04.40 (K 13)	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.22	8 04.42 (K 13)	23.30	9 04.49 (K 13)	22.11	20.30	18.48	16.10	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	04.33 (K 13)	03.43	04.41 (K 13)	05.04	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.24	10 04.43 (K 13)	23.28	7 04.48 (K 13)	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	04.32 (K 13)	03.45	04.43 (K 13)	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.05	23.26	11 04.43 (K 13)	23.27	5 04.48 (K 13)	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.51	03.34	04.31 (K 13)	03.47	04.44 (K 13)	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	13 04.44 (K 13)	23.25	2 04.46 (K 13)	22.02	20.19	18.38	16.01	14.57
10	09.56	08.39	07.09	06.25	04.48	03.33	04.30 (K 13)	03.49		05.13	06.40	08.01	08.32	09.52
	15.23	16.53	18.16	20.43	22.11	23.30	14 04.44 (K 13)	23.23		21.59	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.22	04.44	03.32	04.30 (K 13)	03.51		05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.31	15 04.45 (K 13)	23.21		21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.31	04.29 (K 13)	03.53		05.19	06.45	08.07	08.38	09.56
	15.28	16.59	18.22	20.49	22.16	23.33	16 04.45 (K 13)	23.19		21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.30	04.28 (K 13)	03.56		05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.19	23.34	17 04.45 (K 13)	23.17		21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.29	04.28 (K 13)	03.58		05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.54	22.22	23.35	18 04.46 (K 13)	23.14		21.46	20.02	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.27 (K 13)	04.01		05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	19 04.46 (K 13)	23.12		21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.27 (K 13)	04.03		05.30	06.56	08.18	08.50	10.01
	15.38	17.12	18.33	21.00	22.28	23.38	20 04.47 (K 13)	23.10		21.39	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.27	04.27 (K 13)	04.06		05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.38	20 04.47 (K 13)	23.08		21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.27 (K 13)	04.08		05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	21 04.48 (K 13)	23.05		21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.27 (K 13)	04.11		05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.41	21.09	22.37	23.40	21 04.48 (K 13)	23.03		21.30	19.45	18.05	15.34	14.52
20	09.36	08.08	06.36	05.52	04.18	03.26	04.27 (K 13)	04.14		05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	21 04.48 (K 13)	23.00		21.26	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.27 (K 13)	04.16		05.45	07.09	08.32	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	21 04.48 (K 13)	22.57		21.23	19.39	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.27 (K 13)	04.19		05.47	07.12	08.35	09.07	10.07
	15.55	17.30	18.50	21.18	22.45	23.41	21 04.48 (K 13)	22.55		21.20	19.35	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.10	03.26	04.28 (K 13)	04.22		05.50	07.15	08.38	09.10	10.07
	15.58	17.33	18.53	21.20	22.48	23.41	21 04.49 (K 13)	22.52		21.16	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.28 (K 13)	04.24		05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.55	21.23	22.51	23.41	21 04.49 (K 13)	22.49		21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.29 (K 13)	04.27		05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.40	20 04.49 (K 13)	22.47		21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.29 (K 13)	04.30		05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	20 04.49 (K 13)	22.44		21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.30 (K 13)	04.33		06.01	07.26	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	19 04.49 (K 13)	22.41		21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.31 (K 13)	04.36		06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	19 04.50 (K 13)	22.38		21.00	19.15	16.37	15.14	14.58
29	09.14		07.05	05.22	03.55	03.30	04.31 (K 13)	04.39		06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38	18 04.49 (K 13)	22.35		20.56	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.32 (K 13)	04.41		06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.07	23.37	17 04.49 (K 13)	22.32		20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51			04.44		06.13		08.02		10.07
	16.22		20.15		23.09			22.29		20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600		590		501	391	308	208	155
Total, worst case						452		89						
Sun reduction						0,46		0,45						
Oper. time red.						0,97		0,97						
Wind dir. red.						0,65		0,65						
Total reduction						0,29		0,29						
Total, real						131		25						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AF - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January		February		March		April	May	June
1	10.06	11.57 (K 01)	09.06	12.14 (K 01)	07.39		06.55	05.15	03.48
	15.03 19	12.16 (K 01)	16.25 32	14.07 (K 02)	17.50		20.18	21.44	23.12
2	10.06	11.57 (K 01)	09.03	13.41 (K 02)	07.36		06.52	05.12	03.46
	15.05 20	12.17 (K 01)	16.28 25	14.06 (K 02)	17.53		20.21	21.47	23.14
3	10.05	11.57 (K 01)	09.00	13.43 (K 02)	07.33		06.48	05.09	03.44
	15.07 21	12.18 (K 01)	16.32 22	14.05 (K 02)	17.56		20.23	21.50	23.17
4	10.04	11.57 (K 01)	08.57	13.43 (K 02)	07.29		06.45	05.06	03.42
	15.09 22	12.19 (K 01)	16.35 21	14.04 (K 02)	17.59		20.26	21.53	23.19
5	10.03	11.57 (K 01)	08.54	13.46 (K 02)	07.26		06.42	05.03	03.40
	15.11 23	12.20 (K 01)	16.38 17	14.03 (K 02)	18.02		20.29	21.56	23.21
6	10.02	11.57 (K 01)	08.51	13.49 (K 02)	07.23		06.38	05.00	03.39
	15.13 23	12.20 (K 01)	16.41 22	15.50 (K 03)	18.05		20.32	21.59	23.23
7	10.00	11.57 (K 01)	08.49	15.37 (K 03)	07.20		06.35	04.56	03.37
	15.15 28	13.47 (K 02)	16.44 16	15.53 (K 03)	18.07		20.35	22.02	23.25
8	09.59	11.57 (K 01)	08.46	15.36 (K 03)	07.16		06.32	04.53	03.35
	15.17 34	13.51 (K 02)	16.47 19	15.55 (K 03)	18.10		20.38	22.05	23.27
9	09.58	11.57 (K 01)	08.43	15.34 (K 03)	07.13		06.28	04.50	03.34
	15.20 39	13.53 (K 02)	16.50 22	15.56 (K 03)	18.13		20.40	22.08	23.29
10	09.56	11.57 (K 01)	08.40	15.33 (K 03)	07.10	17.34 (K 05)	06.25	04.47	03.32
	15.22 43	13.55 (K 02)	16.53 25	15.58 (K 03)	18.16 8	17.42 (K 05)	20.43	22.11	23.30
11	09.54	11.58 (K 01)	08.37	15.32 (K 03)	07.06	17.31 (K 05)	06.21	04.44	03.31
	15.25 43	13.56 (K 02)	16.56 26	15.58 (K 03)	18.19 13	17.44 (K 05)	20.46	22.14	23.32
12	09.53	11.58 (K 01)	08.33	15.32 (K 03)	07.03	17.30 (K 05)	06.18	04.41	03.30
	15.27 47	13.58 (K 02)	16.59 28	16.00 (K 03)	18.22 18	17.48 (K 05)	20.49	22.17	23.33
13	09.51	11.58 (K 01)	08.30	15.31 (K 03)	06.59	17.28 (K 05)	06.15	04.38	03.29
	15.30 49	13.59 (K 02)	17.02 29	16.00 (K 03)	18.25 20	17.48 (K 05)	20.52	22.20	23.35
14	09.49	11.57 (K 01)	08.27	15.31 (K 03)	06.56	17.27 (K 05)	06.11	04.35	03.28
	15.32 50	13.59 (K 02)	17.05 29	16.00 (K 03)	18.27 22	17.49 (K 05)	20.55	22.23	23.36
15	09.47	11.58 (K 01)	08.24	15.30 (K 03)	06.53	17.27 (K 05)	06.08	04.32	03.27
	15.35 51	14.00 (K 02)	17.08 30	16.00 (K 03)	18.30 22	17.49 (K 05)	20.57	22.26	23.37
16	09.45	11.58 (K 01)	08.21	15.30 (K 03)	06.49	17.26 (K 05)	06.05	04.29	03.27
	15.38 54	14.02 (K 02)	17.11 31	16.01 (K 03)	18.33 23	17.49 (K 05)	21.00	22.29	23.38
17	09.43	11.59 (K 01)	08.18	15.30 (K 03)	06.46	17.26 (K 05)	06.01	04.26	03.26
	15.41 54	14.03 (K 02)	17.14 31	16.01 (K 03)	18.36 23	17.49 (K 05)	21.03	22.31	23.39
18	09.41	11.59 (K 01)	08.15	15.30 (K 03)	06.43	17.26 (K 05)	05.58	04.24	03.26
	15.43 56	14.04 (K 02)	17.18 30	16.00 (K 03)	18.39 22	17.48 (K 05)	21.06	22.34	23.40
19	09.39	11.59 (K 01)	08.12	15.31 (K 03)	06.39	17.26 (K 05)	05.55	04.21	03.25
	15.46 57	14.04 (K 02)	17.21 29	16.00 (K 03)	18.41 21	17.47 (K 05)	21.09	22.37	23.40
20	09.36	11.59 (K 01)	08.08	15.30 (K 03)	06.36	17.26 (K 05)	05.51	04.18	03.25
	15.49 58	14.05 (K 02)	17.24 29	15.59 (K 03)	18.44 20	17.46 (K 05)	21.12	22.40	23.41
21	09.34	12.00 (K 01)	08.05	15.31 (K 03)	06.33	17.28 (K 05)	05.48	04.15	03.25
	15.52 58	14.06 (K 02)	17.27 28	15.59 (K 03)	18.47 17	17.45 (K 05)	21.15	22.43	23.41
22	09.32	12.00 (K 01)	08.02	15.32 (K 03)	06.29	17.30 (K 05)	05.45	04.13	03.25
	15.55 57	14.05 (K 02)	17.29 26	15.58 (K 03)	18.50 13	17.43 (K 05)	21.18	22.46	23.41
23	09.29	12.01 (K 01)	07.59	15.33 (K 03)	06.26	17.32 (K 05)	05.41	04.10	03.25
	15.58 58	14.06 (K 02)	17.32 24	15.57 (K 03)	18.53 7	17.39 (K 05)	21.21	22.49	23.41
24	09.27	12.02 (K 01)	07.56	15.34 (K 03)	06.22		05.38	04.07	03.26
	16.01 57	14.07 (K 02)	17.35 21	15.55 (K 03)	18.55		21.24	22.51	23.41
25	09.24	12.02 (K 01)	07.52	15.36 (K 03)	06.19		05.35	04.05	03.26
	16.04 57	14.07 (K 02)	17.38 18	15.54 (K 03)	18.58		21.26	22.54	23.41
26	09.22	12.03 (K 01)	07.49	15.38 (K 03)	06.16		05.32	04.02	03.27
	16.07 55	14.07 (K 02)	17.41 13	15.51 (K 03)	19.01		21.29	22.57	23.41
27	09.19	12.04 (K 01)	07.46		06.12		05.28	04.00	03.28
	16.10 54	14.08 (K 02)	17.44		19.04		21.32	22.59	23.40
28	09.17	12.05 (K 01)	07.43		06.09		05.25	03.57	03.29
	16.13 51	14.07 (K 02)	17.47		19.07		21.35	23.02	23.40
29	09.14	12.06 (K 01)			07.05		05.22	03.55	03.30
	16.16 49	14.07 (K 02)			20.09		21.38	23.05	23.39
30	09.11	12.07 (K 01)			07.02		05.19	03.53	03.31
	16.19 46	14.07 (K 02)			20.12		21.41	23.07	23.38
31	09.09	12.10 (K 01)			06.59			03.50	
	16.22 41	14.07 (K 02)			20.15			23.10	
Potential sun hours	185		243		364		446	557	601
Total, worst case	1374		643		249				
Sun reduction	0,16		0,29		0,40				
Oper. time red.	0,97		0,97		0,97				
Wind dir. red.	0,68		0,64		0,58				
Total reduction	0,11		0,18		0,23				
Total, real	148		117		56				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AF - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July		August		September			October			November			December		
1	03.32		04.47		06.15			07.37			18.09 (K 05)	08.05		15.03 (K 03)	09.32		11.40 (K 01)
	23.37		22.27		20.47			19.05	19		18.28 (K 05)	16.24	24	15.27 (K 03)	15.08	45	13.39 (K 02)
2	03.34		04.50		06.18			07.39			18.10 (K 05)	08.08		15.03 (K 03)	09.35		11.40 (K 01)
	23.36		22.24		20.43			19.02	15		18.25 (K 05)	16.21	22	15.25 (K 03)	15.06	41	13.37 (K 02)
3	03.35		04.53		06.21			07.42			18.10 (K 05)	08.11		15.05 (K 03)	09.37		11.41 (K 01)
	23.35		22.21		20.40			18.58	11		18.21 (K 05)	16.18	20	15.25 (K 03)	15.04	39	13.37 (K 02)
4	03.37		04.56		06.23			07.45			18.13 (K 05)	08.14		13.23 (K 02)	09.40		11.42 (K 01)
	23.33		22.18		20.36			18.55	4		18.17 (K 05)	16.15	17	15.22 (K 03)	15.03	35	13.36 (K 02)
5	03.39		04.58		06.26			07.48				08.17		13.18 (K 02)	09.42		11.42 (K 01)
	23.32		22.15		20.33			18.51				16.12	22	15.19 (K 03)	15.01	29	13.33 (K 02)
6	03.40		05.01		06.29			07.50				08.20		13.15 (K 02)	09.44		11.43 (K 01)
	23.30		22.12		20.30			18.48				16.09	17	13.32 (K 02)	15.00	23	12.06 (K 01)
7	03.42		05.04		06.32			07.53				08.23		13.14 (K 02)	09.46		11.43 (K 01)
	23.29		22.08		20.26			18.45				16.06	20	13.34 (K 02)	14.59	23	12.06 (K 01)
8	03.44		05.07		06.34			07.56				08.26		13.13 (K 02)	09.49		11.45 (K 01)
	23.27		22.05		20.23			18.41				16.03	23	13.36 (K 02)	14.57	21	12.06 (K 01)
9	03.46		05.10		06.37			07.59				08.29		13.12 (K 02)	09.51		11.45 (K 01)
	23.25		22.02		20.19			18.38				16.01	24	13.36 (K 02)	14.56	21	12.06 (K 01)
10	03.48		05.13		06.40			08.01				08.32		11.44 (K 01)	09.52		11.47 (K 01)
	23.23		21.59		20.16			18.35				15.58	34	13.38 (K 02)	14.55	20	12.07 (K 01)
11	03.51		05.16		06.42			08.04				08.35		11.42 (K 01)	09.54		11.47 (K 01)
	23.21		21.56		20.13			18.31				15.55	41	13.39 (K 02)	14.54	20	12.07 (K 01)
12	03.53		05.19		06.45			08.07				08.38		11.39 (K 01)	09.56		11.48 (K 01)
	23.19		21.53		20.09			18.28				15.52	45	13.38 (K 02)	14.53	19	12.07 (K 01)
13	03.55		05.22		06.48			08.10				08.41		11.38 (K 01)	09.58		11.49 (K 01)
	23.17		21.49		20.06			18.25				15.49	49	13.39 (K 02)	14.53	18	12.07 (K 01)
14	03.58		05.24		06.51			08.13				08.44		11.37 (K 01)	09.59		11.49 (K 01)
	23.15		21.46		20.02			18.22				15.47	53	13.40 (K 02)	14.52	17	12.06 (K 01)
15	04.00		05.27		06.53			08.15			16.14 (K 03)	08.47		11.36 (K 01)	10.01		11.51 (K 01)
	23.13		21.43		19.59			18.18	7		16.21 (K 03)	15.44	54	13.40 (K 02)	14.52	16	12.07 (K 01)
16	04.03		05.30		06.56			08.18			16.10 (K 03)	08.50		11.36 (K 01)	10.02		11.51 (K 01)
	23.10		21.40		19.56			18.15	15		16.25 (K 03)	15.41	55	13.40 (K 02)	14.51	16	12.07 (K 01)
17	04.05		05.33		06.59			08.21			16.07 (K 03)	08.53		11.36 (K 01)	10.03		11.52 (K 01)
	23.08		21.36		19.52			18.12	19		16.26 (K 03)	15.39	57	13.41 (K 02)	14.51	15	12.07 (K 01)
18	04.08		05.36		07.01			08.24			16.05 (K 03)	08.56		11.36 (K 01)	10.04		11.53 (K 01)
	23.06		21.33		19.49			18.08	23		16.28 (K 03)	15.36	57	13.41 (K 02)	14.51	14	12.07 (K 01)
19	04.10		05.39		07.04			08.27			16.04 (K 03)	08.59		11.36 (K 01)	10.05		11.53 (K 01)
	23.03		21.30		19.46			18.05	24		16.28 (K 03)	15.34	58	13.41 (K 02)	14.51	14	12.07 (K 01)
20	04.13		05.42		07.07		18.20 (K 05)	08.30			16.02 (K 03)	09.02		11.35 (K 01)	10.06		11.54 (K 01)
	23.00		21.27		19.42	4	18.24 (K 05)	18.02	27		16.29 (K 03)	15.31	57	13.40 (K 02)	14.51	13	12.07 (K 01)
21	04.16		05.44		07.09		18.15 (K 05)	08.33			16.01 (K 03)	09.05		11.35 (K 01)	10.07		11.54 (K 01)
	22.58		21.23		19.39	12	18.27 (K 05)	17.59	28		16.29 (K 03)	15.29	58	13.41 (K 02)	14.52	14	12.08 (K 01)
22	04.19		05.47		07.12		18.13 (K 05)	08.36			16.01 (K 03)	09.08		11.36 (K 01)	10.07		11.55 (K 01)
	22.55		21.20		19.35	16	18.29 (K 05)	17.56	30		16.31 (K 03)	15.26	57	13.41 (K 02)	14.52	14	12.09 (K 01)
23	04.21		05.50		07.15		18.12 (K 05)	08.38			16.01 (K 03)	09.11		11.36 (K 01)	10.08		11.56 (K 01)
	22.53		21.17		19.32	18	18.30 (K 05)	17.52	30		16.31 (K 03)	15.24	57	13.41 (K 02)	14.53	13	12.09 (K 01)
24	04.24		05.53		07.18		18.10 (K 05)	08.41			16.00 (K 03)	09.14		11.36 (K 01)	10.08		11.56 (K 01)
	22.50		21.13		19.29	20	18.30 (K 05)	17.49	30		16.30 (K 03)	15.22	56	13.41 (K 02)	14.53	14	12.10 (K 01)
25	04.27		05.56		07.20		18.09 (K 05)	07.44			15.00 (K 03)	09.16		11.37 (K 01)	10.08		11.56 (K 01)
	22.47		21.10		19.25	22	18.31 (K 05)	16.46	30		15.30 (K 03)	15.20	55	13.41 (K 02)	14.54	14	12.10 (K 01)
26	04.30		05.59		07.23		18.08 (K 05)	07.47			15.00 (K 03)	09.19		11.36 (K 01)	10.09		11.57 (K 01)
	22.44		21.07		19.22	23	18.31 (K 05)	16.43	31		15.31 (K 03)	15.17	54	13.40 (K 02)	14.55	14	12.11 (K 01)
27	04.32		06.01		07.26		18.08 (K 05)	07.50			15.00 (K 03)	09.22		11.37 (K 01)	10.08		11.57 (K 01)
	22.41		21.03		19.18	23	18.31 (K 05)	16.40	30		15.30 (K 03)	15.15	52	13.40 (K 02)	14.56	15	12.12 (K 01)
28	04.35		06.04		07.28		18.07 (K 05)	07.53			15.00 (K 03)	09.25		11.38 (K 01)	10.08		11.56 (K 01)
	22.39		21.00		19.15	23	18.30 (K 05)	16.37	30		15.30 (K 03)	15.13	50	13.39 (K 02)	14.57	16	12.12 (K 01)
29	04.38		06.07		07.31		18.07 (K 05)	07.56			15.01 (K 03)	09.27		11.38 (K 01)	10.08		11.57 (K 01)
	22.36		20.57		19.12	22	18.29 (K 05)	16.34	29		15.30 (K 03)	15.11	49	13.39 (K 02)	14.58	16	12.13 (K 01)
30	04.41		06.10		07.34		18.08 (K 05)	07.59			15.01 (K 03)	09.30		11.39 (K 01)	10.08		11.57 (K 01)
	22.33		20.53		19.08	21	18.29 (K 05)	16.30	28		15.29 (K 03)	15.10	46	13.39 (K 02)	15.00	17	12.14 (K 01)
31	04.44		06.12					08.02			15.01 (K 03)				10.07		11.57 (K 01)
	22.30		20.50					16.27	26		15.27 (K 03)				15.01	18	12.15 (K 01)
Potential sun hours	591		501		391			308				208			154		
Total, worst case						204			486				1283			624	
Sun reduction						0,36			0,26				0,15			0,11	
Oper. time red.						0,97			0,97				0,97			0,97	
Wind dir. red.						0,58			0,63				0,67			0,68	
Total reduction						0,20			0,16				0,10			0,07	
Total, real						41			77				125			46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AG - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March			April	May	June
1	10.06		12.32 (K 01)	09.06		12.41 (K 01)	07.39		16.09 (K 03)	06.55	05.15	03.48
	15.03	19	12.51 (K 01)	16.25	52	14.51 (K 02)	17.50	27	16.36 (K 03)	20.18	21.44	23.12
2	10.06		12.31 (K 01)	09.03		12.43 (K 01)	07.36		16.10 (K 03)	06.52	05.12	03.46
	15.05	20	12.51 (K 01)	16.28	48	14.50 (K 02)	17.53	25	16.35 (K 03)	20.21	21.47	23.14
3	10.05		12.32 (K 01)	09.00		12.46 (K 01)	07.33		16.11 (K 03)	06.48	05.09	03.44
	15.07	21	12.53 (K 01)	16.32	44	14.51 (K 02)	17.56	23	16.34 (K 03)	20.23	21.50	23.17
4	10.04		12.32 (K 01)	08.57		14.20 (K 02)	07.29		16.13 (K 03)	06.45	05.06	03.42
	15.09	22	12.54 (K 01)	16.35	30	14.50 (K 02)	17.59	20	16.33 (K 03)	20.26	21.53	23.19
5	10.03		12.32 (K 01)	08.54		14.20 (K 02)	07.26		16.14 (K 03)	06.42	05.03	03.40
	15.11	23	12.55 (K 01)	16.38	30	14.50 (K 02)	18.02	16	16.30 (K 03)	20.29	21.56	23.21
6	10.02		12.31 (K 01)	08.51		14.20 (K 02)	07.23		16.18 (K 03)	06.38	05.00	03.39
	15.13	24	12.55 (K 01)	16.41	29	14.49 (K 02)	18.05	9	16.27 (K 03)	20.32	21.59	23.23
7	10.00		12.31 (K 01)	08.48		14.22 (K 02)	07.20			06.35	04.56	03.37
	15.15	25	12.56 (K 01)	16.44	27	14.49 (K 02)	18.07			20.35	22.02	23.25
8	09.59		12.32 (K 01)	08.46		14.23 (K 02)	07.16			06.32	04.53	03.35
	15.17	26	12.58 (K 01)	16.47	26	14.49 (K 02)	18.10			20.38	22.05	23.27
9	09.58		12.32 (K 01)	08.43		14.23 (K 02)	07.13			06.28	04.50	03.34
	15.20	26	12.58 (K 01)	16.50	25	14.48 (K 02)	18.13			20.40	22.08	23.29
10	09.56		12.32 (K 01)	08.40		14.25 (K 02)	07.10			06.25	04.47	03.32
	15.22	27	12.59 (K 01)	16.53	22	14.47 (K 02)	18.16			20.43	22.11	23.30
11	09.54		12.32 (K 01)	08.37		14.26 (K 02)	07.06			06.21	04.44	03.31
	15.25	28	13.00 (K 01)	16.56	19	14.45 (K 02)	18.19			20.46	22.14	23.32
12	09.53		12.32 (K 01)	08.33		14.29 (K 02)	07.03			06.18	04.41	03.30
	15.27	29	13.01 (K 01)	16.59	15	14.44 (K 02)	18.22			20.49	22.17	23.33
13	09.51		12.32 (K 01)	08.30		14.32 (K 02)	06.59			06.15	04.38	03.29
	15.30	30	13.02 (K 01)	17.02	8	14.40 (K 02)	18.25			20.52	22.20	23.35
14	09.49		12.31 (K 01)	08.27			06.56			06.11	04.35	03.28
	15.32	30	13.01 (K 01)	17.05			18.27			20.55	22.23	23.36
15	09.47		12.31 (K 01)	08.24			06.53			06.08	04.32	03.27
	15.35	31	13.02 (K 01)	17.08			18.30			20.57	22.26	23.37
16	09.45		12.32 (K 01)	08.21		16.18 (K 03)	06.49			06.05	04.29	03.27
	15.38	31	13.03 (K 01)	17.11	11	16.29 (K 03)	18.33			21.00	22.29	23.38
17	09.43		12.32 (K 01)	08.18		16.16 (K 03)	06.46			06.01	04.26	03.26
	15.41	32	13.04 (K 01)	17.14	16	16.32 (K 03)	18.36			21.03	22.31	23.39
18	09.41		12.33 (K 01)	08.15		16.14 (K 03)	06.43			05.58	04.24	03.26
	15.43	37	14.34 (K 02)	17.18	20	16.34 (K 03)	18.39			21.06	22.34	23.40
19	09.39		12.32 (K 01)	08.12		16.13 (K 03)	06.39			05.55	04.21	03.25
	15.46	44	14.37 (K 02)	17.21	22	16.35 (K 03)	18.41			21.09	22.37	23.40
20	09.36		12.33 (K 01)	08.08		16.11 (K 03)	06.36			05.51	04.18	03.25
	15.49	48	14.40 (K 02)	17.24	25	16.36 (K 03)	18.44			21.12	22.40	23.41
21	09.34		12.33 (K 01)	08.05		16.11 (K 03)	06.33			05.48	04.15	03.25
	15.52	51	14.42 (K 02)	17.27	26	16.37 (K 03)	18.47			21.15	22.43	23.41
22	09.32		12.33 (K 01)	08.02		16.10 (K 03)	06.29			05.45	04.13	03.25
	15.55	53	14.43 (K 02)	17.29	27	16.37 (K 03)	18.50			21.18	22.46	23.41
23	09.29		12.34 (K 01)	07.59		16.10 (K 03)	06.26			05.41	04.10	03.25
	15.58	54	14.44 (K 02)	17.32	28	16.38 (K 03)	18.53			21.21	22.49	23.41
24	09.27		12.34 (K 01)	07.56		16.09 (K 03)	06.22			05.38	04.07	03.26
	16.01	57	14.46 (K 02)	17.35	28	16.37 (K 03)	18.55			21.24	22.51	23.41
25	09.24		12.34 (K 01)	07.52		16.09 (K 03)	06.19			05.35	04.05	03.26
	16.04	57	14.46 (K 02)	17.38	29	16.38 (K 03)	18.58			21.26	22.54	23.41
26	09.22		12.35 (K 01)	07.49		16.08 (K 03)	06.16			05.32	04.02	03.27
	16.07	57	14.47 (K 02)	17.41	29	16.37 (K 03)	19.01			21.29	22.57	23.41
27	09.19		12.36 (K 01)	07.46		16.09 (K 03)	06.12			05.28	04.00	03.28
	16.10	58	14.48 (K 02)	17.44	28	16.37 (K 03)	19.04			21.32	22.59	23.40
28	09.17		12.36 (K 01)	07.43		16.08 (K 03)	06.09			05.25	03.57	03.29
	16.13	58	14.48 (K 02)	17.47	28	16.36 (K 03)	19.07			21.35	23.02	23.40
29	09.14		12.38 (K 01)				07.05			05.22	03.55	03.30
	16.16	57	14.49 (K 02)				20.09			21.38	23.05	23.39
30	09.11		12.38 (K 01)				07.02			05.19	03.53	03.31
	16.19	56	14.49 (K 02)				20.12			21.41	23.07	23.38
31	09.08		12.40 (K 01)				06.59				03.50	
	16.22	54	14.50 (K 02)				20.15				23.10	
Potential sun hours	185			243			364			446	557	601
Total, worst case		1185			692			120				
Sun reduction		0,16			0,29			0,40				
Oper. time red.		0,97			0,97			0,97				
Wind dir. red.		0,69			0,66			0,63				
Total reduction		0,11			0,19			0,24				
Total, real		129			129			29				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AG - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		13.54 (K 02)	09.32		12.14 (K 01)
	23.37	22.27	20.47	19.05			16.24	23	14.17 (K 02)	15.08	28	12.42 (K 01)
2	03.34	04.50	06.18	07.39			08.08		13.52 (K 02)	09.35		12.14 (K 01)
	23.36	22.24	20.43	19.02			16.21	25	14.17 (K 02)	15.06	27	12.41 (K 01)
3	03.35	04.53	06.21	07.42			08.11		13.52 (K 02)	09.37		12.15 (K 01)
	23.35	22.21	20.40	18.58			16.18	27	14.19 (K 02)	15.04	27	12.42 (K 01)
4	03.37	04.56	06.23	07.45			08.14		13.51 (K 02)	09.40		12.16 (K 01)
	23.33	22.18	20.36	18.55			16.15	28	14.19 (K 02)	15.03	26	12.42 (K 01)
5	03.39	04.58	06.26	07.48			08.17		13.51 (K 02)	09.42		12.16 (K 01)
	23.32	22.15	20.33	18.51			16.12	29	14.20 (K 02)	15.01	25	12.41 (K 01)
6	03.40	05.01	06.29	07.50			08.20		13.50 (K 02)	09.44		12.17 (K 01)
	23.30	22.11	20.30	18.48			16.09	30	14.20 (K 02)	15.00	25	12.42 (K 01)
7	03.42	05.04	06.32	07.53		16.57 (K 03)	08.23		12.20 (K 01)	09.46		12.18 (K 01)
	23.29	22.08	20.26	18.45	2	16.59 (K 03)	16.06	36	14.21 (K 02)	14.59	23	12.41 (K 01)
8	03.44	05.07	06.34	07.56		16.51 (K 03)	08.26		12.16 (K 01)	09.49		12.19 (K 01)
	23.27	22.05	20.23	18.41	13	17.04 (K 03)	16.03	45	14.21 (K 02)	14.57	23	12.42 (K 01)
9	03.46	05.10	06.37	07.59		16.48 (K 03)	08.29		12.13 (K 01)	09.51		12.20 (K 01)
	23.25	22.02	20.19	18.38	18	17.06 (K 03)	16.01	49	14.21 (K 02)	14.56	21	12.41 (K 01)
10	03.48	05.13	06.40	08.01		16.46 (K 03)	08.32		12.12 (K 01)	09.52		12.20 (K 01)
	23.23	21.59	20.16	18.35	22	17.08 (K 03)	15.58	52	14.21 (K 02)	14.55	21	12.41 (K 01)
11	03.51	05.16	06.42	08.04		16.45 (K 03)	08.35		12.11 (K 01)	09.54		12.22 (K 01)
	23.21	21.56	20.13	18.31	24	17.09 (K 03)	15.55	55	14.22 (K 02)	14.54	20	12.42 (K 01)
12	03.53	05.19	06.45	08.07		16.44 (K 03)	08.38		12.10 (K 01)	09.56		12.23 (K 01)
	23.19	21.53	20.09	18.28	25	17.09 (K 03)	15.52	55	14.21 (K 02)	14.53	19	12.42 (K 01)
13	03.55	05.22	06.48	08.10		16.43 (K 03)	08.41		12.09 (K 01)	09.58		12.23 (K 01)
	23.17	21.49	20.06	18.25	27	17.10 (K 03)	15.49	58	14.21 (K 02)	14.53	18	12.41 (K 01)
14	03.58	05.24	06.51	08.13		16.42 (K 03)	08.44		12.09 (K 01)	09.59		12.24 (K 01)
	23.15	21.46	20.02	18.22	28	17.10 (K 03)	15.47	58	14.21 (K 02)	14.52	17	12.41 (K 01)
15	04.00	05.27	06.53	08.15		16.41 (K 03)	08.47		12.08 (K 01)	10.01		12.26 (K 01)
	23.13	21.43	19.59	18.18	29	17.10 (K 03)	15.44	58	14.20 (K 02)	14.52	16	12.42 (K 01)
16	04.03	05.30	06.56	08.18		16.41 (K 03)	08.50		12.08 (K 01)	10.02		12.26 (K 01)
	23.10	21.40	19.56	18.15	29	17.10 (K 03)	15.41	57	14.20 (K 02)	14.51	15	12.41 (K 01)
17	04.05	05.33	06.59	08.21		16.41 (K 03)	08.53		12.08 (K 01)	10.03		12.27 (K 01)
	23.08	21.36	19.52	18.12	29	17.10 (K 03)	15.39	57	14.20 (K 02)	14.51	14	12.41 (K 01)
18	04.08	05.36	07.01	08.24		16.41 (K 03)	08.56		12.08 (K 01)	10.04		12.28 (K 01)
	23.05	21.33	19.49	18.08	28	17.09 (K 03)	15.36	57	14.20 (K 02)	14.51	14	12.42 (K 01)
19	04.10	05.39	07.04	08.27		16.41 (K 03)	08.59		12.09 (K 01)	10.05		12.29 (K 01)
	23.03	21.30	19.45	18.05	28	17.09 (K 03)	15.34	54	14.19 (K 02)	14.51	13	12.42 (K 01)
20	04.13	05.42	07.07	08.30		16.41 (K 03)	09.02		12.08 (K 01)	10.06		12.29 (K 01)
	23.00	21.27	19.42	18.02	27	17.08 (K 03)	15.31	53	14.18 (K 02)	14.51	13	12.42 (K 01)
21	04.16	05.44	07.09	08.33		16.41 (K 03)	09.05		12.08 (K 01)	10.07		12.30 (K 01)
	22.58	21.23	19.39	17.59	26	17.07 (K 03)	15.29	51	14.17 (K 02)	14.52	12	12.42 (K 01)
22	04.19	05.47	07.12	08.35		16.42 (K 03)	09.08		12.09 (K 01)	10.07		12.31 (K 01)
	22.55	21.20	19.35	17.56	24	17.06 (K 03)	15.26	48	14.16 (K 02)	14.52	12	12.43 (K 01)
23	04.21	05.50	07.15	08.38		16.43 (K 03)	09.11		12.09 (K 01)	10.08		12.31 (K 01)
	22.52	21.17	19.32	17.52	22	17.05 (K 03)	15.24	44	14.14 (K 02)	14.53	12	12.43 (K 01)
24	04.24	05.53	07.18	08.41		16.44 (K 03)	09.13		12.10 (K 01)	10.08		12.31 (K 01)
	22.50	21.13	19.29	17.49	19	17.03 (K 03)	15.22	38	14.12 (K 02)	14.53	13	12.44 (K 01)
25	04.27	05.56	07.20	07.44		15.46 (K 03)	09.16		12.10 (K 01)	10.08		12.31 (K 01)
	22.47	21.10	19.25	16.46	15	16.01 (K 03)	15.20	32	12.42 (K 01)	14.54	13	12.44 (K 01)
26	04.30	05.59	07.23	07.47		15.50 (K 03)	09.19		12.10 (K 01)	10.08		12.32 (K 01)
	22.44	21.07	19.22	16.43	8	15.58 (K 03)	15.17	31	12.41 (K 01)	14.55	14	12.46 (K 01)
27	04.32	06.01	07.26	07.50			09.22		12.11 (K 01)	10.08		12.32 (K 01)
	22.41	21.03	19.18	16.40			15.15	30	12.41 (K 01)	14.56	15	12.47 (K 01)
28	04.35	06.04	07.28	07.53			09.25		12.11 (K 01)	10.08		12.31 (K 01)
	22.38	21.00	19.15	16.37			15.13	31	12.42 (K 01)	14.57	16	12.47 (K 01)
29	04.38	06.07	07.31	07.56		14.01 (K 02)	09.27		12.12 (K 01)	10.08		12.32 (K 01)
	22.36	20.57	19.12	16.33	10	14.11 (K 02)	15.11	30	12.42 (K 01)	14.58	16	12.48 (K 01)
30	04.41	06.10	07.34	07.59		13.58 (K 02)	09.30		12.13 (K 01)	10.08		12.32 (K 01)
	22.33	20.53	19.08	16.30	15	14.13 (K 02)	15.09	29	12.42 (K 01)	15.00	17	12.49 (K 01)
31	04.44	06.12		08.02		13.55 (K 02)				10.07		12.31 (K 01)
	22.30	20.50		16.27	20	14.15 (K 02)				15.01	18	12.49 (K 01)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					488			1270			563	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,63			0,68			0,69	
Total reduction					0,16			0,10			0,07	
Total, real					78			126			42	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AH - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March			April	May	June
1	10.06		13.11 (K 01)	09.06		10.05 (K 10)	07.39		16.42 (K 03)	06.55	05.15	03.48
	15.03	11	13.22 (K 01)	16.25	79	15.25 (K 02)	17.50	25	17.07 (K 03)	20.18	21.44	23.12
2	10.06		13.09 (K 01)	09.03		10.05 (K 10)	07.36		16.41 (K 03)	06.52	05.12	03.46
	15.05	14	13.23 (K 01)	16.28	81	15.26 (K 02)	17.53	26	17.07 (K 03)	20.21	21.47	23.14
3	10.05		13.09 (K 01)	09.00		10.06 (K 10)	07.33		16.41 (K 03)	06.48	05.09	03.44
	15.07	16	13.25 (K 01)	16.31	79	15.27 (K 02)	17.56	27	17.08 (K 03)	20.23	21.50	23.17
4	10.04		13.08 (K 01)	08.57		10.05 (K 10)	07.29		16.41 (K 03)	06.45	05.06	03.42
	15.09	17	13.25 (K 01)	16.35	79	15.27 (K 02)	17.59	27	17.08 (K 03)	20.26	21.53	23.19
5	10.03		13.09 (K 01)	08.54		10.06 (K 10)	07.26		16.40 (K 03)	06.42	05.03	03.40
	15.11	18	13.27 (K 01)	16.38	77	15.28 (K 02)	18.02	27	17.07 (K 03)	20.29	21.56	23.21
6	10.02		13.08 (K 01)	08.51		10.06 (K 10)	07.23		16.40 (K 03)	06.38	05.00	03.39
	15.13	20	13.28 (K 01)	16.41	72	15.28 (K 02)	18.05	27	17.07 (K 03)	20.32	21.59	23.23
7	10.00		13.07 (K 01)	08.48		10.07 (K 10)	07.20		16.40 (K 03)	06.35	04.56	03.37
	15.15	22	13.29 (K 01)	16.44	67	15.29 (K 02)	18.07	26	17.06 (K 03)	20.35	22.02	23.25
8	09.59		13.08 (K 01)	08.46		10.09 (K 10)	07.16		16.41 (K 03)	06.32	04.53	03.35
	15.17	23	13.31 (K 01)	16.47	56	15.30 (K 02)	18.10	25	17.06 (K 03)	20.38	22.05	23.27
9	09.57		13.08 (K 01)	08.43		10.10 (K 10)	07.13		16.41 (K 03)	06.28	04.50	03.34
	15.20	24	13.32 (K 01)	16.50	47	15.29 (K 02)	18.13	23	17.04 (K 03)	20.40	22.08	23.29
10	09.56		13.07 (K 01)	08.40		10.12 (K 10)	07.10		16.42 (K 03)	06.25	04.47	03.32
	15.22	26	13.33 (K 01)	16.53	43	15.29 (K 02)	18.16	22	17.04 (K 03)	20.43	22.11	23.30
11	09.54		13.07 (K 01)	08.36		10.15 (K 10)	07.06		16.43 (K 03)	06.21	04.44	03.31
	15.25	27	13.34 (K 01)	16.56	36	15.29 (K 02)	18.19	18	17.01 (K 03)	20.46	22.14	23.32
12	09.53		13.07 (K 01)	08.33		14.58 (K 02)	07.03		16.45 (K 03)	06.18	04.41	03.30
	15.27	28	13.35 (K 01)	16.59	31	15.29 (K 02)	18.22	14	16.59 (K 03)	20.49	22.17	23.33
13	09.51		13.07 (K 01)	08.30		14.58 (K 02)	06.59		16.48 (K 03)	06.15	04.38	03.29
	15.30	29	13.36 (K 01)	17.02	30	15.28 (K 02)	18.25	7	16.55 (K 03)	20.52	22.20	23.35
14	09.49		13.06 (K 01)	08.27		14.59 (K 02)	06.56			06.11	04.35	03.28
	15.32	30	13.36 (K 01)	17.05	29	15.28 (K 02)	18.27			20.55	22.23	23.36
15	09.47		13.06 (K 01)	08.24		15.00 (K 02)	06.53			06.08	04.32	03.27
	15.35	31	13.37 (K 01)	17.08	27	15.27 (K 02)	18.30			20.57	22.26	23.37
16	09.45		13.06 (K 01)	08.21		15.01 (K 02)	06.49			06.05	04.29	03.27
	15.38	32	13.38 (K 01)	17.11	25	15.26 (K 02)	18.33			21.00	22.29	23.38
17	09.43		13.06 (K 01)	08.18		15.03 (K 02)	06.46			06.01	04.26	03.26
	15.41	33	13.39 (K 01)	17.14	22	15.25 (K 02)	18.36			21.03	22.31	23.39
18	09.41		13.07 (K 01)	08.15		15.04 (K 02)	06.43			05.58	04.24	03.26
	15.43	33	13.40 (K 01)	17.17	19	15.23 (K 02)	18.39			21.06	22.34	23.40
19	09.39		13.06 (K 01)	08.12		15.07 (K 02)	06.39			05.55	04.21	03.25
	15.46	34	13.40 (K 01)	17.21	14	15.21 (K 02)	18.41			21.09	22.37	23.40
20	09.36		13.06 (K 01)	08.08		15.11 (K 02)	06.36			05.51	04.18	03.25
	15.49	35	13.41 (K 01)	17.24	5	15.16 (K 02)	18.44			21.12	22.40	23.41
21	09.34		13.07 (K 01)	08.05			06.33			05.48	04.15	03.25
	15.52	34	13.41 (K 01)	17.26			18.47			21.15	22.43	23.41
22	09.32		13.06 (K 01)	08.02			06.29			05.45	04.13	03.25
	15.55	35	13.41 (K 01)	17.29			18.50			21.18	22.46	23.41
23	09.29		13.07 (K 01)	07.59			06.26			05.41	04.10	03.25
	15.58	35	13.42 (K 01)	17.32			18.53			21.21	22.48	23.41
24	09.27		10.16 (K 10)	07.56		16.51 (K 03)	06.22			05.38	04.07	03.26
	16.01	41	13.43 (K 01)	17.35	7	16.58 (K 03)	18.55			21.23	22.51	23.41
25	09.24		10.12 (K 10)	07.52		16.48 (K 03)	06.19			05.35	04.05	03.26
	16.04	46	13.42 (K 01)	17.38	14	17.02 (K 03)	18.58			21.26	22.54	23.41
26	09.22		10.09 (K 10)	07.49		16.45 (K 03)	06.16			05.32	04.02	03.27
	16.07	50	13.43 (K 01)	17.41	19	17.04 (K 03)	19.01			21.29	22.57	23.41
27	09.19		10.07 (K 10)	07.46		16.44 (K 03)	06.12			05.28	04.00	03.28
	16.10	54	13.43 (K 01)	17.44	22	17.06 (K 03)	19.04			21.32	22.59	23.40
28	09.17		10.06 (K 10)	07.43		16.42 (K 03)	06.09			05.25	03.57	03.29
	16.13	66	15.17 (K 02)	17.47	24	17.06 (K 03)	19.07			21.35	23.02	23.40
29	09.14		10.06 (K 10)				07.05			05.22	03.55	03.30
	16.16	71	15.20 (K 02)				20.09			21.38	23.05	23.39
30	09.11		10.05 (K 10)				07.02			05.19	03.53	03.31
	16.19	74	15.21 (K 02)				20.12			21.41	23.07	23.38
31	09.08		10.05 (K 10)				06.59				03.50	
	16.22	77	15.23 (K 02)				20.15				23.10	
Potential sun hours	185			243			364			446	557	601
Total, worst case		1086			1004			294				
Sun reduction		0,16			0,29			0,40				
Oper. time red.		0,97			0,97			0,97				
Wind dir. red.		0,68			0,66			0,62				
Total reduction		0,11			0,19			0,24				
Total, real		117			188			71				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AH - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37		17.26 (K 03)	08.05		09.41 (K 10)	09.32		12.48 (K 01)
	23.37	22.27	20.46	19.05	12	17.38 (K 03)	16.24	45	14.59 (K 02)	15.08	27	13.15 (K 01)
2	03.34	04.50	06.18	07.39		17.23 (K 03)	08.08		09.39 (K 10)	09.35		12.50 (K 01)
	23.36	22.24	20.43	19.01	17	17.40 (K 03)	16.21	47	14.58 (K 02)	15.06	25	13.15 (K 01)
3	03.35	04.53	06.21	07.42		17.20 (K 03)	08.11		09.38 (K 10)	09.37		12.51 (K 01)
	23.35	22.21	20.40	18.58	20	17.40 (K 03)	16.18	58	14.59 (K 02)	15.04	24	13.15 (K 01)
4	03.37	04.56	06.23	07.45		17.19 (K 03)	08.14		09.37 (K 10)	09.40		12.52 (K 01)
	23.33	22.18	20.36	18.55	22	17.41 (K 03)	16.15	67	14.58 (K 02)	15.03	23	13.15 (K 01)
5	03.39	04.58	06.26	07.48		17.18 (K 03)	08.17		09.37 (K 10)	09.42		12.53 (K 01)
	23.32	22.15	20.33	18.51	24	17.42 (K 03)	16.12	72	14.59 (K 02)	15.01	21	13.14 (K 01)
6	03.40	05.01	06.29	07.50		17.17 (K 03)	08.20		09.36 (K 10)	09.44		12.54 (K 01)
	23.30	22.11	20.30	18.48	26	17.43 (K 03)	16.09	75	14.58 (K 02)	15.00	21	13.15 (K 01)
7	03.42	05.04	06.32	07.53		17.16 (K 03)	08.23		09.36 (K 10)	09.46		12.55 (K 01)
	23.29	22.08	20.26	18.45	27	17.43 (K 03)	16.06	78	14.58 (K 02)	14.59	19	13.14 (K 01)
8	03.44	05.07	06.34	07.56		17.16 (K 03)	08.26		09.36 (K 10)	09.48		12.57 (K 01)
	23.27	22.05	20.23	18.41	27	17.43 (K 03)	16.03	80	14.57 (K 02)	14.57	17	13.14 (K 01)
9	03.46	05.10	06.37	07.59		17.15 (K 03)	08.29		09.36 (K 10)	09.50		12.58 (K 01)
	23.25	22.02	20.19	18.38	28	17.43 (K 03)	16.01	79	14.56 (K 02)	14.56	15	13.13 (K 01)
10	03.48	05.13	06.40	08.01		17.15 (K 03)	08.32		09.36 (K 10)	09.52		12.59 (K 01)
	23.23	21.59	20.16	18.35	28	17.43 (K 03)	15.58	79	14.56 (K 02)	14.55	13	13.12 (K 01)
11	03.51	05.16	06.42	08.04		17.15 (K 03)	08.35		09.36 (K 10)	09.54		13.01 (K 01)
	23.21	21.56	20.13	18.31	27	17.42 (K 03)	15.55	77	14.54 (K 02)	14.54	11	13.12 (K 01)
12	03.53	05.19	06.45	08.07		17.16 (K 03)	08.38		09.37 (K 10)	09.56		13.03 (K 01)
	23.19	21.53	20.09	18.28	25	17.41 (K 03)	15.52	74	14.53 (K 02)	14.53	8	13.11 (K 01)
13	03.55	05.22	06.48	08.10		17.16 (K 03)	08.41		09.37 (K 10)	09.58		13.04 (K 01)
	23.17	21.49	20.06	18.25	25	17.41 (K 03)	15.49	72	14.52 (K 02)	14.53	5	13.09 (K 01)
14	03.58	05.24	06.51	08.13		17.17 (K 03)	08.44		09.38 (K 10)	09.59		
	23.15	21.46	20.02	18.22	22	17.39 (K 03)	15.47	66	14.50 (K 02)	14.52		
15	04.00	05.27	06.53	08.15		17.17 (K 03)	08.47		09.39 (K 10)	10.01		
	23.13	21.43	19.59	18.18	21	17.38 (K 03)	15.44	54	13.15 (K 01)	14.52		
16	04.03	05.30	06.56	08.18		17.19 (K 03)	08.50		09.42 (K 10)	10.02		
	23.10	21.40	19.56	18.15	17	17.36 (K 03)	15.41	51	13.16 (K 01)	14.51		
17	04.05	05.33	06.59	08.21		17.21 (K 03)	08.53		09.46 (K 10)	10.03		
	23.08	21.36	19.52	18.12	11	17.32 (K 03)	15.39	45	13.16 (K 01)	14.51		
18	04.08	05.36	07.01	08.24		17.25 (K 03)	08.56		09.50 (K 10)	10.04		
	23.05	21.33	19.49	18.08	4	17.29 (K 03)	15.36	40	13.16 (K 01)	14.51		
19	04.10	05.39	07.04	08.27			08.59		12.42 (K 01)	10.05		
	23.03	21.30	19.45	18.05			15.34	35	13.17 (K 01)	14.51		
20	04.13	05.42	07.07	08.30			09.02		12.41 (K 01)	10.06		
	23.00	21.27	19.42	18.02			15.31	35	13.16 (K 01)	14.51		
21	04.16	05.44	07.09	08.33			09.05		12.42 (K 01)	10.07		
	22.58	21.23	19.39	17.59			15.29	34	13.16 (K 01)	14.52		
22	04.19	05.47	07.12	08.35		15.39 (K 02)	09.08		12.42 (K 01)	10.07		
	22.55	21.20	19.35	17.56	9	15.48 (K 02)	15.26	35	13.17 (K 01)	14.52		
23	04.21	05.50	07.15	08.38		15.36 (K 02)	09.11		12.43 (K 01)	10.08		
	22.52	21.17	19.32	17.52	16	15.52 (K 02)	15.24	34	13.17 (K 01)	14.53		
24	04.24	05.53	07.18	08.41		15.34 (K 02)	09.13		12.44 (K 01)	10.08		
	22.50	21.13	19.29	17.49	20	15.54 (K 02)	15.22	33	13.17 (K 01)	14.53		
25	04.27	05.56	07.20	07.44		14.32 (K 02)	09.16		12.45 (K 01)	10.08		
	22.47	21.10	19.25	16.46	23	14.55 (K 02)	15.20	32	13.17 (K 01)	14.54		
26	04.30	05.58	07.23	07.47		14.30 (K 02)	09.19		12.44 (K 01)	10.08		
	22.44	21.07	19.22	16.43	26	14.56 (K 02)	15.17	32	13.16 (K 01)	14.55		
27	04.32	06.01	07.26	07.50		14.30 (K 02)	09.22		12.45 (K 01)	10.08		
	22.41	21.03	19.18	16.40	27	14.57 (K 02)	15.15	31	13.16 (K 01)	14.56		
28	04.35	06.04	07.28	07.53		14.29 (K 02)	09.24		12.46 (K 01)	10.08		
	22.38	21.00	19.15	16.37	28	14.57 (K 02)	15.13	30	13.16 (K 01)	14.57		
29	04.38	06.07	07.31	07.56		14.29 (K 02)	09.27		12.47 (K 01)	10.08		
	22.36	20.57	19.12	16.33	29	14.58 (K 02)	15.11	29	13.16 (K 01)	14.58		
30	04.41	06.10	07.34	07.59		14.28 (K 02)	09.30		12.48 (K 01)	10.08		13.13 (K 01)
	22.33	20.53	19.08	16.30	30	14.58 (K 02)	15.09	28	13.16 (K 01)	15.00	3	13.16 (K 01)
31	04.44	06.12		08.02		09.43 (K 10)				10.07		13.11 (K 01)
	22.30	20.50		16.27	38	14.58 (K 02)				15.01	8	13.19 (K 01)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					629			1547			240	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,64			0,67			0,68	
Total reduction					0,16			0,10			0,07	
Total, real					101			150			18	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AI - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March			April	May	June
1	10.06		11.24 (K 11)	09.06		11.32 (K 11)	07.39		16.47 (K 01)	06.55	05.15	03.48
	15.03	14	11.38 (K 11)	16.25	79	15.08 (K 14)	17.50	24	17.11 (K 01)	20.18	21.44	23.12
2	10.06		11.22 (K 11)	09.03		11.35 (K 11)	07.36		16.46 (K 01)	06.52	05.12	03.46
	15.05	17	11.39 (K 11)	16.28	73	15.08 (K 14)	17.53	25	17.11 (K 01)	20.21	21.47	23.14
3	10.05		11.22 (K 11)	09.00		13.13 (K 10)	07.33		16.46 (K 01)	06.48	05.09	03.44
	15.07	19	11.41 (K 11)	16.31	59	15.08 (K 14)	17.56	25	17.11 (K 01)	20.23	21.50	23.16
4	10.04		11.21 (K 11)	08.57		13.13 (K 10)	07.29		16.45 (K 01)	06.45	05.06	03.42
	15.09	20	11.41 (K 11)	16.35	58	15.07 (K 14)	17.59	26	17.11 (K 01)	20.26	21.53	23.19
5	10.03		11.22 (K 11)	08.54		13.14 (K 10)	07.26		16.46 (K 01)	06.42	05.03	03.40
	15.11	21	11.43 (K 11)	16.38	55	15.07 (K 14)	18.02	25	17.11 (K 01)	20.29	21.56	23.21
6	10.01		11.21 (K 11)	08.51		13.14 (K 10)	07.23		16.47 (K 01)	06.38	05.00	03.39
	15.13	26	13.26 (K 10)	16.41	50	15.04 (K 14)	18.04	23	17.10 (K 01)	20.32	21.59	23.23
7	10.00		11.21 (K 11)	08.48		13.15 (K 10)	07.19		16.47 (K 01)	06.35	04.56	03.37
	15.15	34	13.30 (K 10)	16.44	43	15.02 (K 14)	18.07	22	17.09 (K 01)	20.35	22.02	23.25
8	09.59		11.21 (K 11)	08.45		13.15 (K 10)	07.16		16.48 (K 01)	06.31	04.53	03.35
	15.17	38	13.32 (K 10)	16.47	36	13.51 (K 10)	18.10	20	17.08 (K 01)	20.37	22.05	23.27
9	09.57		11.21 (K 11)	08.42		13.17 (K 10)	07.13		16.48 (K 01)	06.28	04.50	03.34
	15.20	42	13.34 (K 10)	16.50	33	13.50 (K 10)	18.13	18	17.06 (K 01)	20.40	22.08	23.28
10	09.56		11.22 (K 11)	08.39		13.19 (K 10)	07.09		16.51 (K 01)	06.25	04.47	03.32
	15.22	45	13.37 (K 10)	16.53	31	13.50 (K 10)	18.16	14	17.05 (K 01)	20.43	22.11	23.30
11	09.54		11.21 (K 11)	08.36		13.19 (K 10)	07.06		16.53 (K 01)	06.21	04.44	03.31
	15.25	48	13.37 (K 10)	16.56	29	13.48 (K 10)	18.19	8	17.01 (K 01)	20.46	22.14	23.32
12	09.52		11.21 (K 11)	08.33		13.22 (K 10)	07.03			06.18	04.41	03.30
	15.27	52	13.39 (K 10)	16.59	25	13.47 (K 10)	18.22			20.49	22.17	23.33
13	09.51		11.21 (K 11)	08.30		13.24 (K 10)	06.59			06.15	04.38	03.29
	15.30	53	13.40 (K 10)	17.02	20	13.44 (K 10)	18.24			20.52	22.20	23.35
14	09.49		11.21 (K 11)	08.27		13.28 (K 10)	06.56			06.11	04.35	03.28
	15.32	57	13.42 (K 10)	17.05	13	13.41 (K 10)	18.27			20.54	22.23	23.36
15	09.47		11.21 (K 11)	08.24			06.53			06.08	04.32	03.27
	15.35	59	13.43 (K 10)	17.08			18.30			20.57	22.25	23.37
16	09.45		11.22 (K 11)	08.21			06.49			06.05	04.29	03.27
	15.38	60	13.44 (K 10)	17.11			18.33			21.00	22.28	23.38
17	09.43		11.22 (K 11)	08.18			06.46			06.01	04.26	03.26
	15.40	62	13.45 (K 10)	17.14			18.36			21.03	22.31	23.39
18	09.41		11.22 (K 11)	08.15			06.43			05.58	04.24	03.26
	15.43	63	13.46 (K 10)	17.17			18.39			21.06	22.34	23.40
19	09.38		11.22 (K 11)	08.12			06.39			05.55	04.21	03.25
	15.46	65	13.47 (K 10)	17.20			18.41			21.09	22.37	23.40
20	09.36		11.23 (K 11)	08.08			06.36			05.51	04.18	03.25
	15.49	70	14.52 (K 14)	17.23			18.44			21.12	22.40	23.41
21	09.34		11.23 (K 11)	08.05			06.32			05.48	04.15	03.25
	15.52	75	14.56 (K 14)	17.26			18.47			21.15	22.43	23.41
22	09.32		11.23 (K 11)	08.02			06.29			05.45	04.13	03.25
	15.55	82	15.00 (K 14)	17.29			18.50			21.18	22.46	23.41
23	09.29		11.24 (K 11)	07.59			06.26			05.41	04.10	03.25
	15.58	86	15.04 (K 14)	17.32			18.53			21.20	22.48	23.41
24	09.27		11.25 (K 11)	07.56		16.54 (K 01)	06.22			05.38	04.07	03.26
	16.01	89	15.07 (K 14)	17.35	4	16.58 (K 01)	18.55			21.23	22.51	23.41
25	09.24		11.25 (K 11)	07.52		16.52 (K 01)	06.19			05.35	04.05	03.26
	16.04	89	15.07 (K 14)	17.38	10	17.02 (K 01)	18.58			21.26	22.54	23.41
26	09.22		11.26 (K 11)	07.49		16.50 (K 01)	06.15			05.32	04.02	03.27
	16.07	90	15.08 (K 14)	17.41	15	17.05 (K 01)	19.01			21.29	22.57	23.41
27	09.19		11.26 (K 11)	07.46		16.49 (K 01)	06.12			05.28	04.00	03.28
	16.10	90	15.08 (K 14)	17.44	19	17.08 (K 01)	19.04			21.32	22.59	23.40
28	09.16		11.27 (K 11)	07.43		16.47 (K 01)	06.09			05.25	03.57	03.29
	16.13	88	15.08 (K 14)	17.47	24	17.11 (K 01)	19.07			21.35	23.02	23.39
29	09.14		11.28 (K 11)				07.05			05.22	03.55	03.30
	16.16	88	15.09 (K 14)				20.09			21.38	23.04	23.39
30	09.11		11.29 (K 11)				07.02			05.19	03.53	03.31
	16.19	87	15.09 (K 14)				20.12			21.41	23.07	23.38
31	09.08		11.31 (K 11)				06.59				03.50	
	16.22	82	15.09 (K 14)				20.15				23.09	
Potential sun hours	185			243			364			446	557	601
Total, worst case		1811			676			230				
Sun reduction		0,16			0,29			0,40				
Oper. time red.		0,97			0,97			0,97				
Wind dir. red.		0,67			0,67			0,62				
Total reduction		0,11			0,19			0,24				
Total, real		193			129			55				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AI - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July		August		September		October			November			December		
1	03.32		04.47		06.15		07.36			08.05		12.48 (K 10)	09.32		11.03 (K 11)
	23.37		22.27		20.46		19.05			16.24	31	13.19 (K 10)	15.08	49	13.20 (K 10)
2	03.34		04.50		06.18		07.39			08.08		12.46 (K 10)	09.35		11.04 (K 11)
	23.36		22.24		20.43		19.01			16.21	34	13.20 (K 10)	15.06	45	13.19 (K 10)
3	03.35		04.53		06.21		07.42		17.29 (K 01)	08.11		12.46 (K 10)	09.37		11.05 (K 11)
	23.35		22.21		20.40		18.58	12	17.41 (K 01)	16.18	35	13.21 (K 10)	15.04	42	13.18 (K 10)
4	03.37		04.55		06.23		07.45		17.27 (K 01)	08.14		12.45 (K 10)	09.40		11.05 (K 11)
	23.33		22.17		20.36		18.55	16	17.43 (K 01)	16.15	43	14.32 (K 14)	15.03	39	13.17 (K 10)
5	03.39		04.58		06.26		07.47		17.25 (K 01)	08.17		12.44 (K 10)	09.42		11.06 (K 11)
	23.32		22.14		20.33		18.51	19	17.44 (K 01)	16.12	52	14.35 (K 14)	15.01	34	13.15 (K 10)
6	03.40		05.01		06.29		07.50		17.24 (K 01)	08.20		12.43 (K 10)	09.44		11.08 (K 11)
	23.30		22.11		20.30		18.48	21	17.45 (K 01)	16.09	55	14.36 (K 14)	15.00	27	13.13 (K 10)
7	03.42		05.04		06.32		07.53		17.23 (K 01)	08.23		12.43 (K 10)	09.46		11.08 (K 11)
	23.29		22.08		20.26		18.45	23	17.46 (K 01)	16.06	58	14.38 (K 14)	14.58	21	11.29 (K 11)
8	03.44		05.07		06.34		07.56		17.22 (K 01)	08.26		12.43 (K 10)	09.48		11.09 (K 11)
	23.27		22.05		20.23		18.41	24	17.46 (K 01)	16.03	60	14.38 (K 14)	14.57	20	11.29 (K 11)
9	03.46		05.10		06.37		07.58		17.21 (K 01)	08.29		11.05 (K 11)	09.50		11.10 (K 11)
	23.25		22.02		20.19		18.38	25	17.46 (K 01)	16.01	74	14.39 (K 14)	14.56	19	11.29 (K 11)
10	03.48		05.13		06.40		08.01		17.20 (K 01)	08.32		11.03 (K 11)	09.52		11.11 (K 11)
	23.23		21.59		20.16		18.35	25	17.45 (K 01)	15.58	80	14.40 (K 14)	14.55	18	11.29 (K 11)
11	03.51		05.16		06.42		08.04		17.20 (K 01)	08.35		11.01 (K 11)	09.54		11.14 (K 11)
	23.21		21.56		20.13		18.31	25	17.45 (K 01)	15.55	84	14.40 (K 14)	14.54	14	11.28 (K 11)
12	03.53		05.19		06.45		08.07		17.20 (K 01)	08.38		11.01 (K 11)	09.56		11.17 (K 11)
	23.19		21.52		20.09		18.28	25	17.45 (K 01)	15.52	84	14.40 (K 14)	14.53	11	11.28 (K 11)
13	03.55		05.22		06.48		08.10		17.20 (K 01)	08.41		11.00 (K 11)	09.57		11.20 (K 11)
	23.17		21.49		20.06		18.25	24	17.44 (K 01)	15.49	88	14.41 (K 14)	14.53	8	11.28 (K 11)
14	03.58		05.24		06.50		08.12		17.20 (K 01)	08.44		10.59 (K 11)	09.59		11.23 (K 11)
	23.15		21.46		20.02		18.21	22	17.42 (K 01)	15.47	89	14.40 (K 14)	14.52	6	11.29 (K 11)
15	04.00		05.27		06.53		08.15		17.21 (K 01)	08.47		10.59 (K 11)	10.00		11.25 (K 11)
	23.12		21.43		19.59		18.18	18	17.39 (K 01)	15.44	90	14.41 (K 14)	14.52	3	11.28 (K 11)
16	04.03		05.30		06.56		08.18		17.23 (K 01)	08.50		10.58 (K 11)	10.02		11.28 (K 11)
	23.10		21.39		19.56		18.15	13	17.36 (K 01)	15.41	91	14.41 (K 14)	14.51	1	11.29 (K 11)
17	04.05		05.33		06.59		08.21		17.24 (K 01)	08.53		10.58 (K 11)	10.03		
	23.08		21.36		19.52		18.12	9	17.33 (K 01)	15.39	90	14.41 (K 14)	14.51		
18	04.08		05.36		07.01		08.24		17.27 (K 01)	08.56		10.59 (K 11)	10.04		
	23.05		21.33		19.49		18.08	2	17.29 (K 01)	15.36	89	14.41 (K 14)	14.51		
19	04.10		05.39		07.04		08.27			08.59		10.58 (K 11)	10.05		
	23.03		21.30		19.45		18.05			15.34	86	14.38 (K 14)	14.51		
20	04.13		05.42		07.07		08.30			09.02		10.58 (K 11)	10.06		
	23.00		21.26		19.42		18.02			15.31	82	14.35 (K 14)	14.51		
21	04.16		05.44		07.09		08.32			09.05		10.58 (K 11)	10.07		
	22.58		21.23		19.39		17.59			15.29	75	14.31 (K 14)	14.52		
22	04.18		05.47		07.12		08.35			09.08		10.59 (K 11)	10.07		
	22.55		21.20		19.35		17.55			15.26	70	14.28 (K 14)	14.52		
23	04.21		05.50		07.15		08.38			09.10		10.59 (K 11)	10.08		
	22.52		21.16		19.32		17.52			15.24	65	13.24 (K 10)	14.53		
24	04.24		05.53		07.17		08.41			09.13		11.00 (K 11)	10.08		
	22.50		21.13		19.28		17.49			15.22	63	13.24 (K 10)	14.53		
25	04.27		05.56		07.20		07.44			09.16		10.59 (K 11)	10.08		
	22.47		21.10		19.25		16.46			15.20	63	13.23 (K 10)	14.54		
26	04.30		05.58		07.23		07.47			09.19		11.00 (K 11)	10.08		
	22.44		21.07		19.22		16.43			15.17	60	13.22 (K 10)	14.55		
27	04.32		06.01		07.26		07.50			09.22		11.01 (K 11)	10.08		
	22.41		21.03		19.18		16.40			15.15	58	13.22 (K 10)	14.56		
28	04.35		06.04		07.28		07.53		12.56 (K 10)	09.24		11.01 (K 11)	10.08		11.32 (K 11)
	22.38		21.00		19.15		16.37	15	13.11 (K 10)	15.13	56	13.22 (K 10)	14.57	2	11.34 (K 11)
29	04.38		06.07		07.31		07.56		12.52 (K 10)	09.27		11.02 (K 11)	10.08		11.31 (K 11)
	22.35		20.56		19.12		16.33	22	13.14 (K 10)	15.11	54	13.21 (K 10)	14.58	5	11.36 (K 11)
30	04.41		06.10		07.34		07.59		12.51 (K 10)	09.30		11.03 (K 11)	10.08		11.29 (K 11)
	22.33		20.53		19.08		16.30	25	13.16 (K 10)	15.09	52	13.21 (K 10)	15.00	7	11.36 (K 11)
31	04.44		06.12				08.02		12.49 (K 10)				10.07		11.27 (K 11)
	22.30		20.50				16.27	28	13.17 (K 10)				15.01	10	11.37 (K 11)
Potential sun hours	591		501		391		308			208			154		
Total, worst case								393			2011			381	
Sun reduction								0,26			0,15			0,11	
Oper. time red.								0,97			0,97			0,97	
Wind dir. red.								0,63			0,67			0,67	
Total reduction								0,16			0,10			0,07	
Total, real								63			196			27	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AJ - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March			April	May	June
1	10.06		12.17 (K 11)	09.06		12.23 (K 11)	07.39			06.55	05.15	03.48
	15.03	19	12.36 (K 11)	16.25	54	15.11 (K 10)	17.50			20.18	21.44	23.12
2	10.05		12.17 (K 11)	09.03		12.25 (K 11)	07.36			06.52	05.12	03.46
	15.05	21	12.38 (K 11)	16.28	54	15.13 (K 10)	17.53			20.20	21.47	23.14
3	10.05		12.18 (K 11)	09.00		12.27 (K 11)	07.33			06.48	05.09	03.44
	15.07	21	12.39 (K 11)	16.31	53	15.14 (K 10)	17.56			20.23	21.50	23.16
4	10.04		12.17 (K 11)	08.57		12.28 (K 11)	07.29			06.45	05.06	03.42
	15.09	22	12.39 (K 11)	16.35	52	15.15 (K 10)	17.59			20.26	21.53	23.19
5	10.03		12.17 (K 11)	08.54		12.31 (K 11)	07.26			06.42	05.03	03.40
	15.11	24	12.41 (K 11)	16.38	49	15.16 (K 10)	18.02			20.29	21.56	23.21
6	10.01		12.17 (K 11)	08.51		12.36 (K 11)	07.23		17.26 (K 01)	06.38	05.00	03.39
	15.13	25	12.42 (K 11)	16.41	40	15.17 (K 10)	18.04	4	17.30 (K 01)	20.32	21.59	23.23
7	10.00		12.17 (K 11)	08.48		14.40 (K 10)	07.19		17.23 (K 01)	06.35	04.56	03.37
	15.15	25	12.42 (K 11)	16.44	38	15.18 (K 10)	18.07	10	17.33 (K 01)	20.35	22.02	23.25
8	09.59		12.16 (K 11)	08.45		14.39 (K 10)	07.16		17.22 (K 01)	06.31	04.53	03.35
	15.17	27	12.43 (K 11)	16.47	39	15.18 (K 10)	18.10	14	17.36 (K 01)	20.37	22.05	23.27
9	09.57		12.16 (K 11)	08.42		14.39 (K 10)	07.13		17.20 (K 01)	06.28	04.50	03.34
	15.20	28	12.44 (K 11)	16.50	40	15.19 (K 10)	18.13	18	17.38 (K 01)	20.40	22.08	23.28
10	09.56		12.16 (K 11)	08.39		14.39 (K 10)	07.09		17.20 (K 01)	06.25	04.47	03.32
	15.22	29	12.45 (K 11)	16.53	41	15.20 (K 10)	18.16	21	17.41 (K 01)	20.43	22.11	23.30
11	09.54		12.16 (K 11)	08.36		14.39 (K 10)	07.06		17.19 (K 01)	06.21	04.44	03.31
	15.25	29	12.45 (K 11)	16.56	40	15.19 (K 10)	18.19	21	17.40 (K 01)	20.46	22.14	23.32
12	09.52		12.16 (K 11)	08.33		14.39 (K 10)	07.03		17.19 (K 01)	06.18	04.41	03.30
	15.27	30	12.46 (K 11)	16.59	41	15.20 (K 10)	18.22	22	17.41 (K 01)	20.49	22.17	23.33
13	09.51		12.16 (K 11)	08.30		14.38 (K 10)	06.59		17.18 (K 01)	06.15	04.38	03.29
	15.30	31	12.47 (K 11)	17.02	42	15.20 (K 10)	18.24	22	17.40 (K 01)	20.52	22.20	23.35
14	09.49		12.16 (K 11)	08.27		14.39 (K 10)	06.56		17.19 (K 01)	06.11	04.35	03.28
	15.32	32	12.48 (K 11)	17.05	41	15.20 (K 10)	18.27	20	17.39 (K 01)	20.54	22.22	23.36
15	09.47		12.17 (K 11)	08.24		14.38 (K 10)	06.53		17.19 (K 01)	06.08	04.32	03.27
	15.35	32	12.49 (K 11)	17.08	41	15.19 (K 10)	18.30	19	17.38 (K 01)	20.57	22.25	23.37
16	09.45		12.17 (K 11)	08.21		14.39 (K 10)	06.49		17.20 (K 01)	06.05	04.29	03.27
	15.38	33	12.50 (K 11)	17.11	40	15.19 (K 10)	18.33	17	17.37 (K 01)	21.00	22.28	23.38
17	09.43		12.17 (K 11)	08.18		14.39 (K 10)	06.46		17.22 (K 01)	06.01	04.26	03.26
	15.40	34	12.51 (K 11)	17.14	39	15.18 (K 10)	18.36	14	17.36 (K 01)	21.03	22.31	23.39
18	09.41		12.17 (K 11)	08.15		14.40 (K 10)	06.43		17.23 (K 01)	05.58	04.24	03.26
	15.43	33	12.50 (K 11)	17.17	38	15.18 (K 10)	18.39	10	17.33 (K 01)	21.06	22.34	23.39
19	09.38		12.17 (K 11)	08.11		14.40 (K 10)	06.39			05.55	04.21	03.25
	15.46	34	12.51 (K 11)	17.20	37	15.17 (K 10)	18.41			21.09	22.37	23.40
20	09.36		12.17 (K 11)	08.08		14.41 (K 10)	06.36			05.51	04.18	03.25
	15.49	35	12.52 (K 11)	17.23	36	15.17 (K 10)	18.44			21.12	22.40	23.41
21	09.34		12.17 (K 11)	08.05		14.42 (K 10)	06.32			05.48	04.15	03.25
	15.52	34	12.51 (K 11)	17.26	35	15.17 (K 10)	18.47			21.15	22.43	23.41
22	09.32		12.18 (K 11)	08.02		14.42 (K 10)	06.29			05.45	04.13	03.25
	15.55	34	12.52 (K 11)	17.29	33	15.15 (K 10)	18.50			21.18	22.46	23.41
23	09.29		12.18 (K 11)	07.59		14.44 (K 10)	06.26			05.41	04.10	03.25
	15.58	35	12.53 (K 11)	17.32	30	15.14 (K 10)	18.53			21.20	22.48	23.41
24	09.27		12.19 (K 11)	07.55		14.45 (K 10)	06.22			05.38	04.07	03.26
	16.01	34	12.53 (K 11)	17.35	27	15.12 (K 10)	18.55			21.23	22.51	23.41
25	09.24		12.19 (K 11)	07.52		14.48 (K 10)	06.19			05.35	04.05	03.26
	16.04	34	12.53 (K 11)	17.38	22	15.10 (K 10)	18.58			21.26	22.54	23.41
26	09.22		12.19 (K 11)	07.49		14.50 (K 10)	06.15			05.32	04.02	03.27
	16.07	34	12.53 (K 11)	17.41	17	15.07 (K 10)	19.01			21.29	22.56	23.40
27	09.19		12.19 (K 11)	07.46		14.57 (K 10)	06.12			05.28	04.00	03.28
	16.10	33	12.52 (K 11)	17.44	4	15.01 (K 10)	19.04			21.32	22.59	23.40
28	09.16		12.20 (K 11)	07.42			06.09			05.25	03.57	03.29
	16.13	36	14.58 (K 10)	17.47			19.06			21.35	23.02	23.39
29	09.14		12.21 (K 11)				07.05			05.22	03.55	03.30
	16.16	45	15.04 (K 10)				20.09			21.38	23.04	23.39
30	09.11		12.21 (K 11)				07.02			05.19	03.53	03.31
	16.19	50	15.07 (K 10)				20.12			21.41	23.07	23.38
31	09.08		12.23 (K 11)				06.59				03.50	
	16.22	52	15.09 (K 10)				20.15				23.09	
Potential sun hours	185			243			364			446	557	601
Total, worst case		985			1023			212				
Sun reduction		0,16			0,29			0,40				
Oper. time red.		0,97			0,97			0,97				
Wind dir. red.		0,69			0,67			0,59				
Total reduction		0,11			0,19			0,23				
Total, real		107			195			49				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AJ - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July		August		September			October			November			December		
1	03.32		04.47		06.15			07.36		17.58 (K 01)	08.05		14.09 (K 10)	09.32		11.58 (K 11)
	23.37		22.27		20.46			19.05	22	18.20 (K 01)	16.24	40	14.49 (K 10)	15.08	30	12.28 (K 11)
2	03.34		04.50		06.18			07.39		17.57 (K 01)	08.08		14.09 (K 10)	09.35		11.59 (K 11)
	23.36		22.24		20.43			19.01	22	18.19 (K 01)	16.21	39	14.48 (K 10)	15.06	29	12.28 (K 11)
3	03.35		04.53		06.21			07.42		17.57 (K 01)	08.11		14.10 (K 10)	09.37		12.00 (K 11)
	23.34		22.21		20.40			18.58	21	18.18 (K 01)	16.18	38	14.48 (K 10)	15.04	28	12.28 (K 11)
4	03.37		04.55		06.23			07.45		17.58 (K 01)	08.14		14.10 (K 10)	09.39		12.01 (K 11)
	23.33		22.17		20.36			18.55	19	18.17 (K 01)	16.15	37	14.47 (K 10)	15.03	26	12.27 (K 11)
5	03.39		04.58		06.26			07.47		17.58 (K 01)	08.17		12.05 (K 11)	09.42		12.02 (K 11)
	23.32		22.14		20.33			18.51	16	18.14 (K 01)	16.12	42	14.47 (K 10)	15.01	26	12.28 (K 11)
6	03.40		05.01		06.29			07.50		17.59 (K 01)	08.20		12.00 (K 11)	09.44		12.03 (K 11)
	23.30		22.11		20.29			18.48	12	18.11 (K 01)	16.09	50	14.46 (K 10)	15.00	25	12.28 (K 11)
7	03.42		05.04		06.32			07.53		18.00 (K 01)	08.23		11.58 (K 11)	09.46		12.04 (K 11)
	23.29		22.08		20.26			18.45	7	18.07 (K 01)	16.06	53	14.45 (K 10)	14.58	23	12.27 (K 11)
8	03.44		05.07		06.34			07.56		18.03 (K 01)	08.26		11.56 (K 11)	09.48		12.05 (K 11)
	23.27		22.05		20.23			18.41	1	18.04 (K 01)	16.03	54	14.44 (K 10)	14.57	23	12.28 (K 11)
9	03.46		05.10		06.37			07.58			08.29		11.55 (K 11)	09.50		12.06 (K 11)
	23.25		22.02		20.19			18.38			16.01	55	14.43 (K 10)	14.56	21	12.27 (K 11)
10	03.48		05.13		06.40			08.01			08.32		11.55 (K 11)	09.52		12.06 (K 11)
	23.23		21.59		20.16			18.35			15.58	53	14.42 (K 10)	14.55	21	12.27 (K 11)
11	03.51		05.16		06.42			08.04			08.35		11.53 (K 11)	09.54		12.07 (K 11)
	23.21		21.56		20.13			18.31			15.55	53	14.40 (K 10)	14.54	20	12.27 (K 11)
12	03.53		05.19		06.45			08.07			08.38		11.53 (K 11)	09.56		12.08 (K 11)
	23.19		21.52		20.09			18.28			15.52	49	14.38 (K 10)	14.53	19	12.27 (K 11)
13	03.55		05.21		06.48			08.10			08.41		11.53 (K 11)	09.57		12.09 (K 11)
	23.17		21.49		20.06			18.25			15.49	45	14.36 (K 10)	14.53	18	12.27 (K 11)
14	03.58		05.24		06.50			08.12			08.44		11.52 (K 11)	09.59		12.11 (K 11)
	23.15		21.46		20.02			18.21			15.47	34	14.29 (K 10)	14.52	16	12.27 (K 11)
15	04.00		05.27		06.53			08.15		15.26 (K 10)	08.47		11.52 (K 11)	10.00		12.11 (K 11)
	23.12		21.43		19.59			18.18	10	15.36 (K 10)	15.44	33	12.25 (K 11)	14.52	15	12.26 (K 11)
16	04.03		05.30		06.56			08.18		15.21 (K 10)	08.50		11.52 (K 11)	10.02		12.13 (K 11)
	23.10		21.39		19.56			18.15	19	15.40 (K 10)	15.41	34	12.26 (K 11)	14.51	14	12.27 (K 11)
17	04.05		05.33		06.59			08.21		15.19 (K 10)	08.53		11.53 (K 11)	10.03		12.14 (K 11)
	23.08		21.36		19.52			18.12	24	15.43 (K 10)	15.39	34	12.27 (K 11)	14.51	13	12.27 (K 11)
18	04.08		05.36		07.01			08.24		15.16 (K 10)	08.56		11.53 (K 11)	10.04		12.14 (K 11)
	23.05		21.33		19.49			18.08	28	15.44 (K 10)	15.36	34	12.27 (K 11)	14.51	13	12.27 (K 11)
19	04.10		05.39		07.04			08.27		15.15 (K 10)	08.59		11.52 (K 11)	10.05		12.15 (K 11)
	23.03		21.30		19.45			18.05	30	15.45 (K 10)	15.34	35	12.27 (K 11)	14.51	12	12.27 (K 11)
20	04.13		05.42		07.07			08.30		15.13 (K 10)	09.02		11.53 (K 11)	10.06		12.16 (K 11)
	23.00		21.26		19.42			18.02	33	15.46 (K 10)	15.31	34	12.27 (K 11)	14.51	11	12.27 (K 11)
21	04.16		05.44		07.09			08.32		15.12 (K 10)	09.05		11.53 (K 11)	10.06		12.16 (K 11)
	22.58		21.23		19.39			17.59	35	15.47 (K 10)	15.29	34	12.27 (K 11)	14.52	12	12.28 (K 11)
22	04.18		05.47		07.12			08.35		15.10 (K 10)	09.08		11.54 (K 11)	10.07		12.16 (K 11)
	22.55		21.20		19.35			17.55	37	15.47 (K 10)	15.26	34	12.28 (K 11)	14.52	12	12.28 (K 11)
23	04.21		05.50		07.15			08.38		15.10 (K 10)	09.10		11.54 (K 11)	10.08		12.17 (K 11)
	22.52		21.16		19.32			17.52	39	15.49 (K 10)	15.24	34	12.28 (K 11)	14.53	11	12.28 (K 11)
24	04.24		05.53		07.17			08.41		15.10 (K 10)	09.13		11.54 (K 11)	10.08		12.17 (K 11)
	22.50		21.13		19.28			17.49	39	15.49 (K 10)	15.22	33	12.27 (K 11)	14.53	12	12.29 (K 11)
25	04.27		05.56		07.20		18.07 (K 01)	07.44		14.09 (K 10)	09.16		11.54 (K 11)	10.08		12.18 (K 11)
	22.47		21.10		19.25	8	18.15 (K 01)	16.46	40	14.49 (K 10)	15.20	34	12.28 (K 11)	14.54	12	12.30 (K 11)
26	04.30		05.58		07.23		18.04 (K 01)	07.47		14.08 (K 10)	09.19		11.55 (K 11)	10.08		12.17 (K 11)
	22.44		21.06		19.22	13	18.17 (K 01)	16.43	41	14.49 (K 10)	15.17	33	12.28 (K 11)	14.55	14	12.31 (K 11)
27	04.32		06.01		07.26		18.02 (K 01)	07.50		14.08 (K 10)	09.22		11.56 (K 11)	10.08		12.17 (K 11)
	22.41		21.03		19.18	17	18.19 (K 01)	16.40	41	14.49 (K 10)	15.15	32	12.28 (K 11)	14.56	14	12.31 (K 11)
28	04.35		06.04		07.28		18.00 (K 01)	07.53		14.08 (K 10)	09.24		11.57 (K 11)	10.08		12.18 (K 11)
	22.38		21.00		19.15	19	18.19 (K 01)	16.37	41	14.49 (K 10)	15.13	31	12.28 (K 11)	14.57	15	12.33 (K 11)
29	04.38		06.07		07.31		17.59 (K 01)	07.56		14.08 (K 10)	09.27		11.57 (K 11)	10.08		12.17 (K 11)
	22.35		20.56		19.11	20	18.19 (K 01)	16.33	41	14.49 (K 10)	15.11	31	12.28 (K 11)	14.58	16	12.33 (K 11)
30	04.41		06.10		07.34		17.59 (K 01)	07.59		14.08 (K 10)	09.30		11.57 (K 11)	10.07		12.18 (K 11)
	22.32		20.53		19.08	21	18.20 (K 01)	16.30	41	14.49 (K 10)	15.09	31	12.28 (K 11)	15.00	17	12.35 (K 11)
31	04.44		06.12					08.02		14.08 (K 10)				10.07		12.18 (K 11)
	22.30		20.50					16.27	41	14.49 (K 10)				15.01	17	12.35 (K 11)
Potential sun hours	591		501		391			308			208			154		
Total, worst case						98			700			1173			555	
Sun reduction						0,36			0,26			0,15			0,11	
Oper. time red.						0,97			0,97			0,97			0,97	
Wind dir. red.						0,59			0,66			0,68			0,69	
Total reduction						0,21			0,17			0,10			0,07	
Total, real						20			116			116			41	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AK - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.06		13.34 (K 11)	09.06		13.40 (K 11)	07.39	06.55	05.15	03.48
	15.03	7	13.41 (K 11)	16.25	18	13.58 (K 11)	17.50	20.18	21.44	23.12
2	10.05		13.34 (K 11)	09.03		13.42 (K 11)	07.36	06.52	05.12	03.46
	15.05	11	13.45 (K 11)	16.28	15	13.57 (K 11)	17.53	20.20	21.47	23.14
3	10.05		13.34 (K 11)	09.00		13.46 (K 11)	07.33	06.48	05.09	03.44
	15.07	13	13.47 (K 11)	16.31	9	13.55 (K 11)	17.56	20.23	21.50	23.16
4	10.04		13.33 (K 11)	08.57		15.38 (K 10)	07.29	06.45	05.06	03.42
	15.09	14	13.47 (K 11)	16.34	8	15.46 (K 10)	17.59	20.26	21.53	23.19
5	10.03		13.33 (K 11)	08.54		15.36 (K 10)	07.26	06.42	05.03	03.40
	15.11	16	13.49 (K 11)	16.38	14	15.50 (K 10)	18.02	20.29	21.56	23.21
6	10.01		13.32 (K 11)	08.51		15.33 (K 10)	07.23	06.38	04.59	03.38
	15.13	18	13.50 (K 11)	16.41	18	15.51 (K 10)	18.04	20.32	21.59	23.23
7	10.00		13.32 (K 11)	08.48		15.32 (K 10)	07.19	06.35	04.56	03.37
	15.15	19	13.51 (K 11)	16.44	21	15.53 (K 10)	18.07	20.35	22.02	23.25
8	09.59		13.32 (K 11)	08.45		15.31 (K 10)	07.16	06.31	04.53	03.35
	15.17	20	13.52 (K 11)	16.47	23	15.54 (K 10)	18.10	20.37	22.05	23.27
9	09.57		13.31 (K 11)	08.42		15.31 (K 10)	07.13	06.28	04.50	03.34
	15.20	22	13.53 (K 11)	16.50	25	15.56 (K 10)	18.13	20.40	22.08	23.28
10	09.56		13.31 (K 11)	08.39		15.30 (K 10)	07.09	06.25	04.47	03.32
	15.22	23	13.54 (K 11)	16.53	27	15.57 (K 10)	18.16	20.43	22.11	23.30
11	09.54		13.31 (K 11)	08.36		15.29 (K 10)	07.06	06.21	04.44	03.31
	15.24	24	13.55 (K 11)	16.56	28	15.57 (K 10)	18.19	20.46	22.14	23.32
12	09.52		13.31 (K 11)	08.33		15.29 (K 10)	07.03	06.18	04.41	03.30
	15.27	24	13.55 (K 11)	16.59	29	15.58 (K 10)	18.22	20.49	22.17	23.33
13	09.51		13.31 (K 11)	08.30		15.29 (K 10)	06.59	06.15	04.38	03.29
	15.30	25	13.56 (K 11)	17.02	29	15.58 (K 10)	18.24	20.52	22.20	23.35
14	09.49		13.31 (K 11)	08.27		15.29 (K 10)	06.56	06.11	04.35	03.28
	15.32	26	13.57 (K 11)	17.05	29	15.58 (K 10)	18.27	20.54	22.22	23.36
15	09.47		13.31 (K 11)	08.24		15.28 (K 10)	06.53	06.08	04.32	03.27
	15.35	27	13.58 (K 11)	17.08	30	15.58 (K 10)	18.30	20.57	22.25	23.37
16	09.45		13.32 (K 11)	08.21		15.29 (K 10)	06.49	06.05	04.29	03.26
	15.38	27	13.59 (K 11)	17.11	29	15.58 (K 10)	18.33	21.00	22.28	23.38
17	09.43		13.32 (K 11)	08.18		15.28 (K 10)	06.46	06.01	04.26	03.26
	15.40	28	14.00 (K 11)	17.14	29	15.57 (K 10)	18.36	21.03	22.31	23.39
18	09.41		13.31 (K 11)	08.15		15.29 (K 10)	06.42	05.58	04.24	03.25
	15.43	29	14.00 (K 11)	17.17	28	15.57 (K 10)	18.38	21.06	22.34	23.39
19	09.38		13.32 (K 11)	08.11		15.29 (K 10)	06.39	05.55	04.21	03.25
	15.46	28	14.00 (K 11)	17.20	27	15.56 (K 10)	18.41	21.09	22.37	23.40
20	09.36		13.32 (K 11)	08.08		15.30 (K 10)	06.36	05.51	04.18	03.25
	15.49	29	14.01 (K 11)	17.23	25	15.55 (K 10)	18.44	21.12	22.40	23.41
21	09.34		13.32 (K 11)	08.05		15.31 (K 10)	06.32	05.48	04.15	03.25
	15.52	29	14.01 (K 11)	17.26	23	15.54 (K 10)	18.47	21.15	22.43	23.41
22	09.32		13.32 (K 11)	08.02		15.33 (K 10)	06.29	05.45	04.12	03.25
	15.55	29	14.01 (K 11)	17.29	20	15.53 (K 10)	18.50	21.17	22.46	23.41
23	09.29		13.33 (K 11)	07.59		15.35 (K 10)	06.26	05.41	04.10	03.25
	15.58	29	14.02 (K 11)	17.32	16	15.51 (K 10)	18.52	21.20	22.48	23.41
24	09.27		13.34 (K 11)	07.55		15.38 (K 10)	06.22	05.38	04.07	03.26
	16.01	28	14.02 (K 11)	17.35	10	15.48 (K 10)	18.55	21.23	22.51	23.41
25	09.24		13.33 (K 11)	07.52			06.19	05.35	04.05	03.26
	16.04	29	14.02 (K 11)	17.38			18.58	21.26	22.54	23.41
26	09.22		13.34 (K 11)	07.49			06.15	05.31	04.02	03.27
	16.07	28	14.02 (K 11)	17.41			19.01	21.29	22.56	23.40
27	09.19		13.34 (K 11)	07.46			06.12	05.28	04.00	03.28
	16.10	27	14.01 (K 11)	17.44			19.04	21.32	22.59	23.40
28	09.16		13.35 (K 11)	07.42			06.09	05.25	03.57	03.29
	16.13	26	14.01 (K 11)	17.47			19.06	21.35	23.02	23.39
29	09.14		13.37 (K 11)				07.05	05.22	03.55	03.30
	16.16	24	14.01 (K 11)				20.09	21.38	23.04	23.39
30	09.11		13.37 (K 11)				07.02	05.19	03.53	03.31
	16.19	23	14.00 (K 11)				20.12	21.41	23.07	23.38
31	09.08		13.39 (K 11)				06.58		03.50	
	16.22	21	14.00 (K 11)				20.15		23.09	
Potential sun hours	185			243			364	446	557	601
Total, worst case		723			530					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,67			0,64					
Total reduction		0,11			0,18					
Total, real		77			96					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AK - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July		August		September		October			November			December		
1	03.32		04.47		06.15		07.36			08.05		15.00 (K 10)	09.32		13.13 (K 11)
	23.37		22.27		20.46		19.05			16.24	26	15.26 (K 10)	15.08	24	13.37 (K 11)
2	03.34		04.50		06.18		07.39			08.08		15.00 (K 10)	09.35		13.14 (K 11)
	23.36		22.24		20.43		19.01			16.21	25	15.25 (K 10)	15.06	23	13.37 (K 11)
3	03.35		04.53		06.21		07.42			08.11		15.01 (K 10)	09.37		13.16 (K 11)
	23.34		22.20		20.40		18.58			16.18	23	15.24 (K 10)	15.04	21	13.37 (K 11)
4	03.37		04.55		06.23		07.45			08.14		15.02 (K 10)	09.39		13.16 (K 11)
	23.33		22.17		20.36		18.55			16.15	21	15.23 (K 10)	15.03	20	13.36 (K 11)
5	03.38		04.58		06.26		07.47			08.17		15.04 (K 10)	09.42		13.17 (K 11)
	23.32		22.14		20.33		18.51			16.12	18	15.22 (K 10)	15.01	19	13.36 (K 11)
6	03.40		05.01		06.29		07.50			08.20		15.06 (K 10)	09.44		13.19 (K 11)
	23.30		22.11		20.29		18.48			16.09	13	15.19 (K 10)	15.00	17	13.36 (K 11)
7	03.42		05.04		06.31		07.53			08.23		15.09 (K 10)	09.46		13.19 (K 11)
	23.29		22.08		20.26		18.45			16.06	7	15.16 (K 10)	14.58	17	13.36 (K 11)
8	03.44		05.07		06.34		07.56			08.26		13.15 (K 11)	09.48		13.21 (K 11)
	23.27		22.05		20.23		18.41			16.03	10	13.25 (K 11)	14.57	15	13.36 (K 11)
9	03.46		05.10		06.37		07.58			08.29		13.13 (K 11)	09.50		13.22 (K 11)
	23.25		22.02		20.19		18.38			16.00	15	13.28 (K 11)	14.56	13	13.35 (K 11)
10	03.48		05.13		06.40		08.01			08.32		13.11 (K 11)	09.52		13.23 (K 11)
	23.23		21.59		20.16		18.35			15.58	19	13.30 (K 11)	14.55	11	13.34 (K 11)
11	03.51		05.16		06.42		08.04			08.35		13.09 (K 11)	09.54		13.24 (K 11)
	23.21		21.56		20.12		18.31			15.55	22	13.31 (K 11)	14.54	8	13.32 (K 11)
12	03.53		05.19		06.45		08.07			08.38		13.09 (K 11)	09.56		13.26 (K 11)
	23.19		21.52		20.09		18.28			15.52	23	13.32 (K 11)	14.53	4	13.30 (K 11)
13	03.55		05.21		06.48		08.10			08.41		13.08 (K 11)	09.57		
	23.17		21.49		20.06		18.25			15.49	25	13.33 (K 11)	14.53		
14	03.58		05.24		06.50		08.12			08.44		13.07 (K 11)	09.59		
	23.15		21.46		20.02		18.21			15.47	26	13.33 (K 11)	14.52		
15	04.00		05.27		06.53		08.15			08.47		13.07 (K 11)	10.00		
	23.12		21.43		19.59		18.18			15.44	27	13.34 (K 11)	14.52		
16	04.03		05.30		06.56		08.18			08.50		13.07 (K 11)	10.02		
	23.10		21.39		19.56		18.15			15.41	28	13.35 (K 11)	14.51		
17	04.05		05.33		06.59		08.21			08.53		13.07 (K 11)	10.03		
	23.08		21.36		19.52		18.12			15.39	29	13.36 (K 11)	14.51		
18	04.08		05.36		07.01		08.24		16.08 (K 10)	08.56		13.07 (K 11)	10.04		
	23.05		21.33		19.49		18.08	13	16.21 (K 10)	15.36	28	13.35 (K 11)	14.51		
19	04.10		05.39		07.04		08.27		16.05 (K 10)	08.59		13.07 (K 11)	10.05		
	23.03		21.30		19.45		18.05	18	16.23 (K 10)	15.34	29	13.36 (K 11)	14.51		
20	04.13		05.41		07.07		08.30		16.03 (K 10)	09.02		13.07 (K 11)	10.06		
	23.00		21.26		19.42		18.02	21	16.24 (K 10)	15.31	29	13.36 (K 11)	14.51		
21	04.16		05.44		07.09		08.32		16.02 (K 10)	09.05		13.08 (K 11)	10.06		
	22.58		21.23		19.39		17.59	23	16.25 (K 10)	15.29	29	13.37 (K 11)	14.52		
22	04.18		05.47		07.12		08.35		16.00 (K 10)	09.08		13.08 (K 11)	10.07		
	22.55		21.20		19.35		17.55	26	16.26 (K 10)	15.26	29	13.37 (K 11)	14.52		
23	04.21		05.50		07.15		08.38		16.00 (K 10)	09.10		13.09 (K 11)	10.08		
	22.52		21.16		19.32		17.52	27	16.27 (K 10)	15.24	28	13.37 (K 11)	14.53		
24	04.24		05.53		07.17		08.41		15.59 (K 10)	09.13		13.08 (K 11)	10.08		
	22.50		21.13		19.28		17.49	28	16.27 (K 10)	15.22	29	13.37 (K 11)	14.53		
25	04.27		05.56		07.20		07.44		14.58 (K 10)	09.16		13.09 (K 11)	10.08		
	22.47		21.10		19.25		16.46	29	15.27 (K 10)	15.20	28	13.37 (K 11)	14.54		
26	04.30		05.58		07.23		07.47		14.58 (K 10)	09.19		13.10 (K 11)	10.08		
	22.44		21.06		19.22		16.43	29	15.27 (K 10)	15.17	27	13.37 (K 11)	14.55		
27	04.32		06.01		07.26		07.50		14.58 (K 10)	09.22		13.10 (K 11)	10.08		
	22.41		21.03		19.18		16.40	30	15.28 (K 10)	15.15	27	13.37 (K 11)	14.56		
28	04.35		06.04		07.28		07.53		14.58 (K 10)	09.24		13.11 (K 11)	10.08		
	22.38		21.00		19.15		16.36	29	15.27 (K 10)	15.13	26	13.37 (K 11)	14.57		
29	04.38		06.07		07.31		07.56		14.58 (K 10)	09.27		13.12 (K 11)	10.08		
	22.35		20.56		19.11		16.33	29	15.27 (K 10)	15.11	26	13.38 (K 11)	14.58		
30	04.41		06.09		07.34		07.59		14.59 (K 10)	09.30		13.12 (K 11)	10.07		
	22.32		20.53		19.08		16.30	28	15.27 (K 10)	15.09	25	13.37 (K 11)	15.00		
31	04.44		06.12				08.02		14.59 (K 10)				10.07		13.36 (K 11)
	22.30		20.50				16.27	27	15.26 (K 10)				15.01	2	13.38 (K 11)
Potential sun hours	591		501		391		308			208			154		
Total, worst case								357				717			194
Sun reduction								0,26				0,15			0,11
Oper. time red.								0,97				0,97			0,97
Wind dir. red.								0,64				0,67			0,67
Total reduction								0,16				0,10			0,07
Total, real								57				69			14

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AL - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (56)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.49	03.33	04.47	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.11	23.36	22.26	20.46	19.05	16.24	15.08
2	10.05	09.02	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.34
	15.05	16.28	17.53	20.20	21.47	23.13	23.35	22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.32	06.48	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.20	20.39	18.58	16.18	15.05
4	10.03	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.32	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.47	08.17	09.41
	15.11	16.38	18.02	20.29	21.55	23.20	23.31	22.14	20.33	18.51	16.12	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.58	23.22	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.34	22.01	23.24	23.28	22.08	20.26	18.45	16.06	14.59
8	09.58	08.45	07.16	06.31	04.53	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.04	23.26	23.26	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.07	23.28	23.24	22.02	20.19	18.38	16.01	14.57
10	09.55	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.10	23.29	23.22	21.58	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.21	04.44	03.32	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.13	23.31	23.21	21.55	20.12	18.31	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.55
	15.27	16.59	18.22	20.49	22.16	23.32	23.18	21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.09	08.41	09.57
	15.30	17.02	18.24	20.51	22.19	23.34	23.16	21.49	20.06	18.25	15.50	14.53
14	09.48	08.27	06.56	06.11	04.35	03.29	03.58	05.25	06.50	08.12	08.44	09.58
	15.33	17.05	18.27	20.54	22.22	23.35	23.14	21.46	20.02	18.21	15.47	14.53
15	09.46	08.24	06.53	06.08	04.32	03.28	04.01	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.36	23.12	21.42	19.59	18.18	15.44	14.52
16	09.44	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.37	23.10	21.39	19.55	18.15	15.42	14.52
17	09.42	08.18	06.46	06.01	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.02
	15.41	17.14	18.36	21.03	22.31	23.38	23.07	21.36	19.52	18.12	15.39	14.52
18	09.40	08.14	06.42	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.03
	15.44	17.17	18.38	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.52
19	09.38	08.11	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.26	08.58	10.04
	15.46	17.20	18.41	21.09	22.37	23.39	23.02	21.29	19.45	18.05	15.34	14.52
20	09.36	08.08	06.36	05.51	04.18	03.26	04.13	05.42	07.07	08.29	09.01	10.05
	15.49	17.23	18.44	21.11	22.39	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.33	08.05	06.32	05.48	04.16	03.26	04.16	05.44	07.09	08.32	09.04	10.06
	15.52	17.26	18.47	21.14	22.42	23.40	22.57	21.23	19.38	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.40	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.41	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	23.40	22.52	21.16	19.32	17.52	15.24	14.53
24	09.26	07.55	06.22	05.38	04.08	03.26	04.24	05.53	07.17	08.41	09.13	10.07
	16.01	17.35	18.55	21.23	22.51	23.40	22.49	21.13	19.28	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.53	23.40	22.46	21.10	19.25	16.46	15.20	14.54
26	09.21	07.49	06.15	05.32	04.03	03.28	04.30	05.58	07.23	07.47	09.18	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.25	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.39	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.42	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.06	21.35	23.01	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.13		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.07
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.11	16.33	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.41	06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.06	23.37	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.58		03.51		04.44	06.12		08.02		10.06
	16.22		20.15		23.09		22.29	20.50		16.27		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AM - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	17.00 (K 10)	06.55	05.15	03.48	03.32	04.47	06.15	07.36	17.41 (K 10)	08.05	15.00 (K 11)	09.32
	15.03	16.25	17.50	17.14 (K 10)	20.18	21.44	23.12	23.37	22.26	20.46	19.05	17.50 (K 10)	16.24	15.26 (K 11)	15.08
2	10.05	09.03	07.36	16.58 (K 10)	06.52	05.12	03.46	03.34	04.50	06.18	07.39	17.37 (K 10)	08.08	15.00 (K 11)	09.35
	15.05	16.28	17.53	17.17 (K 10)	20.20	21.47	23.14	23.36	22.23	20.43	19.01	17.51 (K 10)	16.21	15.25 (K 11)	15.06
3	10.05	09.00	07.33	16.58 (K 10)	06.48	05.09	03.44	03.35	04.52	06.20	07.42	17.36 (K 10)	08.11	15.00 (K 11)	09.37
	15.07	16.31	17.56	17.19 (K 10)	20.23	21.50	23.16	23.34	22.20	20.40	18.58	17.53 (K 10)	16.18	15.24 (K 11)	15.04
4	10.04	08.57	07.29	16.56 (K 10)	06.45	05.06	03.42	03.37	04.55	06.23	07.45	17.34 (K 10)	08.14	15.01 (K 11)	09.39
	15.09	16.34	17.59	17.19 (K 10)	20.26	21.53	23.18	23.33	22.17	20.36	18.55	17.54 (K 10)	16.15	15.24 (K 11)	15.03
5	10.02	08.54	07.26	16.56 (K 10)	06.42	05.03	03.40	03.38	04.58	06.26	07.47	17.33 (K 10)	08.17	15.02 (K 11)	09.42
	15.11	16.38	18.02	17.19 (K 10)	20.29	21.56	23.21	23.32	22.14	20.33	18.51	17.54 (K 10)	16.12	15.24 (K 11)	15.01
6	10.01	08.51	07.23	16.56 (K 10)	06.38	04.59	03.38	03.40	05.01	06.29	07.50	17.33 (K 10)	08.20	15.03 (K 11)	09.44
	15.13	16.41	18.04	17.18 (K 10)	20.32	21.59	23.23	23.30	22.11	20.29	18.48	17.55 (K 10)	16.09	15.22 (K 11)	15.00
7	10.00	08.48	07.19	16.56 (K 10)	06.35	04.56	03.37	03.42	05.04	06.31	07.53	17.32 (K 10)	08.23	15.05 (K 11)	09.46
	15.15	16.44	18.07	17.18 (K 10)	20.34	22.02	23.25	23.28	22.08	20.26	18.45	17.55 (K 10)	16.06	15.19 (K 11)	14.58
8	09.59	08.45	07.16	16.56 (K 10)	06.31	04.53	03.35	03.44	05.07	06.34	07.56	17.31 (K 10)	08.26	15.06 (K 11)	09.48
	15.17	16.47	18.10	17.17 (K 10)	20.37	22.05	23.27	23.27	22.05	20.23	18.41	17.54 (K 10)	16.03	15.15 (K 11)	14.57
9	09.57	08.42	07.13	16.56 (K 10)	06.28	04.50	03.34	03.46	05.10	06.37	07.58	17.31 (K 10)	08.29	15.09 (K 11)	09.50
	15.20	16.50	18.13	17.17 (K 10)	20.40	22.08	23.28	23.25	22.02	20.19	18.38	17.53 (K 10)	16.00	15.12 (K 11)	14.56
10	09.56	08.39	07.09	16.58 (K 10)	06.25	04.47	03.32	03.48	05.13	06.40	08.01	17.31 (K 10)	08.32		09.52
	15.22	16.53	18.16	17.16 (K 10)	20.43	22.11	23.30	23.23	21.59	20.16	18.35	17.53 (K 10)	15.58		14.55
11	09.54	08.36	07.06	16.58 (K 10)	06.21	04.44	03.31	03.51	05.16	06.42	08.04	17.32 (K 10)	08.35		09.54
	15.24	16.56	18.19	17.14 (K 10)	20.46	22.14	23.32	23.21	21.55	20.12	18.31	17.52 (K 10)	15.55		14.54
12	09.52	08.33	07.03	17.01 (K 10)	06.18	04.41	03.30	03.53	05.19	06.45	08.07	17.32 (K 10)	08.38		09.56
	15.27	16.59	18.22	17.12 (K 10)	20.49	22.17	23.33	23.19	21.52	20.09	18.28	17.49 (K 10)	15.52		14.53
13	09.51	08.30	06.59		06.15	04.38	03.29	03.55	05.21	06.48	08.10	17.33 (K 10)	08.41		09.57
	15.30	17.02	18.24		20.52	22.19	23.34	23.17	21.49	20.06	18.25	17.46 (K 10)	15.49		14.53
14	09.49	08.27	06.56		06.11	04.35	03.28	03.58	05.24	06.50	08.12	17.35 (K 10)	08.44		09.59
	15.32	17.05	18.27		20.54	22.22	23.36	23.15	21.46	20.02	18.21	17.42 (K 10)	15.47		14.52
15	09.47	08.24	06.53		06.08	04.32	03.27	04.00	05.27	06.53	08.15	17.38 (K 10)	08.47		10.00
	15.35	17.08	18.30		20.57	22.25	23.37	23.12	21.43	19.59	18.18	17.39 (K 10)	15.44		14.52
16	09.45	08.21	06.49		06.05	04.29	03.26	04.03	05.30	06.56	08.18		08.50		10.02
	15.38	17.11	18.33		21.00	22.28	23.38	23.10	21.39	19.55	18.15		15.41		14.51
17	09.43	08.18	06.46		06.01	04.26	03.26	04.05	05.33	06.58	08.21		08.53		10.03
	15.40	17.14	18.36		21.03	22.31	23.39	23.08	21.36	19.52	18.12		15.39		14.51
18	09.41	08.15	06.42		05.58	04.23	03.25	04.08	05.36	07.01	08.24		08.56		10.04
	15.43	17.17	18.38		21.06	22.34	23.39	23.05	21.33	19.49	18.08		15.36		14.51
19	09.38	08.11	06.39		05.55	04.21	03.25	04.10	05.39	07.04	08.27		08.59		10.05
	15.46	17.20	18.41		21.09	22.37	23.40	23.03	21.30	19.45	18.05		15.34		14.51
20	09.36	08.08	06.36		05.51	04.18	03.25	04.13	05.41	07.07	08.29		09.02		10.06
	15.49	17.23	18.44		21.12	22.40	23.40	23.00	21.26	19.42	18.02		15.31		14.51
21	09.34	08.05	06.32		05.48	04.15	03.25	04.16	05.44	07.09	08.32	16.09 (K 11)	09.05		10.06
	15.52	17.26	18.47		21.15	22.43	23.41	22.58	21.23	19.38	17.59	16.19 (K 11)	15.29		14.52
22	09.31	08.02	06.29		05.45	04.12	03.25	04.18	05.47	07.12	08.35	16.05 (K 11)	09.07		10.07
	15.55	17.29	18.50		21.17	22.45	23.41	22.55	21.20	19.35	17.55	16.21 (K 11)	15.26		14.52
23	09.29	07.59	06.26		05.41	04.10	03.25	04.21	05.50	07.15	08.38	16.03 (K 11)	09.10		10.07
	15.58	17.32	18.52		21.20	22.48	23.41	22.52	21.16	19.32	17.52	16.22 (K 11)	15.24		14.53
24	09.27	07.55	06.22		05.38	04.07	03.26	04.24	05.53	07.17	08.41	16.03 (K 11)	09.13		10.08
	16.01	17.35	18.55		21.23	22.51	23.41	22.49	21.13	19.28	17.49	16.24 (K 11)	15.22		14.53
25	09.24	07.52	06.19		05.35	04.05	03.26	04.27	05.56	07.20	07.44	15.01 (K 11)	09.16		10.08
	16.04	17.38	18.58		21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.25 (K 11)	15.19		14.54
26	09.22	07.49	06.15		05.31	04.02	03.27	04.30	05.58	07.23	07.47	15.00 (K 11)	09.19		10.08
	16.07	17.41	19.01		21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.25 (K 11)	15.17		14.55
27	09.19	07.46	06.12		05.28	04.00	03.28	04.32	06.01	07.25	07.50	15.00 (K 11)	09.22		10.08
	16.10	17.44	19.04		21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.26 (K 11)	15.15		14.56
28	09.16	07.42	06.09		05.25	03.57	03.29	04.35	06.04	07.28	07.53	14.59 (K 11)	09.24		10.08
	16.13	17.47	19.06		21.35	23.02	23.39	22.38	21.00	19.15	16.36	15.26 (K 11)	15.13		14.57
29	09.14		07.05		05.22	03.55	03.30	04.38	06.07	07.31	07.56	14.59 (K 11)	09.27		10.08
	16.16		20.09		21.38	23.04	23.39	22.35	20.56	19.11	16.33	15.26 (K 11)	15.11		14.58
30	09.11		07.02		05.18	03.53	03.31	04.41	06.09	07.34	07.59	14.59 (K 11)	09.29		10.07
	16.19		20.12		21.41	23.07	23.38	22.32	20.53	19.08	16.30	15.26 (K 11)	15.09		15.00
31	09.08		06.58			03.50		04.44	06.12		08.02	14.59 (K 11)			10.07
	16.22		20.15			23.09		22.29	20.50		16.27	15.26 (K 11)			15.01
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case		426	231							500	165	
Sun reduction		0,29	0,40							0,26	0,15	
Oper. time red.		0,97	0,97							0,97	0,97	
Wind dir. red.		0,64	0,61							0,63	0,64	
Total reduction		0,18	0,24							0,16	0,09	
Total, real		77	55							79	15	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
PROKON Regenerative Energien eG
Kirchhoffstraße 3
DE-25524 Itzehoe
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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AN - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.48	21.06 (K 12)	03.33	04.47	21.11 (K 12)	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.11	17 21.23 (K 12)	23.36	22.26	26 21.37 (K 12)	20.46	19.05	16.24	15.08
2	10.05	09.02	07.36	06.52	05.12	03.46	21.08 (K 12)	03.34	04.50	21.11 (K 12)	06.18	07.39	08.08	09.34
	15.05	16.28	17.53	20.20	21.47	23.14	15 21.23 (K 12)	23.35	22.23	25 21.36 (K 12)	20.43	19.01	16.21	15.06
3	10.04	09.00	07.32	06.48	05.09	03.44	21.09 (K 12)	03.36	04.53	21.12 (K 12)	06.21	07.42	08.11	09.37
	15.07	16.31	17.56	20.23	21.50	23.16	13 21.22 (K 12)	23.34	22.20	23 21.35 (K 12)	20.39	18.58	16.18	15.04
4	10.03	08.57	07.29	06.45	05.06	03.42	21.10 (K 12)	03.37	04.56	21.13 (K 12)	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	11 21.21 (K 12)	23.33	22.17	19 21.32 (K 12)	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	21.09 (K 12)	03.41	21.12 (K 12)	03.39	04.58	21.14 (K 12)	06.26	07.47	08.17	09.41
	15.11	16.38	18.02	20.29	21.56	4 21.13 (K 12)	23.20	8 21.20 (K 12)	23.31	22.14	16 21.30 (K 12)	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	21.06 (K 12)	03.39	21.14 (K 12)	03.41	05.01	21.15 (K 12)	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.58	9 21.15 (K 12)	23.22	4 21.18 (K 12)	23.30	22.11	12 21.27 (K 12)	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.56	21.04 (K 12)	03.37	03.43	21.19 (K 12)	05.04	21.17 (K 12)	06.31	07.53	08.23	09.46
	15.15	16.44	18.07	20.34	22.01	14 21.18 (K 12)	23.24	23.28	7 21.26 (K 12)	22.08	8 21.25 (K 12)	20.26	18.45	16.06	14.59
8	09.58	08.45	07.16	06.31	04.53	21.04 (K 12)	03.36	03.45	21.17 (K 12)	05.07	21.19 (K 12)	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.04	17 21.21 (K 12)	23.26	23.26	10 21.27 (K 12)	22.05	2 21.21 (K 12)	20.23	18.41	16.03	14.57
9	09.57	08.42	07.13	06.28	04.50	21.02 (K 12)	03.34	03.47	21.17 (K 12)	05.10		06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.07	21 21.23 (K 12)	23.28	23.25	12 21.29 (K 12)	22.02		20.19	18.38	16.01	14.56
10	09.55	08.39	07.09	06.25	04.47	21.02 (K 12)	03.33	03.49	21.16 (K 12)	05.13		06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.10	24 21.26 (K 12)	23.30	23.23	14 21.30 (K 12)	21.58		20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	21.01 (K 12)	03.31	03.51	21.15 (K 12)	05.16		06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.13	25 21.26 (K 12)	23.31	23.21	16 21.31 (K 12)	21.55		20.12	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	21.00 (K 12)	03.30	03.53	21.14 (K 12)	05.19		06.45	08.07	08.38	09.55
	15.27	16.59	18.22	20.49	22.16	26 21.26 (K 12)	23.33	23.19	18 21.32 (K 12)	21.52		20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	21.00 (K 12)	03.29	03.56	21.14 (K 12)	05.22		06.48	08.09	08.41	09.57
	15.30	17.02	18.24	20.51	22.19	27 21.27 (K 12)	23.34	23.16	19 21.33 (K 12)	21.49		20.06	18.25	15.49	14.53
14	09.48	08.27	06.56	06.11	04.35	20.59 (K 12)	03.28	03.58	21.13 (K 12)	05.24		06.50	08.12	08.44	09.58
	15.32	17.05	18.27	20.54	22.22	28 21.27 (K 12)	23.35	23.14	21 21.34 (K 12)	21.46		20.02	18.21	15.47	14.52
15	09.46	08.24	06.53	06.08	04.32	21.00 (K 12)	03.28	04.00	21.13 (K 12)	05.27		06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	28 21.28 (K 12)	23.36	23.12	21 21.34 (K 12)	21.42		19.59	18.18	15.44	14.52
16	09.44	08.21	06.49	06.05	04.29	21.00 (K 12)	03.27	04.03	21.12 (K 12)	05.30		06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	28 21.28 (K 12)	23.37	23.10	23 21.35 (K 12)	21.39		19.55	18.15	15.41	14.52
17	09.42	08.18	06.46	06.01	04.27	20.59 (K 12)	03.26	04.05	21.12 (K 12)	05.33		06.58	08.21	08.53	10.02
	15.41	17.14	18.36	21.03	22.31	29 21.28 (K 12)	23.38	23.07	24 21.36 (K 12)	21.36		19.52	18.12	15.39	14.51
18	09.40	08.14	06.42	05.58	04.24	20.59 (K 12)	03.26	04.08	21.12 (K 12)	05.36		07.01	08.24	08.56	10.03
	15.43	17.17	18.38	21.06	22.34	29 21.28 (K 12)	23.39	23.05	24 21.36 (K 12)	21.33		19.49	18.08	15.36	14.51
19	09.38	08.11	06.39	05.55	04.21	21.00 (K 12)	03.26	04.11	21.11 (K 12)	05.39		07.04	08.27	08.59	10.04
	15.46	17.20	18.41	21.09	22.37	28 21.28 (K 12)	23.40	23.02	26 21.37 (K 12)	21.29		19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	20.59 (K 12)	03.25	04.13	21.11 (K 12)	05.42		07.07	08.29	09.01	10.05
	15.49	17.23	18.44	21.11	22.39	28 21.27 (K 12)	23.40	23.00	26 21.37 (K 12)	21.26		19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	21.00 (K 12)	03.25	04.16	21.10 (K 12)	05.44		07.09	08.32	09.04	10.06
	15.52	17.26	18.47	21.14	22.42	27 21.27 (K 12)	23.40	22.57	27 21.37 (K 12)	21.23		19.38	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	21.00 (K 12)	03.26	04.19	21.10 (K 12)	05.47		07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	27 21.27 (K 12)	23.41	22.55	27 21.37 (K 12)	21.20		19.35	17.55	15.26	14.52
23	09.29	07.59	06.26	05.41	04.10	21.00 (K 12)	03.26	04.21	21.10 (K 12)	05.50		07.15	08.38	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	27 21.27 (K 12)	23.41	22.52	28 21.38 (K 12)	21.16		19.32	17.52	15.24	14.53
24	09.26	07.55	06.22	05.38	04.07	21.01 (K 12)	03.26	04.24	21.10 (K 12)	05.53		07.17	08.41	09.13	10.07
	16.01	17.35	18.55	21.23	22.51	26 21.27 (K 12)	23.40	22.49	28 21.38 (K 12)	21.13		19.28	17.49	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	21.01 (K 12)	03.27	04.27	21.10 (K 12)	05.56		07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.53	25 21.26 (K 12)	23.40	22.46	28 21.38 (K 12)	21.10		19.25	16.46	15.20	14.54
26	09.21	07.49	06.15	05.32	04.02	21.02 (K 12)	03.27	04.30	21.09 (K 12)	05.58		07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	24 21.26 (K 12)	23.40	22.44	29 21.38 (K 12)	21.06		19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	21.02 (K 12)	03.28	04.33	21.10 (K 12)	06.01		07.25	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23 21.25 (K 12)	23.39	22.41	29 21.39 (K 12)	21.03		19.18	16.40	15.15	14.56
28	09.16	07.42	06.09	05.25	03.57	21.04 (K 12)	03.29	04.35	21.10 (K 12)	06.04		07.28	07.53	09.24	10.08
	16.13	17.47	19.06	21.35	23.01	22 21.26 (K 12)	23.39	22.38	28 21.38 (K 12)	21.00		19.15	16.37	15.13	14.57
29	09.13		07.05	05.22	03.55	21.04 (K 12)	03.30	04.38	21.11 (K 12)	06.07		07.31	07.56	09.27	10.07
	16.16		20.09	21.38	23.04	21 21.25 (K 12)	23.38	22.35	28 21.39 (K 12)	20.56		19.11	16.33	15.11	14.59
30	09.11		07.02	05.19	03.53	21.05 (K 12)	03.31	04.41	21.10 (K 12)	06.10		07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.06	19 21.24 (K 12)	23.37	22.32	28 21.38 (K 12)	20.53		19.08	16.30	15.10	15.00
31	09.08		06.58		03.51	21.06 (K 12)		04.44	21.10 (K 12)	06.12			08.02		10.07
	16.22		20.15		23.09	18 21.24 (K 12)		22.29	27 21.37 (K 12)	20.50			16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case					624	68	568	131				
Sun reduction					0,48	0,46	0,45	0,41				
Oper. time red.					0,97	0,97	0,97	0,97				
Wind dir. red.					0,62	0,62	0,62	0,62				
Total reduction					0,29	0,28	0,27	0,25				
Total, real					180	19	155	33				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AO - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (53)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March		April	May	June	July	August	September		October		November	December
1	10.06	09.05	07.39		06.55	05.15	03.48	03.32	04.47	06.15		07.36	17.45 (K 11)	08.05	09.32
	15.03	16.25	17.50		20.18	21.44	23.12	23.37	22.26	20.46		19.05	23 18.08 (K 11)	16.24	15.08
2	10.05	09.03	07.36		06.52	05.12	03.46	03.34	04.50	06.18		07.39	17.45 (K 11)	08.08	09.34
	15.05	16.28	17.53		20.20	21.47	23.14	23.35	22.23	20.43		19.01	23 18.08 (K 11)	16.21	15.06
3	10.04	09.00	07.33	17.14 (K 11)	06.48	05.09	03.44	03.35	04.52	06.20		07.42	17.44 (K 11)	08.11	09.37
	15.07	16.31	17.56	7 17.21 (K 11)	20.23	21.50	23.16	23.34	22.20	20.39		18.58	25 18.09 (K 11)	16.18	15.04
4	10.03	08.57	07.29	17.11 (K 11)	06.45	05.06	03.42	03.37	04.55	06.23		07.45	17.44 (K 11)	08.14	09.39
	15.09	16.34	17.59	12 17.23 (K 11)	20.26	21.53	23.18	23.33	22.17	20.36		18.55	25 18.09 (K 11)	16.15	15.03
5	10.02	08.54	07.26	17.10 (K 11)	06.41	05.03	03.40	03.39	04.58	06.26		07.47	17.44 (K 11)	08.17	09.42
	15.11	16.38	18.01	17 17.27 (K 11)	20.29	21.56	23.20	23.31	22.14	20.33		18.51	24 18.08 (K 11)	16.12	15.01
6	10.01	08.51	07.23	17.09 (K 11)	06.38	04.59	03.39	03.40	05.01	06.29		07.50	17.44 (K 11)	08.20	09.44
	15.13	16.41	18.04	20 17.29 (K 11)	20.32	21.59	23.23	23.30	22.11	20.29		18.48	24 18.08 (K 11)	16.09	15.00
7	10.00	08.48	07.19	17.08 (K 11)	06.35	04.56	03.37	03.42	05.04	06.31		07.53	17.45 (K 11)	08.23	09.46
	15.15	16.44	18.07	23 17.31 (K 11)	20.34	22.02	23.25	23.28	22.08	20.26		18.45	22 18.07 (K 11)	16.06	14.58
8	09.59	08.45	07.16	17.07 (K 11)	06.31	04.53	03.35	03.44	05.07	06.34		07.56	17.44 (K 11)	08.26	09.48
	15.17	16.47	18.10	24 17.31 (K 11)	20.37	22.05	23.26	23.27	22.05	20.23		18.41	19 18.03 (K 11)	16.03	14.57
9	09.57	08.42	07.13	17.07 (K 11)	06.28	04.50	03.34	03.46	05.10	06.37		07.58	17.45 (K 11)	08.29	09.50
	15.20	16.50	18.13	24 17.31 (K 11)	20.40	22.08	23.28	23.25	22.02	20.19		18.38	15 18.00 (K 11)	16.00	14.56
10	09.56	08.39	07.09	17.07 (K 11)	06.25	04.47	03.32	03.48	05.13	06.40		08.01	17.47 (K 11)	08.32	09.52
	15.22	16.53	18.16	24 17.31 (K 11)	20.43	22.11	23.30	23.23	21.59	20.16		18.35	9 17.56 (K 11)	15.58	14.55
11	09.54	08.36	07.06	17.06 (K 11)	06.21	04.44	03.31	03.51	05.16	06.42		08.04	17.49 (K 11)	08.35	09.54
	15.24	16.56	18.19	24 17.30 (K 11)	20.46	22.13	23.31	23.21	21.55	20.12		18.31	4 17.53 (K 11)	15.55	14.54
12	09.52	08.33	07.03	17.07 (K 11)	06.18	04.41	03.30	03.53	05.19	06.45		08.07		08.38	09.56
	15.27	16.59	18.21	23 17.30 (K 11)	20.49	22.16	23.33	23.19	21.52	20.09		18.28		15.52	14.53
13	09.50	08.30	06.59	17.07 (K 11)	06.15	04.38	03.29	03.55	05.21	06.48		08.10		08.41	09.57
	15.30	17.02	18.24	22 17.29 (K 11)	20.51	22.19	23.34	23.17	21.49	20.06		18.25		15.49	14.53
14	09.49	08.27	06.56	17.08 (K 11)	06.11	04.35	03.28	03.58	05.24	06.50		08.12		08.44	09.59
	15.32	17.05	18.27	20 17.28 (K 11)	20.54	22.22	23.36	23.15	21.46	20.02		18.21		15.47	14.52
15	09.47	08.24	06.53	17.08 (K 11)	06.08	04.32	03.27	04.00	05.27	06.53		08.15		08.47	10.00
	15.35	17.08	18.30	18 17.26 (K 11)	20.57	22.25	23.37	23.12	21.43	19.59		18.18		15.44	14.52
16	09.45	08.21	06.49	17.10 (K 11)	06.04	04.29	03.26	04.03	05.30	06.56		08.18		08.50	10.01
	15.38	17.11	18.33	14 17.24 (K 11)	21.00	22.28	23.38	23.10	21.39	19.55		18.15		15.41	14.51
17	09.43	08.18	06.46	17.12 (K 11)	06.01	04.26	03.26	04.05	05.33	06.58		08.21		08.53	10.03
	15.40	17.14	18.36	9 17.21 (K 11)	21.03	22.31	23.39	23.08	21.36	19.52		18.12		15.39	14.51
18	09.40	08.15	06.42		05.58	04.24	03.26	04.08	05.36	07.01		08.24		08.56	10.04
	15.43	17.17	18.38		21.06	22.34	23.39	23.05	21.33	19.49		18.08		15.36	14.51
19	09.38	08.11	06.39		05.54	04.21	03.25	04.10	05.39	07.04		08.27		08.59	10.05
	15.46	17.20	18.41		21.09	22.37	23.40	23.03	21.30	19.45		18.05		15.34	14.51
20	09.36	08.08	06.36		05.51	04.18	03.25	04.13	05.41	07.07		08.29		09.02	10.06
	15.49	17.23	18.44		21.12	22.40	23.40	23.00	21.26	19.42		18.02		15.31	14.51
21	09.34	08.05	06.32		05.48	04.15	03.25	04.16	05.44	07.09		08.32		09.05	10.06
	15.52	17.26	18.47		21.14	22.43	23.41	22.57	21.23	19.38		17.59		15.29	14.52
22	09.31	08.02	06.29		05.45	04.12	03.25	04.18	05.47	07.12		08.35		09.07	10.07
	15.55	17.29	18.50		21.17	22.45	23.41	22.55	21.20	19.35		17.55		15.26	14.52
23	09.29	07.59	06.26		05.41	04.10	03.25	04.21	05.50	07.15		08.38		09.10	10.07
	15.58	17.32	18.52		21.20	22.48	23.41	22.52	21.16	19.32		17.52		15.24	14.53
24	09.26	07.55	06.22		05.38	04.07	03.26	04.24	05.53	07.17		08.41		09.13	10.08
	16.01	17.35	18.55		21.23	22.51	23.41	22.49	21.13	19.28		17.49		15.22	14.53
25	09.24	07.52	06.19		05.35	04.05	03.26	04.27	05.56	07.20		07.44		09.16	10.08
	16.04	17.38	18.58		21.26	22.54	23.41	22.47	21.10	19.25		16.46		15.19	14.54
26	09.21	07.49	06.15		05.31	04.02	03.27	04.30	05.58	07.23	17.57 (K 11)	07.47		09.19	10.08
	16.07	17.41	19.01		21.29	22.56	23.40	22.44	21.06	19.22	5 18.02 (K 11)	16.43		15.17	14.55
27	09.19	07.46	06.12		05.28	04.00	03.28	04.32	06.01	07.25	17.52 (K 11)	07.50		09.21	10.08
	16.10	17.44	19.04		21.32	22.59	23.40	22.41	21.03	19.18	13 18.05 (K 11)	16.40		15.15	14.56
28	09.16	07.42	06.09		05.25	03.57	03.29	04.35	06.04	07.28	17.50 (K 11)	07.53		09.24	10.08
	16.13	17.47	19.06		21.35	23.02	23.39	22.38	21.00	19.15	17 18.07 (K 11)	16.36		15.13	14.57
29	09.14		07.05		05.22	03.55	03.30	04.38	06.07	07.31	17.48 (K 11)	07.56		09.27	10.08
	16.16		20.09		21.38	23.04	23.38	22.35	20.56	19.11	20 18.08 (K 11)	16.33		15.11	14.58
30	09.11		07.02		05.18	03.53	03.31	04.41	06.09	07.34	17.47 (K 11)	07.59		09.29	10.07
	16.19		20.12		21.41	23.07	23.38	22.32	20.53	19.08	22 18.09 (K 11)	16.30		15.09	15.00
31	09.08		06.58			03.50		04.44	06.12			08.02			10.07
	16.22		20.15			23.09		22.29	20.50			16.27			15.01
Potential sun hours	185	243	364		446	557	601	591	501	391		308		208	154
Total, worst case				281							77		213		
Sun reduction				0,40							0,36		0,26		
Oper. time red.				0,97							0,97		0,97		
Wind dir. red.				0,60							0,60		0,60		
Total reduction				0,23							0,21		0,15		
Total, real				66							16		33		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **Shadow receptor:** AP - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (52)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April		May	June	July	August		September		October	November	December
1	10.06	09.05	07.39	06.55		05.15	03.48	03.33	04.47		06.15	19.57 (K 12)	07.36	08.05	09.32
	15.03	16.25	17.50	20.18		21.44	23.11	23.36	22.26		20.46 12	20.09 (K 12)	19.05	16.24	15.08
2	10.05	09.02	07.36	06.52		05.12	03.46	03.34	04.50		06.18	19.58 (K 12)	07.39	08.08	09.34
	15.05	16.28	17.53	20.20		21.47	23.14	23.35	22.23		20.43 7	20.05 (K 12)	19.01	16.21	15.06
3	10.04	09.00	07.32	06.48		05.09	03.44	03.35	04.53		06.20	20.01 (K 12)	07.42	08.11	09.37
	15.07	16.31	17.56	20.23		21.50	23.16	23.34	22.20		20.39 2	20.03 (K 12)	18.58	16.18	15.04
4	10.03	08.57	07.29	06.45		05.06	03.42	03.37	04.55		06.23		07.45	08.14	09.39
	15.09	16.35	17.59	20.26		21.53	23.18	23.33	22.17		20.36		18.55	16.15	15.03
5	10.02	08.54	07.26	06.42		05.03	03.41	03.39	04.58		06.26		07.47	08.17	09.41
	15.11	16.38	18.02	20.29		21.56	23.20	23.31	22.14		20.33		18.51	16.12	15.01
6	10.01	08.51	07.23	06.38		05.00	03.39	03.41	05.01		06.29		07.50	08.20	09.44
	15.13	16.41	18.04	20.32		21.59	23.22	23.30	22.11		20.29		18.48	16.09	15.00
7	10.00	08.48	07.19	06.35		04.56	03.37	03.42	05.04		06.31		07.53	08.23	09.46
	15.15	16.44	18.07	20.34		22.01	23.24	23.28	22.08		20.26		18.45	16.06	14.59
8	09.58	08.45	07.16	06.31		04.53	03.35	03.44	05.07		06.34		07.56	08.26	09.48
	15.17	16.47	18.10	20.37		22.04	23.26	23.26	22.05		20.23		18.41	16.03	14.57
9	09.57	08.42	07.13	06.28		04.50	03.34	03.47	05.10		06.37		07.58	08.29	09.50
	15.20	16.50	18.13	20.40	2	22.07	23.28	23.25	22.02		20.19		18.38	16.01	14.56
10	09.55	08.39	07.09	06.25		04.47	03.33	03.49	05.13		06.40		08.01	08.32	09.52
	15.22	16.53	18.16	20.43	7	22.10	23.30	23.23	21.58		20.16		18.35	15.58	14.55
11	09.54	08.36	07.06	06.21		04.44	03.31	03.51	05.16		06.42		08.04	08.35	09.54
	15.25	16.56	18.19	20.46	12	22.13	23.31	23.21	21.55		20.12		18.31	15.55	14.54
12	09.52	08.33	07.03	06.18		04.41	03.30	03.53	05.19		06.45		08.07	08.38	09.55
	15.27	16.59	18.21	20.49	16	22.16	23.33	23.19	21.52		20.09		18.28	15.52	14.54
13	09.50	08.30	06.59	06.15		04.38	03.29	03.55	05.22		06.48		08.09	08.41	09.57
	15.30	17.02	18.24	20.51	20	22.19	23.34	23.16	21.49		20.06		18.25	15.49	14.53
14	09.48	08.27	06.56	06.11		04.35	03.28	03.58	05.24		06.50		08.12	08.44	09.59
	15.32	17.05	18.27	20.54	24	22.22	23.35	23.14	21.46		20.02		18.21	15.47	14.52
15	09.46	08.24	06.52	06.08		04.32	03.27	04.00	05.27		06.53		08.15	08.47	10.00
	15.35	17.08	18.30	20.57	25	22.25	23.36	23.12	21.42		19.59		18.18	15.44	14.52
16	09.44	08.21	06.49	06.05		04.29	03.27	04.03	05.30		06.56		08.18	08.50	10.01
	15.38	17.11	18.33	21.00	26	22.28	23.37	23.10	21.39		19.55		18.15	15.41	14.52
17	09.42	08.18	06.46	06.01		04.26	03.26	04.05	05.33	20.06 (K 12)	06.58		08.21	08.53	10.02
	15.41	17.14	18.36	21.03	26	22.31	23.38	23.07	21.36 8	20.14 (K 12)	19.52		18.12	15.39	14.51
18	09.40	08.14	06.42	05.58		04.24	03.26	04.08	05.36	20.04 (K 12)	07.01		08.24	08.56	10.04
	15.43	17.17	18.38	21.06	26	22.34	23.39	23.05	21.33 13	20.17 (K 12)	19.49		18.08	15.36	14.51
19	09.38	08.11	06.39	05.55		04.21	03.26	04.11	05.39	20.01 (K 12)	07.04		08.26	08.59	10.04
	15.46	17.20	18.41	21.09	25	22.37	23.40	23.02	21.29 17	20.18 (K 12)	19.45		18.05	15.34	14.51
20	09.36	08.08	06.36	05.51		04.18	03.25	04.13	05.41	20.00 (K 12)	07.07		08.29	09.01	10.05
	15.49	17.23	18.44	21.11	24	22.40	23.40	23.00	21.26 20	20.20 (K 12)	19.42		18.02	15.31	14.52
21	09.34	08.05	06.32	05.48		04.15	03.25	04.16	05.44	19.58 (K 12)	07.09		08.32	09.04	10.06
	15.52	17.26	18.47	21.14	23	22.42	23.40	22.57	21.23 22	20.20 (K 12)	19.38		17.59	15.29	14.52
22	09.31	08.02	06.29	05.45		04.13	03.25	04.19	05.47	19.57 (K 12)	07.12		08.35	09.07	10.07
	15.55	17.29	18.50	21.17	21	22.45	23.41	22.55	21.20 24	20.21 (K 12)	19.35		17.55	15.26	14.52
23	09.29	07.59	06.25	05.41		04.10	03.26	04.21	05.50	19.57 (K 12)	07.15		08.38	09.10	10.07
	15.58	17.32	18.52	21.20	19	22.48	23.41	22.52	21.16 24	20.21 (K 12)	19.32		17.52	15.24	14.53
24	09.26	07.55	06.22	05.38		19.56 (K 12)	04.07	03.26	04.24	05.53	19.56 (K 12)	07.17		08.41	09.13	10.08
	16.01	17.35	18.55	21.23	16	20.12 (K 12)	22.51	23.41	22.49	21.13 25	20.21 (K 12)	19.28		17.49	15.22	14.53
25	09.24	07.52	06.19	05.35		19.58 (K 12)	04.05	03.27	04.27	05.56	19.56 (K 12)	07.20		07.44	09.16	10.08
	16.04	17.38	18.58	21.26	12	20.10 (K 12)	22.53	23.40	22.46	21.10 25	20.21 (K 12)	19.25		16.46	15.20	14.54
26	09.21	07.49	06.15	05.32		20.01 (K 12)	04.02	03.27	04.30	05.58	19.55 (K 12)	07.23		07.47	09.19	10.08
	16.07	17.41	19.01	21.29	6	20.07 (K 12)	22.56	23.40	22.44	21.06 25	20.20 (K 12)	19.21		16.43	15.17	14.55
27	09.19	07.46	06.12	05.28			04.00	03.28	04.33	06.01	19.55 (K 12)	07.25		07.50	09.21	10.08
	16.10	17.44	19.04	21.32			22.59	23.40	22.41	21.03 26	20.21 (K 12)	19.18		16.40	15.15	14.56
28	09.16	07.42	06.09	05.25			03.57	03.29	04.35	06.04	19.55 (K 12)	07.28		07.53	09.24	10.08
	16.13	17.47	19.06	21.35			23.01	23.39	22.38	21.00 24	20.19 (K 12)	19.15		16.36	15.13	14.57
29	09.13		07.05	05.22			03.55	03.30	04.38	06.07	19.55 (K 12)	07.31		07.56	09.27	10.07
	16.16		20.09	21.38			23.04	23.38	22.35	20.56 24	20.19 (K 12)	19.11		16.33	15.11	14.59
30	09.11		07.02	05.19			03.53	03.31	04.41	06.09	19.56 (K 12)	07.34		07.59	09.29	10.07
	16.19		20.12	21.41			23.06	23.37	22.32	20.53 20	20.16 (K 12)	19.08		16.30	15.10	15.00
31	09.08		06.58				03.51		04.44	06.12	19.56 (K 12)			08.02		10.07
	16.22		20.15				23.09		22.29	20.50 16	20.12 (K 12)			16.27		15.01
Potential sun hours	185	243	364	446			556	600	590	501		391		308	208	155
Total, worst case					330						313		21			
Sun reduction					0,42						0,41		0,36			
Oper. time red.					0,97						0,97		0,97			
Wind dir. red.					0,58						0,58		0,58			
Total reduction					0,24						0,24		0,20			
Total, real					79						74		4			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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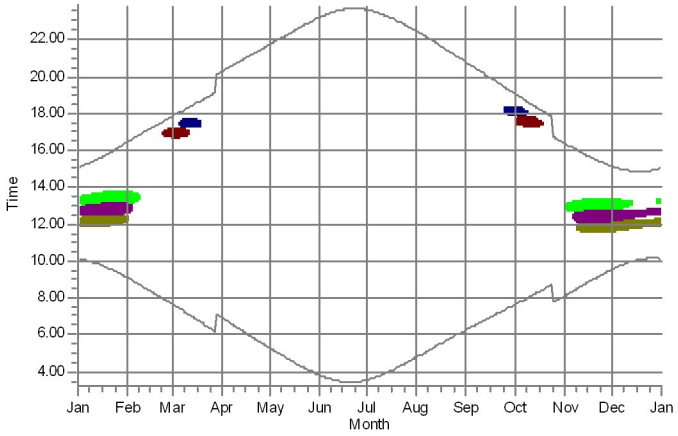
Calculated:
29/11/2024 10.34/4.0.552

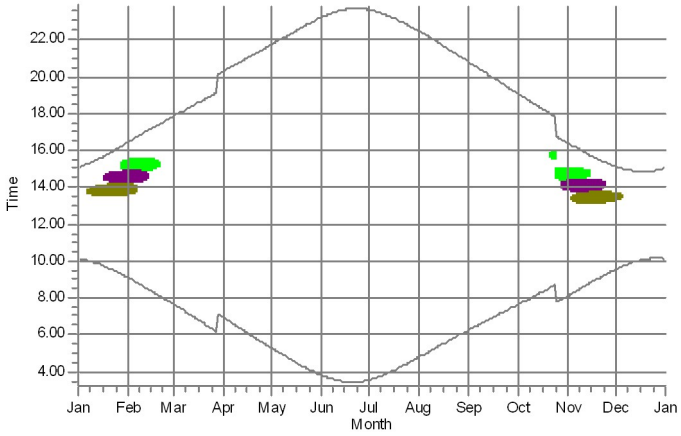
SHADOW - Calendar per WTG, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

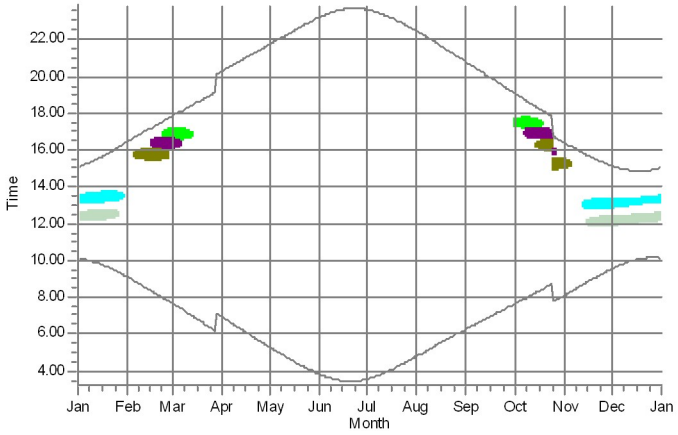
K 01: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



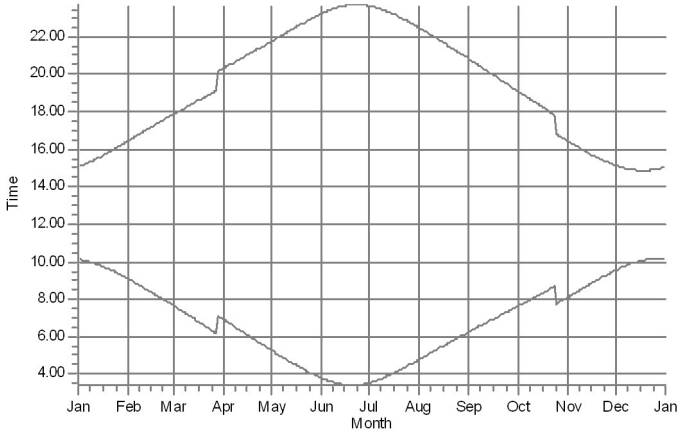
K 02: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 149,5 m (TOT: 231,0 m)



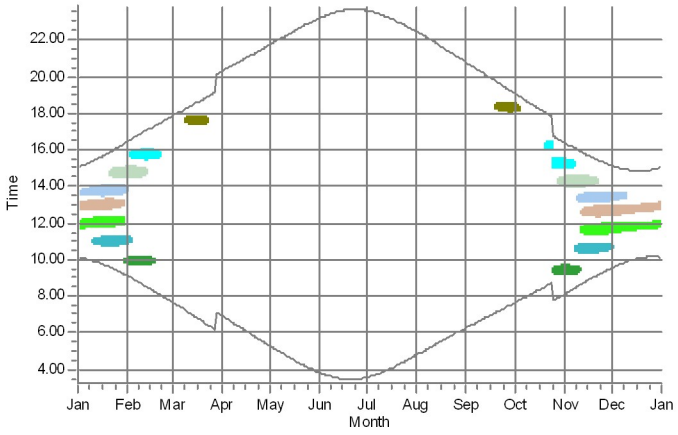
K 03: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



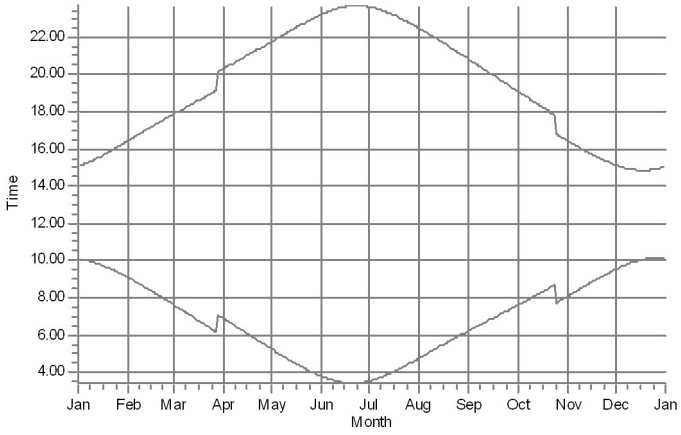
K 04: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 05: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 06: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 148,5 m (TOT: 230,0 m)



Shadow receptors

AJ: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)
AI: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)
AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)
AF: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)
AG: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)
AD: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)
AC: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)
AB: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)
Z: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)
Y: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)
X: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)
W: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

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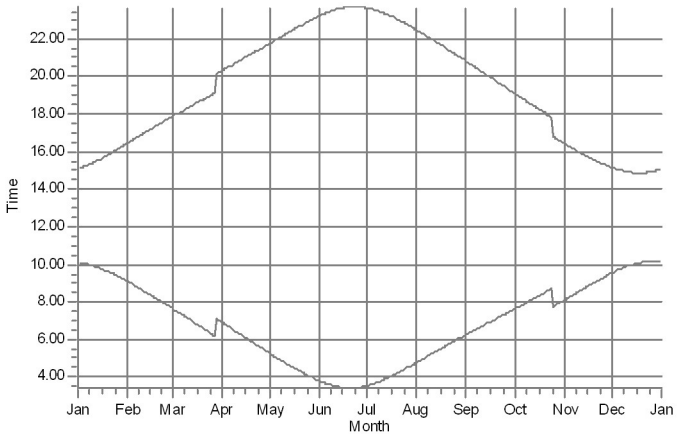
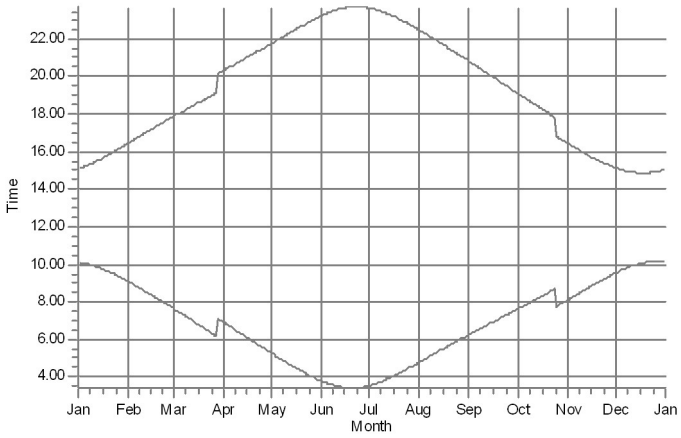
SHADOW - Calendar per WTG, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

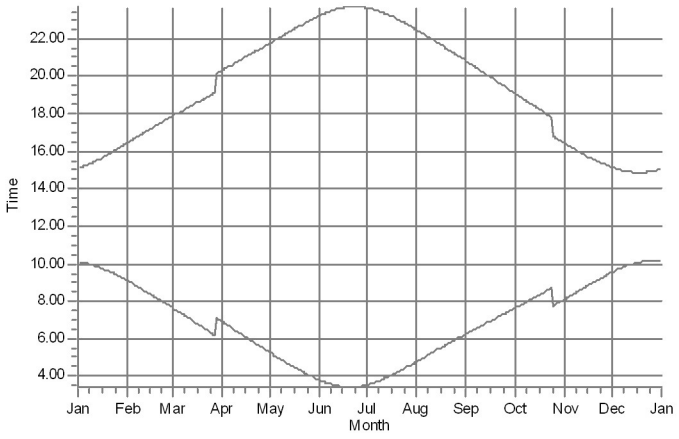
K 07: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 149,5 m (TOT: 231,0 m)



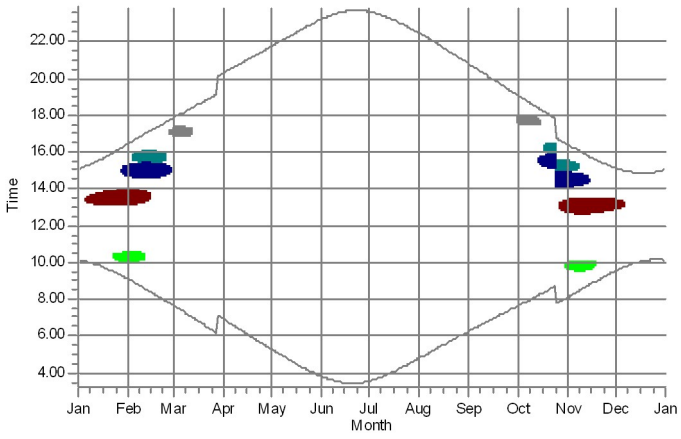
K 08: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 149,5 m (TOT: 231,0 m)



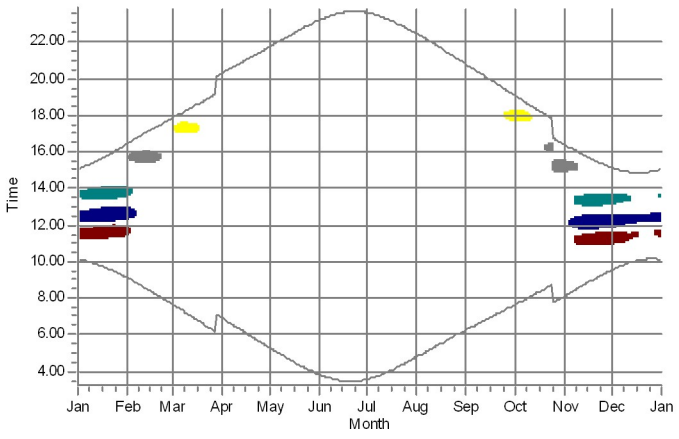
K 09: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



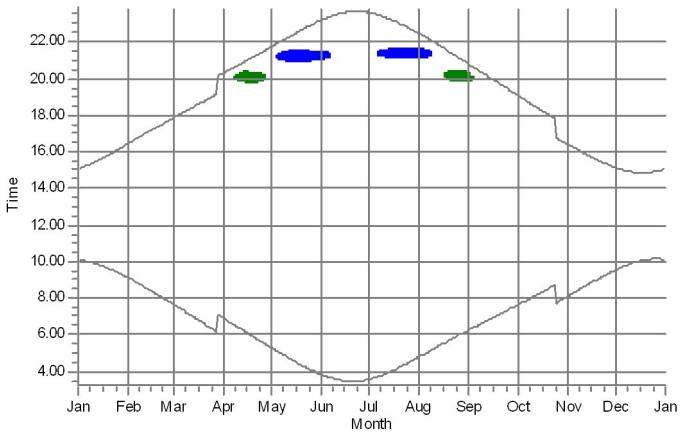
K 10: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 11: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 12: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



Shadow receptors

AP: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (52)
AO: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (53)
AN: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)
AM: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)
AK: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)
AJ: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)
AI: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)
AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)

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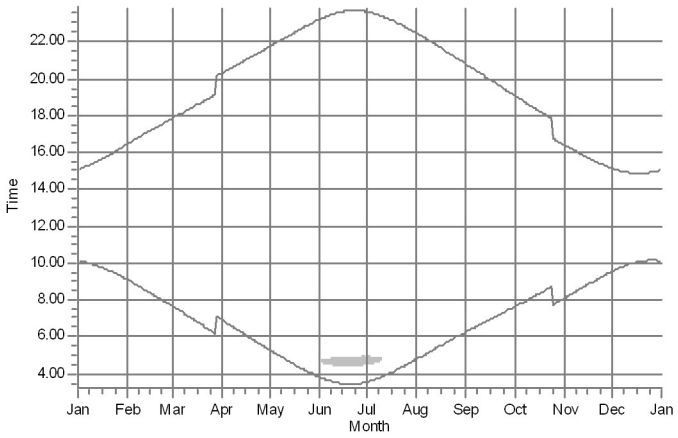
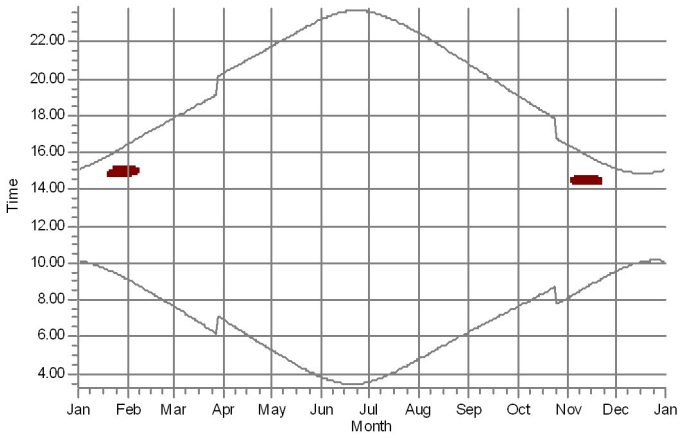
SHADOW - Calendar per WTG, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

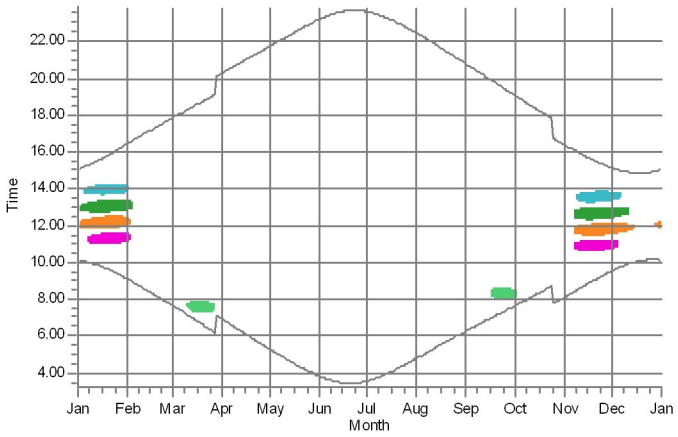
K 13: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



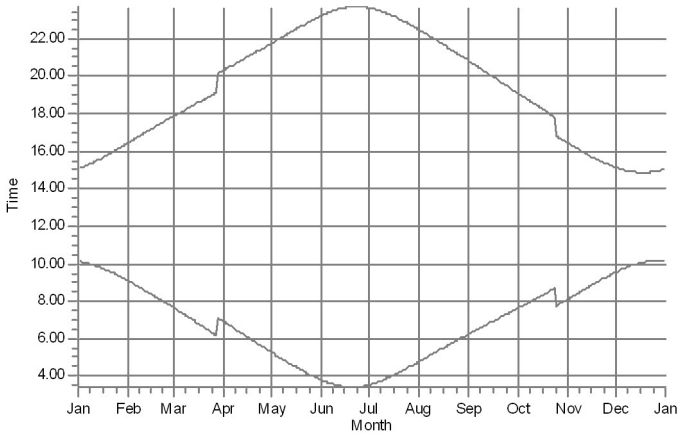
K 14: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



WTG 01: NORDEX N175/6.X-6800 6800 175.0 ┣! hub: 171,5 m (TOT: 259,0



WTG 02: NORDEX N175/6.X-6800 6800 175.0 ┣! hub: 171,5 m (TOT: 259,0



Shadow receptors

AI: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)
AE: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)
X: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)
W: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)
T: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)
S: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)
O: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)

Project:
20220502 Kattiharju extension

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 01 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06 12.32-12.51/19 13.11-13.22/11	09.06 12.41-13.02/21 13.11-13.42/31	07.39 16.47-17.11/24	06.55	05.16	03.48
	15.04 11.57-12.16/19	16.25 12.14-12.20/6	17.50	20.18	21.44	23.12
2	10.06 12.31-12.51/20 13.09-13.23/14	09.03 12.43-13.00/17	07.36 16.46-17.11/25	06.52	05.12	03.46
	15.05 11.57-12.17/20	16.28 13.11-13.41/30	17.53	20.21	21.47	23.14
3	10.05 12.32-12.53/21 13.09-13.25/16	09.00 12.46-12.59/13	07.33 16.46-17.11/25	06.49	05.09	03.44
	15.07 11.57-12.18/21	16.32 13.13-13.41/28	17.56	20.23	21.50	23.16
4	10.04 12.32-12.54/22 13.08-13.25/17	08.57 13.13-13.39/26	07.29 16.45-17.11/26	06.45	05.06	03.42
	15.09 11.57-12.19/22	16.35	17.59	20.26	21.53	23.19
5	10.03 12.32-12.55/23 13.09-13.27/18	08.54 13.15-13.39/24	07.26 16.46-17.11/25	06.42	05.03	03.41
	15.11 11.57-12.20/23	16.38	18.02	20.29	21.56	23.21
6	10.01 12.31-12.55/24 13.08-13.28/20	08.51 13.17-13.37/20	07.23 16.47-17.10/23	06.38	05.00	03.39
	15.13 11.57-12.20/23	16.41	18.05 17.26-17.30/4	20.32	21.59	23.23
7	10.00 12.31-12.56/25 13.07-13.29/22	08.48 13.20-13.35/15	07.20 16.47-17.09/22	06.35	04.57	03.37
	15.15 11.57-12.21/24	16.44	18.07 17.23-17.33/10	20.35	22.02	23.25
8	09.59 12.32-12.58/26 13.08-13.31/23	08.45 13.25-13.31/6	07.16 16.48-17.08/20	06.32	04.53	03.35
	15.18 11.57-12.22/25	16.47	18.10 17.22-17.36/14	20.38	22.05	23.27
9	09.57 12.32-12.58/26 13.08-13.32/24	08.42	07.13 16.48-17.06/18	06.28	04.50	03.34
	15.20 11.57-12.23/26	16.50	18.13 17.20-17.38/18	20.40	22.08	23.28
10	09.56 12.32-12.59/27 13.07-13.33/26	08.39	07.10 16.51-17.05/14	06.25	04.47	03.33
	15.22 11.57-12.24/27	16.53	18.16 17.20-17.41/21	20.43	22.11	23.30
11	09.54 12.32-13.00/28 13.07-13.34/27	08.36	07.06 16.53-17.01/8	06.21	04.44	03.31
	15.25 11.58-12.24/26	16.56	18.19 17.19-17.40/21	20.46	22.14	23.32
12	09.53 12.32-13.01/29 13.07-13.35/28	08.33	07.03 17.19-17.41/22	06.18	04.41	03.30
	15.27 11.58-12.25/27	16.59	18.22	20.49	22.17	23.33
13	09.51 12.32-13.02/30 13.07-13.36/29	08.30	06.59 17.18-17.40/22	06.15	04.38	03.29
	15.30 11.58-12.26/28	17.02	18.25	20.52	22.20	23.35
14	09.49 12.31-13.01/30 13.06-13.36/30	08.27	06.56 17.19-17.39/20	06.11	04.35	03.28
	15.32 11.57-12.25/28	17.05	18.27	20.55	22.23	23.36
15	09.47 12.31-13.02/31 13.06-13.37/31	08.24	06.53 17.19-17.38/19	06.08	04.32	03.27
	15.35 11.58-12.26/28	17.08	18.30	20.57	22.26	23.37
16	09.45 12.32-13.03/31 13.06-13.38/32	08.21	06.49 17.20-17.37/17	06.05	04.29	03.27
	15.38 11.58-12.27/29	17.12	18.33	21.00	22.28	23.38
17	09.43 12.32-13.04/32 13.06-13.39/33	08.18	06.46 17.22-17.36/14	06.01	04.27	03.26
	15.41 11.59-12.27/28	17.15	18.36	21.03	22.31	23.39
18	09.41 12.33-13.04/31 13.07-13.40/33	08.15	06.43 17.23-17.33/10	05.58	04.24	03.26
	15.43 11.59-12.28/29	17.18	18.39	21.06	22.34	23.40
19	09.39 12.32-13.04/32 13.06-13.40/34	08.12	06.39	05.55	04.21	03.25
	15.46 11.59-12.28/29	17.21	18.41	21.09	22.37	23.40
20	09.36 12.33-13.05/32 13.06-13.41/35	08.08	06.36	05.51	04.18	03.25
	15.49 11.59-12.28/29	17.24	18.44	21.12	22.40	23.41
21	09.34 12.33-13.05/32 13.07-13.41/34	08.05	06.33	05.48	04.15	03.25
	15.52 12.00-12.29/29	17.27	18.47	21.15	22.43	23.41
22	09.32 12.33-13.05/32 13.06-13.41/35	08.02	06.29	05.45	04.13	03.25
	15.55 12.00-12.28/28	17.30	18.50	21.18	22.46	23.41
23	09.29 12.34-13.05/31 13.07-13.42/35	07.59	06.26	05.42	04.10	03.26
	15.58 12.01-12.29/28	17.32	18.53	21.21	22.48	23.41
24	09.27 12.34-13.06/32 13.07-13.43/36	07.56 16.54-16.58/4	06.22	05.38	04.07	03.26
	16.01 12.02-12.29/27	17.35	18.55	21.23	22.51	23.41
25	09.24 12.34-13.05/31 13.07-13.42/35	07.52 16.52-17.02/10	06.19	05.35	04.05	03.27
	16.04 12.02-12.28/26	17.38	18.58	21.26	22.54	23.41
26	09.22 12.35-13.05/30 13.08-13.43/35	07.49 16.50-17.05/15	06.16	05.32	04.02	03.27
	16.07 12.03-12.28/25	17.41	19.01	21.29	22.57	23.41
27	09.19 12.36-13.06/30 13.08-13.43/35	07.46 16.49-17.08/19	06.12	05.28	04.00	03.28
	16.10 12.04-12.28/24	17.44	19.04	21.32	22.59	23.40
28	09.16 12.36-13.05/29 13.08-13.43/35	07.43 16.47-17.11/24	06.09	05.25	03.57	03.29
	16.13 12.05-12.27/22	17.47	19.07	21.35	23.02	23.39
29	09.14 12.38-13.05/27 13.09-13.43/34		07.05	05.22	03.55	03.30
	16.16 12.06-12.26/20		20.09	21.38	23.04	23.39
30	09.11 12.38-13.04/26 13.09-13.42/33		07.02	05.19	03.53	03.31
	16.19 12.07-12.24/17		20.12	21.41	23.07	23.38
31	09.08 12.40-13.03/23 13.10-13.42/32		06.59		03.51	
	16.22 12.10-12.23/13		20.15		23.09	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	2514	309	442	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 01 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.33	04.47	06.15	07.37 17.58-18.20/22	08.05	09.32 12.14-12.42/28 12.48-13.15/27
	23.37	22.27	20.46	19.05	16.24	15.08 11.40-12.07/27
2	03.34	04.50	06.18	07.39 17.57-18.19/22	08.08	09.35 12.14-12.41/27 12.50-13.15/25
	23.36	22.24	20.43	19.02	16.21	15.06 11.40-12.06/26
3	03.35	04.53	06.21	07.42 17.29-17.41/12	08.11 12.53-13.01/8	09.37 12.15-12.42/27 12.51-13.15/24
	23.35	22.21	20.40	18.58 17.57-18.18/21	16.18	15.04 11.41-12.06/25
4	03.37	04.56	06.23	07.45 17.27-17.43/16	08.14 12.49-13.05/16	09.40 12.16-12.42/26 12.52-13.15/23
	23.33	22.18	20.36	18.55 17.58-18.17/19	16.15	15.03 11.42-12.07/25
5	03.39	04.59	06.26	07.48 17.25-17.44/19	08.17 12.47-13.07/20	09.42 12.16-12.41/25 12.53-13.14/21
	23.32	22.14	20.33	18.51 17.58-18.14/16	16.12	15.01 11.42-12.06/24
6	03.41	05.01	06.29	07.50 17.24-17.45/21	08.20 12.45-13.08/23	09.44 12.17-12.42/25 12.54-13.15/21
	23.30	22.11	20.30	18.48 17.59-18.11/12	16.09	15.00 11.43-12.06/23
7	03.42	05.04	06.32	07.53 17.23-17.46/23	08.23 12.20-12.25/5	09.46 12.18-12.41/23 12.55-13.14/19
	23.29	22.08	20.26	18.45 18.00-18.07/7	16.06 12.44-13.10/26	14.59 11.43-12.06/23
8	03.44	05.07	06.34	07.56 17.22-17.46/24	08.26 12.16-12.30/14	09.48 12.19-12.42/23 12.57-13.14/17
	23.27	22.05	20.23	18.41 18.03-18.04/1	16.04 12.43-13.12/29	14.57 11.45-12.06/21
9	03.47	05.10	06.37	07.59 17.21-17.46/25	08.29 12.13-12.31/18	09.50 12.20-12.41/21 12.58-13.13/15
	23.25	22.02	20.19	18.38	16.01 12.42-13.12/30	14.56 11.45-12.06/21
10	03.49	05.13	06.40	08.01 17.20-17.45/25	08.32 12.12-12.33/21 12.42-13.13/31	09.52 12.20-12.41/21 12.59-13.12/13
	23.23	21.59	20.16	18.35	15.58 11.44-11.51/7	14.55 11.47-12.07/20
11	03.51	05.16	06.43	08.04 17.20-17.45/25	08.35 12.11-12.35/24 12.41-13.13/32	09.54 12.22-12.42/20 13.01-13.12/11
	23.21	21.56	20.13	18.31	15.55 11.42-11.55/13	14.54 11.47-12.07/20
12	03.53	05.19	06.45	08.07 17.20-17.45/25	08.38 12.10-12.35/25 12.41-13.14/33	09.56 12.23-12.42/19 13.03-13.11/8
	23.19	21.52	20.09	18.28	15.52 11.39-11.56/17	14.54 11.48-12.07/19
13	03.55	05.22	06.48	08.10 17.20-17.44/24	08.41 12.09-12.37/28 12.41-13.15/34	09.57 12.23-12.41/18 13.04-13.09/5
	23.17	21.49	20.06	18.25	15.50 11.38-11.58/20	14.53 11.49-12.07/18
14	03.58	05.25	06.51	08.13 17.20-17.42/22	08.44 12.09-12.38/29 12.41-13.15/34	09.59 12.24-12.41/17
	23.15	21.46	20.02	18.22	15.47 11.37-12.00/23	14.52 11.49-12.06/17
15	04.00	05.27	06.53	08.15 17.21-17.39/18	08.47 12.08-12.38/30 12.40-13.15/35	10.00 12.26-12.42/16
	23.13	21.43	19.59	18.18	15.44 11.36-12.00/24	14.52 11.51-12.07/16
16	04.03	05.30	06.56	08.18 17.23-17.36/13	08.50 12.08-12.38/30 12.40-13.16/36	10.02 12.26-12.41/15
	23.10	21.40	19.56	18.15	15.41 11.36-12.01/25	14.52 11.51-12.07/16
17	04.05	05.33	06.59	08.21 17.24-17.33/9	08.53 12.08-12.39/31 12.41-13.16/35	10.03 12.27-12.41/14
	23.08	21.36	19.52	18.12	15.39 11.36-12.02/26	14.51 11.52-12.07/15
18	04.08	05.36	07.01	08.24 17.27-17.29/2	08.56 12.08-12.40/32 12.41-13.16/35	10.04 12.28-12.42/14
	23.05	21.33	19.49	18.09	15.36 11.36-12.03/27	14.51 11.53-12.07/14
19	04.11	05.39	07.04	08.27	08.59 12.09-12.40/31 12.42-13.17/35	10.05 12.29-12.42/13
	23.03	21.30	19.45	18.05	15.34 11.36-12.04/28	14.51 11.53-12.07/14
20	04.13	05.42	07.07	08.30	09.02 12.08-12.40/32 12.41-13.16/35	10.06 12.29-12.42/13
	23.00	21.26	19.42	18.02	15.31 11.35-12.03/28	14.52 11.54-12.07/13
21	04.16	05.44	07.09	08.33	09.05 12.08-12.40/32 12.42-13.16/34	10.07 12.30-12.42/12
	22.58	21.23	19.39	17.59	15.29 11.35-12.04/29	14.52 11.54-12.08/14
22	04.19	05.47	07.12	08.35	09.08 12.09-12.41/32 12.42-13.17/35	10.07 12.31-12.43/12
	22.55	21.20	19.35	17.56	15.27 11.36-12.04/28	14.52 11.55-12.09/14
23	04.21	05.50	07.15	08.38	09.11 12.09-12.41/32 12.43-13.17/34	10.08 12.31-12.43/12
	22.52	21.17	19.32	17.52	15.24 11.36-12.05/29	14.53 11.56-12.09/13
24	04.24	05.53	07.18	08.41	09.13 12.10-12.41/31 12.44-13.17/33	10.08 12.31-12.44/13
	22.50	21.13	19.29	17.49	15.22 11.36-12.05/29	14.53 11.56-12.10/14
25	04.27	05.56	07.20 18.07-18.15/8	07.44	09.16 12.10-12.42/32 12.45-13.17/32	10.08 12.31-12.44/13
	22.47	21.10	19.25	16.46	15.20 11.37-12.06/29	14.54 11.56-12.10/14
26	04.30	05.59	07.23 18.04-18.17/13	07.47	09.19 12.10-12.41/31 12.44-13.16/32	10.08 12.32-12.46/14
	22.44	21.07	19.22	16.43	15.18 11.36-12.05/29	14.55 11.57-12.11/14
27	04.33	06.01	07.26 18.02-18.19/17	07.50	09.22 12.11-12.41/30 12.45-13.16/31	10.08 12.32-12.47/15
	22.41	21.03	19.18	16.40	15.15 11.37-12.05/28	14.56 11.57-12.12/15
28	04.35	06.04	07.28 18.00-18.19/19	07.53	09.24 12.11-12.42/31 12.46-13.16/30	10.08 12.31-12.47/16
	22.38	21.00	19.15	16.37	15.13 11.38-12.06/28	14.57 11.56-12.12/16
29	04.38	06.07	07.31 17.59-18.19/20	07.56	09.27 12.12-12.42/30 12.47-13.16/29	10.08 12.32-12.48/16
	22.35	20.57	19.12	16.34	15.12 11.38-12.06/28	14.59 11.57-12.13/16
30	04.41	06.10	07.34 17.59-18.20/21	07.59	09.30 12.13-12.42/29 12.48-13.16/28	10.08 12.32-12.49/17 13.13-13.16/3
	22.33	20.53	19.08	16.30	15.10 11.39-12.06/27	15.00 11.57-12.14/17
31	04.44	06.12		08.02		10.07 12.31-12.49/18 13.11-13.19/8
	22.30	20.50		16.27		15.01 11.57-12.15/18
Potential sun hours	591	501	391	308	208	154
Sum of minutes with flicker	0	0	98	423	2027	1365

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 02 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06	09.06 14.20-14.51/31 15.01-15.25/24	07.39	06.55	05.16	03.48
	15.04	16.25 13.41-14.07/26	17.50	20.18	21.44	23.12
2	10.06	09.03 14.19-14.50/31 14.59-15.26/27	07.36	06.52	05.12	03.46
	15.05	16.29 13.41-14.06/25	17.53	20.21	21.47	23.14
3	10.05	09.00 14.20-14.51/31 14.59-15.27/28	07.33	06.49	05.09	03.44
	15.07	16.32 13.43-14.05/22	17.56	20.23	21.50	23.16
4	10.04	08.57 14.20-14.50/30 14.58-15.27/29	07.30	06.45	05.06	03.42
	15.09	16.35 13.43-14.04/21	17.59	20.26	21.53	23.19
5	10.03	08.54 14.20-14.50/30 14.58-15.28/30	07.26	06.42	05.03	03.41
	15.11	16.38 13.46-14.03/17	18.02	20.29	21.56	23.21
6	10.02	08.51 14.20-14.49/29 14.58-15.28/30	07.23	06.38	05.00	03.39
	15.13	16.41 13.49-14.01/12	18.05	20.32	21.59	23.23
7	10.00 13.43-13.47/4	08.48 14.22-14.49/27	07.20	06.35	04.57	03.37
	15.15	16.44 14.58-15.29/31	18.08	20.35	22.02	23.25
8	09.59 13.42-13.51/9	08.46 14.23-14.49/26	07.16	06.32	04.54	03.36
	15.18	16.47 14.58-15.30/32	18.10	20.38	22.05	23.27
9	09.57 13.40-13.53/13	08.43 14.23-14.48/25	07.13	06.28	04.50	03.34
	15.20	16.50 14.58-15.29/31	18.13	20.40	22.08	23.29
10	09.56 13.39-13.55/16	08.40 14.25-14.47/22	07.10	06.25	04.47	03.33
	15.22	16.53 14.58-15.29/31	18.16	20.43	22.11	23.30
11	09.54 13.39-13.56/17	08.37 14.26-14.45/19	07.06	06.22	04.44	03.31
	15.25	16.56 14.58-15.29/31	18.19	20.46	22.14	23.32
12	09.53 13.38-13.58/20	08.33 14.29-14.44/15	07.03	06.18	04.41	03.30
	15.27	16.59 14.58-15.29/31	18.22	20.49	22.17	23.33
13	09.51 13.38-13.59/21	08.30 14.32-14.40/8	07.00	06.15	04.38	03.29
	15.30	17.02 14.58-15.28/30	18.25	20.52	22.20	23.35
14	09.49 13.37-13.59/22	08.27 14.59-15.28/29	06.56	06.11	04.35	03.28
	15.33	17.05	18.27	20.55	22.23	23.36
15	09.47 13.37-14.00/23	08.24 15.00-15.27/27	06.53	06.08	04.32	03.27
	15.35	17.09	18.30	20.57	22.26	23.37
16	09.45 13.37-14.02/25	08.21 15.01-15.26/25	06.49	06.05	04.30	03.27
	15.38	17.12	18.33	21.00	22.28	23.38
17	09.43 13.37-14.03/26	08.18 15.03-15.25/22	06.46	06.01	04.27	03.26
	15.41	17.15	18.36	21.03	22.31	23.39
18	09.41 14.28-14.34/6	08.15 15.04-15.23/19	06.43	05.58	04.24	03.26
	15.44 13.37-14.04/27	17.18	18.39	21.06	22.34	23.40
19	09.39 14.25-14.37/12	08.12 15.07-15.21/14	06.39	05.55	04.21	03.26
	15.46 13.36-14.04/28	17.21	18.42	21.09	22.37	23.40
20	09.36 14.24-14.40/16	08.08 15.11-15.16/5	06.36	05.51	04.18	03.25
	15.49 13.36-14.05/29	17.24	18.44	21.12	22.40	23.41
21	09.34 14.23-14.42/19	08.05	06.33	05.48	04.15	03.25
	15.52 13.37-14.06/29	17.27	18.47	21.15	22.43	23.41
22	09.32 14.22-14.43/21	08.02	06.29	05.45	04.13	03.25
	15.55 13.36-14.05/29	17.30	18.50	21.18	22.46	23.41
23	09.29 14.21-14.44/23	07.59	06.26	05.42	04.10	03.26
	15.58 13.36-14.06/30	17.33	18.53	21.21	22.48	23.41
24	09.27 14.21-14.46/25	07.56	06.22	05.38	04.07	03.26
	16.01 13.37-14.07/30	17.36	18.55	21.24	22.51	23.41
25	09.24 14.20-14.46/26	07.52	06.19	05.35	04.05	03.27
	16.04 13.36-14.07/31	17.38	18.58	21.26	22.54	23.41
26	09.22 14.20-14.47/27	07.49	06.16	05.32	04.02	03.27
	16.07 13.37-14.07/30	17.41	19.01	21.29	22.57	23.41
27	09.19 14.20-14.48/28	07.46	06.12	05.28	04.00	03.28
	16.10 13.38-14.08/30	17.44	19.04	21.32	22.59	23.40
28	09.17 14.19-14.48/29 15.06-15.17/11	07.43	06.09	05.25	03.57	03.29
	16.13 13.38-14.07/29	17.47	19.07	21.35	23.02	23.39
29	09.14 14.19-14.49/30 15.04-15.20/16		07.05	05.22	03.55	03.30
	16.16 13.38-14.07/29		20.09	21.38	23.04	23.39
30	09.11 14.19-14.49/30 15.02-15.21/19		07.02	05.19	03.53	03.31
	16.19 13.38-14.07/29		20.12	21.41	23.07	23.38
31	09.08 14.19-14.50/31 15.01-15.23/22		06.59		03.51	
	16.22 13.39-14.07/28		20.15		23.09	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	995	973	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 02 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October		November		December	
1	03.33	04.47	06.15	07.37		08.05	13.54-14.17/23	09.32	13.21-13.39/18
	23.37	22.27	20.47	19.05		16.24	14.27-14.59/32	15.08	
2	03.34	04.50	06.18	07.39		08.08	13.52-14.17/25	09.35	13.22-13.37/15
	23.36	22.24	20.43	19.02		16.21	14.27-14.58/31	15.06	
3	03.35	04.53	06.21	07.42		08.11	13.52-14.19/27	09.37	13.23-13.37/14
	23.35	22.21	20.40	18.58		16.18	14.28-14.59/31	15.04	
4	03.37	04.56	06.23	07.45		08.14	13.51-14.19/28 14.27-14.58/31	09.40	13.26-13.36/10
	23.33	22.18	20.36	18.55		16.15	13.23-13.25/2	15.03	
5	03.39	04.59	06.26	07.48		08.17	13.51-14.20/29 14.28-14.59/31	09.42	13.28-13.33/5
	23.32	22.15	20.33	18.52		16.12	13.18-13.31/13	15.01	
6	03.41	05.01	06.29	07.50		08.20	13.50-14.20/30 14.28-14.58/30	09.44	
	23.30	22.11	20.30	18.48		16.09	13.15-13.32/17	15.00	
7	03.42	05.04	06.32	07.53		08.23	13.50-14.21/31 14.29-14.58/29	09.46	
	23.29	22.08	20.26	18.45		16.06	13.14-13.34/20	14.59	
8	03.44	05.07	06.34	07.56		08.26	13.50-14.21/31 14.30-14.57/27	09.48	
	23.27	22.05	20.23	18.41		16.04	13.13-13.36/23	14.57	
9	03.47	05.10	06.37	07.59		08.29	13.50-14.21/31 14.30-14.56/26	09.50	
	23.25	22.02	20.19	18.38		16.01	13.12-13.36/24	14.56	
10	03.49	05.13	06.40	08.01		08.32	13.50-14.21/31 14.32-14.56/24	09.52	
	23.23	21.59	20.16	18.35		15.58	13.11-13.38/27	14.55	
11	03.51	05.16	06.43	08.04		08.35	13.51-14.22/31 14.32-14.54/22	09.54	
	23.21	21.56	20.13	18.32		15.55	13.11-13.39/28	14.54	
12	03.53	05.19	06.45	08.07		08.38	13.51-14.21/30 14.34-14.53/19	09.56	
	23.19	21.53	20.09	18.28		15.52	13.10-13.38/28	14.54	
13	03.56	05.22	06.48	08.10		08.41	13.51-14.21/30 14.36-14.52/16	09.58	
	23.17	21.49	20.06	18.25		15.50	13.10-13.39/29	14.53	
14	03.58	05.25	06.51	08.13		08.44	13.52-14.21/29 14.39-14.50/11	09.59	
	23.15	21.46	20.03	18.22		15.47	13.10-13.40/30	14.52	
15	04.00	05.27	06.53	08.15		08.47	13.52-14.20/28	10.00	
	23.13	21.43	19.59	18.18		15.44	13.10-13.40/30	14.52	
16	04.03	05.30	06.56	08.18		08.50	13.53-14.20/27	10.02	
	23.10	21.40	19.56	18.15		15.42	13.10-13.40/30	14.52	
17	04.05	05.33	06.59	08.21		08.53	13.54-14.20/26	10.03	
	23.08	21.36	19.52	18.12		15.39	13.10-13.41/31	14.51	
18	04.08	05.36	07.01	08.24		08.56	13.55-14.20/25	10.04	
	23.05	21.33	19.49	18.09		15.36	13.11-13.41/30	14.51	
19	04.11	05.39	07.04	08.27		08.59	13.56-14.19/23	10.05	
	23.03	21.30	19.46	18.05		15.34	13.11-13.41/30	14.51	
20	04.13	05.42	07.07	08.30		09.02	13.57-14.18/21	10.06	
	23.00	21.27	19.42	18.02		15.31	13.11-13.40/29	14.52	
21	04.16	05.45	07.10	08.33		09.05	13.58-14.17/19	10.07	
	22.58	21.23	19.39	17.59		15.29	13.12-13.41/29	14.52	
22	04.19	05.47	07.12	08.36	15.39-15.48/9	09.08	14.00-14.16/16	10.07	
	22.55	21.20	19.35	17.56		15.27	13.12-13.41/29	14.52	
23	04.21	05.50	07.15	08.38	15.36-15.52/16	09.11	14.02-14.14/12	10.08	
	22.52	21.17	19.32	17.52		15.24	13.13-13.41/28	14.53	
24	04.24	05.53	07.18	08.41	15.34-15.54/20	09.13	14.05-14.12/7	10.08	
	22.50	21.13	19.29	17.49		15.22	13.14-13.41/27	14.53	
25	04.27	05.56	07.20	07.44	14.32-14.55/23	09.16	13.15-13.41/26	10.08	
	22.47	21.10	19.25	16.46		15.20		14.54	
26	04.30	05.59	07.23	07.47	14.30-14.56/26	09.19	13.15-13.40/25	10.08	
	22.44	21.07	19.22	16.43		15.18		14.55	
27	04.33	06.01	07.26	07.50	14.30-14.57/27	09.22	13.16-13.40/24	10.08	
	22.41	21.03	19.18	16.40		15.16		14.56	
28	04.35	06.04	07.28	07.53	14.29-14.57/28	09.24	13.17-13.39/22	10.08	
	22.38	21.00	19.15	16.37		15.14		14.57	
29	04.38	06.07	07.31	07.56	14.01-14.11/10	09.27	13.18-13.39/21	10.08	
	22.36	20.57	19.12	16.34	14.29-14.58/29	15.12		14.59	
30	04.41	06.10	07.34	07.59	13.58-14.13/15	09.30	13.20-13.39/19	10.08	
	22.33	20.53	19.08	16.30	14.28-14.58/30	15.10		15.00	
31	04.44	06.12		08.02	13.55-14.15/20			10.07	
	22.30	20.50		16.27	14.27-14.58/31			15.02	
Potential sun hours	591	501	391	308		208		154	
Sum of minutes with flicker	0	0	0	284		1641		62	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 03 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06 12.13-12.33/20	09.06	07.39 16.09-16.36/27	06.55	05.16	03.48
	15.04 13.12-13.29/17	16.25	17.50 16.42-17.07/25	20.18	21.44	23.12
2	10.06 12.13-12.34/21	09.03	07.36 16.10-16.35/25	06.52	05.12	03.46
	15.05 13.12-13.30/18	16.29	17.53 16.41-17.07/26	20.21	21.47	23.14
3	10.05 12.13-12.34/21	09.00	07.33 16.11-16.34/23	06.49	05.09	03.44
	15.07 13.12-13.31/19	16.32	17.56 16.41-17.08/27	20.24	21.50	23.17
4	10.04 12.14-12.35/21	08.57	07.30 16.13-16.33/20	06.45	05.06	03.42
	15.09 13.12-13.32/20	16.35	17.59 16.41-17.08/27	20.26	21.53	23.19
5	10.03 12.13-12.36/23	08.54	07.26 16.14-16.30/16	06.42	05.03	03.41
	15.11 13.12-13.32/20	16.38	18.02 16.40-17.07/27	20.29	21.56	23.21
6	10.02 12.14-12.37/23	08.51 15.40-15.50/10	07.23 16.18-16.27/9	06.38	05.00	03.39
	15.13 13.12-13.33/21	16.41	18.05 16.40-17.07/27	20.32	21.59	23.23
7	10.00 12.14-12.37/23	08.49 15.37-15.53/16	07.20 16.40-17.06/26	06.35	04.57	03.37
	15.15 13.13-13.34/21	16.44	18.08	20.35	22.02	23.25
8	09.59 12.14-12.38/24	08.46 15.36-15.55/19	07.16 16.41-17.06/25	06.32	04.54	03.36
	15.18 13.13-13.35/22	16.47	18.10	20.38	22.05	23.27
9	09.58 12.15-12.38/23	08.43 15.34-15.56/22	07.13 16.41-17.04/23	06.28	04.50	03.34
	15.20 13.13-13.36/23	16.50	18.13	20.40	22.08	23.29
10	09.56 12.15-12.39/24	08.40 15.33-15.58/25	07.10 16.42-17.04/22	06.25	04.47	03.33
	15.22 13.13-13.36/23	16.53	18.16	20.43	22.11	23.30
11	09.54 12.15-12.39/24	08.37 15.32-15.58/26	07.06 16.43-17.01/18	06.22	04.44	03.31
	15.25 13.13-13.37/24	16.56	18.19	20.46	22.14	23.32
12	09.53 12.16-12.40/24	08.34 15.32-16.00/28	07.03 16.45-16.59/14	06.18	04.41	03.30
	15.27 13.13-13.38/25	16.59	18.22	20.49	22.17	23.33
13	09.51 12.16-12.40/24	08.30 15.31-16.00/29	07.00 16.48-16.55/7	06.15	04.38	03.29
	15.30 13.14-13.38/24	17.02	18.25	20.52	22.20	23.35
14	09.49 12.17-12.41/24	08.27 15.31-16.00/29	06.56	06.11	04.35	03.28
	15.33 13.14-13.39/25	17.05	18.27	20.55	22.23	23.36
15	09.47 12.16-12.40/24	08.24 15.30-16.00/30	06.53	06.08	04.32	03.27
	15.35 13.13-13.38/25	17.09	18.30	20.58	22.26	23.37
16	09.45 12.17-12.41/24	08.21 16.18-16.29/11	06.49	06.05	04.30	03.27
	15.38 13.14-13.39/25	17.12 15.30-16.01/31	18.33	21.00	22.29	23.38
17	09.43 12.17-12.41/24	08.18 16.16-16.32/16	06.46	06.01	04.27	03.26
	15.41 13.14-13.40/26	17.15 15.30-16.01/31	18.36	21.03	22.31	23.39
18	09.41 12.18-12.42/24	08.15 16.14-16.34/20	06.43	05.58	04.24	03.26
	15.44 13.15-13.40/25	17.18 15.30-16.00/30	18.39	21.06	22.34	23.40
19	09.39 12.19-12.42/23	08.12 16.13-16.35/22	06.39	05.55	04.21	03.25
	15.46 13.15-13.40/25	17.21 15.31-16.00/29	18.42	21.09	22.37	23.40
20	09.36 12.19-12.41/22	08.09 16.11-16.36/25	06.36	05.51	04.18	03.25
	15.49 13.15-13.40/25	17.24 15.30-15.59/29	18.44	21.12	22.40	23.41
21	09.34 12.20-12.41/21	08.05 16.11-16.37/26	06.33	05.48	04.15	03.25
	15.52 13.16-13.40/24	17.27 15.31-15.59/28	18.47	21.15	22.43	23.41
22	09.32 12.22-12.41/19	08.02 16.10-16.37/27	06.29	05.45	04.13	03.25
	15.55 13.17-13.41/24	17.30 15.32-15.58/26	18.50	21.18	22.46	23.41
23	09.29 12.22-12.40/18	07.59 16.10-16.38/28	06.26	05.42	04.10	03.26
	15.58 13.17-13.40/23	17.33 15.33-15.57/24	18.53	21.21	22.49	23.41
24	09.27 12.24-12.39/15	07.56 16.09-16.37/28 16.51-16.58/7	06.22	05.38	04.07	03.26
	16.01 13.19-13.40/21	17.36 15.34-15.55/21	18.56	21.24	22.51	23.41
25	09.24 12.26-12.38/12	07.52 16.09-16.38/29 16.48-17.02/14	06.19	05.35	04.05	03.27
	16.04 13.20-13.40/20	17.38 15.36-15.54/18	18.58	21.26	22.54	23.41
26	09.22 12.28-12.36/8	07.49 16.08-16.37/29 16.45-17.04/19	06.16	05.32	04.02	03.27
	16.07 13.20-13.39/19	17.41 15.38-15.51/13	19.01	21.29	22.57	23.41
27	09.19 13.22-13.38/16	07.46 16.09-16.37/28	06.12	05.28	04.00	03.28
	16.10	17.44 16.44-17.06/22	19.04	21.32	22.59	23.40
28	09.17 13.24-13.36/12	07.43 16.08-16.36/28	06.09	05.25	03.57	03.29
	16.13	17.47 16.42-17.06/24	19.07	21.35	23.02	23.40
29	09.14 13.28-13.33/5		07.06	05.22	03.55	03.30
	16.16		20.10	21.38	23.05	23.39
30	09.11		07.02	05.19	03.53	03.31
	16.19		20.12	21.41	23.07	23.38
31	09.09		06.59		03.51	
	16.22		20.15		23.10	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	1170	917	414	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 03 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.33	04.47	06.15	07.37 17.26-17.38/12	08.05 15.03-15.27/24	09.32 11.57-12.22/25
	23.37	22.27	20.47	19.05	16.24	15.08 12.55-13.19/24
2	03.34	04.50	06.18	07.39 17.23-17.40/17	08.08 15.03-15.25/22	09.35 11.58-12.22/24
	23.36	22.24	20.43	19.02	16.21	15.06 12.56-13.20/24
3	03.35	04.53	06.21	07.42 17.20-17.40/20	08.11 15.05-15.25/20	09.37 11.58-12.22/24
	23.35	22.21	20.40	18.58	16.18	15.04 12.56-13.19/23
4	03.37	04.56	06.24	07.45 17.19-17.41/22	08.14 15.07-15.22/15	09.40 11.59-12.22/23
	23.33	22.18	20.36	18.55	16.15	15.03 12.57-13.19/22
5	03.39	04.59	06.26	07.48 17.18-17.42/24	08.17 15.10-15.19/9	09.42 12.00-12.23/23
	23.32	22.15	20.33	18.52	16.12	15.01 12.58-13.20/22
6	03.41	05.01	06.29	07.50 17.17-17.43/26	08.20	09.44 12.00-12.22/22
	23.30	22.12	20.30	18.48	16.09	15.00 12.58-13.19/21
7	03.42	05.04	06.32	07.53 16.57-16.59/2	08.23	09.46 12.01-12.23/22
	23.29	22.08	20.26	18.45 17.16-17.43/27	16.07	14.59 12.59-13.20/21
8	03.44	05.07	06.34	07.56 16.51-17.04/13	08.26	09.48 12.01-12.23/22
	23.27	22.05	20.23	18.42 17.16-17.43/27	16.04	14.57 13.00-13.19/19
9	03.47	05.10	06.37	07.59 16.48-17.06/18	08.29	09.51 12.02-12.24/22
	23.25	22.02	20.20	18.38 17.15-17.43/28	16.01	14.56 13.01-13.20/19
10	03.49	05.13	06.40	08.01 16.46-17.08/22	08.32	09.52 12.02-12.24/22
	23.23	21.59	20.16	18.35 17.15-17.43/28	15.58	14.55 13.02-13.20/18
11	03.51	05.16	06.43	08.04 16.45-17.09/24	08.35	09.54 12.03-12.24/21
	23.21	21.56	20.13	18.32 17.15-17.42/27	15.55	14.54 13.02-13.20/18
12	03.53	05.19	06.45	08.07 16.44-17.09/25	08.38	09.56 12.04-12.24/20
	23.19	21.53	20.09	18.28 17.16-17.41/25	15.52	14.54 13.03-13.20/17
13	03.56	05.22	06.48	08.10 16.43-17.10/27	08.41 12.59-13.05/6	09.58 12.04-12.24/20
	23.17	21.49	20.06	18.25 17.16-17.41/25	15.50	14.53 13.04-13.20/16
14	03.58	05.25	06.51	08.13 16.42-17.10/28	08.44 12.56-13.09/13	09.59 12.05-12.25/20
	23.15	21.46	20.03	18.22 17.17-17.39/22	15.47	14.52 13.04-13.19/15
15	04.00	05.27	06.53	08.16 16.41-17.10/29 17.17-17.38/21	08.47 12.55-13.11/16	10.01 12.06-12.24/18
	23.13	21.43	19.59	18.18 16.14-16.21/7	15.44	14.52 13.06-13.20/14
16	04.03	05.30	06.56	08.18 16.41-17.10/29 17.19-17.36/17	08.50 12.01-12.09/8	10.02 12.06-12.24/18
	23.10	21.40	19.56	18.15 16.10-16.25/15	15.42 12.53-13.11/18	14.52 13.06-13.20/14
17	04.05	05.33	06.59	08.21 16.41-17.10/29 17.21-17.32/11	08.53 11.59-12.11/12	10.03 12.07-12.25/18
	23.08	21.36	19.52	18.12 16.07-16.26/19	15.39 12.53-13.13/20	14.51 13.07-13.20/13
18	04.08	05.36	07.01	08.24 16.41-17.09/28 17.25-17.29/4	08.56 11.58-12.13/15	10.04 12.07-12.25/18
	23.05	21.33	19.49	18.09 16.05-16.28/23	15.36 12.52-13.14/22	14.51 13.08-13.20/12
19	04.11	05.39	07.04	08.27 16.41-17.09/28	08.59 11.57-12.15/18	10.05 12.08-12.26/18
	23.03	21.30	19.46	18.05 16.04-16.28/24	15.34 12.52-13.15/23	14.51 13.08-13.20/12
20	04.13	05.42	07.07	08.30 16.41-17.08/27	09.02 11.57-12.16/19	10.06 12.09-12.26/17
	23.00	21.27	19.42	18.02 16.02-16.29/27	15.31 12.52-13.16/24	14.52 13.09-13.21/12
21	04.16	05.45	07.10	08.33 16.41-17.07/26	09.05 11.55-12.16/21	10.07 12.09-12.27/18
	22.58	21.23	19.39	17.59 16.01-16.29/28	15.29 12.51-13.15/24	14.52 13.09-13.20/11
22	04.19	05.47	07.12	08.36 16.42-17.06/24	09.08 11.55-12.17/22	10.07 12.09-12.27/18
	22.55	21.20	19.35	17.56 16.01-16.31/30	15.27 12.52-13.16/24	14.52 13.10-13.21/11
23	04.21	05.50	07.15	08.38 16.43-17.05/22	09.11 11.55-12.18/23	10.08 12.10-12.27/17
	22.53	21.17	19.32	17.52 16.01-16.31/30	15.24 12.52-13.17/25	14.53 13.10-13.21/11
24	04.24	05.53	07.18	08.41 16.44-17.03/19	09.13 11.55-12.19/24	10.08 12.10-12.28/18
	22.50	21.13	19.29	17.49 16.00-16.30/30	15.22 12.52-13.17/25	14.53 13.11-13.23/12
25	04.27	05.56	07.20	07.44 15.46-16.01/15	09.16 11.56-12.19/23	10.08 12.11-12.29/18
	22.47	21.10	19.25	16.46 15.00-15.30/30	15.20 12.53-13.18/25	14.54 13.11-13.24/13
26	04.30	05.59	07.23	07.47 15.50-15.58/8	09.19 11.56-12.20/24	10.08 12.11-12.29/18
	22.44	21.07	19.22	16.43 15.00-15.31/31	15.18 12.53-13.18/25	14.55 13.11-13.24/13
27	04.33	06.01	07.26	07.50 15.00-15.30/30	09.22 11.56-12.21/25	10.08 12.11-12.30/19
	22.41	21.03	19.18	16.40	15.16 12.53-13.18/25	14.56 13.12-13.25/13
28	04.35	06.04	07.28	07.53 15.00-15.30/30	09.25 11.56-12.20/24	10.08 12.12-12.31/19
	22.39	21.00	19.15	16.37	15.14 12.53-13.18/25	14.57 13.12-13.26/14
29	04.38	06.07	07.31	07.56 15.01-15.30/29	09.27 11.56-12.21/25	10.08 12.12-12.31/19
	22.36	20.57	19.12	16.34	15.12 12.54-13.18/24	14.59 13.12-13.26/14
30	04.41	06.10	07.34	07.59 15.01-15.29/28	09.30 11.57-12.21/24	10.08 12.13-12.32/19
	22.33	20.53	19.08	16.31	15.10 12.54-13.19/25	15.00 13.11-13.27/16
31	04.44	06.13		08.02 15.01-15.27/26		10.07 12.13-12.33/20
	22.30	20.50		16.27		15.02 13.12-13.29/17
Potential sun hours	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	1263	786	1121

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 04 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.37	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.52	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.13	20.40	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.00	05.28	06.53	08.16	08.47	10.01
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.06	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.51
20	09.36	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.14	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.09
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.08
	16.13	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 05 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.07 11.48-12.04/16	09.06 09.49-10.01/12 13.46-13.56/10	07.39	06.55	05.16	03.48
	15.04 12.44-13.03/19	16.25 10.56-11.13/17 14.32-15.01/29	17.50	20.18	21.44	23.12
2	10.06 11.48-12.05/17 13.38-13.43/5	09.03 09.47-10.03/16 14.32-15.01/29	07.36	06.52	05.12	03.46
	15.05 12.45-13.04/19	16.29 10.58-11.12/14	17.53	20.21	21.47	23.14
3	10.05 11.47-12.06/19 13.36-13.45/9	09.00 09.46-10.04/18 14.32-15.01/29	07.33	06.49	05.09	03.44
	15.07 12.44-13.05/21	16.32 11.00-11.09/9 15.43-15.45/2	17.56	20.24	21.50	23.17
4	10.04 11.48-12.07/19 13.36-13.47/11	08.57 09.45-10.05/20 15.38-15.49/11	07.30	06.45	05.06	03.42
	15.09 12.45-13.06/21	16.35 14.33-15.02/29	17.59	20.26	21.53	23.19
5	10.03 11.47-12.08/21 13.35-13.48/13	08.54 09.44-10.05/21 15.36-15.52/16	07.26	06.42	05.03	03.41
	15.11 12.44-13.06/22	16.38 14.33-15.01/28	18.02	20.29	21.56	23.21
6	10.02 11.48-12.09/21 13.35-13.50/15	08.52 09.44-10.06/22 15.36-15.54/18	07.23	06.38	05.00	03.39
	15.13 12.45-13.08/23	16.41 14.33-15.01/28	18.05	20.32	21.59	23.23
7	10.00 11.48-12.10/22 13.35-13.51/16	08.49 09.44-10.06/22 15.34-15.55/21	07.20	06.35	04.57	03.37
	15.15 12.45-13.08/23	16.44 14.34-15.00/26	18.08	20.35	22.02	23.25
8	09.59 11.48-12.10/22 13.34-13.52/18	08.46 09.44-10.07/23 15.34-15.56/22	07.16	06.32	04.54	03.35
	15.18 12.45-13.09/24	16.47 14.35-15.00/25	18.10	20.38	22.05	23.27
9	09.58 11.48-12.11/23 13.34-13.53/19	08.43 09.43-10.07/24 15.33-15.56/23	07.13	06.28	04.50	03.34
	15.20 12.45-13.10/25	16.50 14.35-14.59/24	18.13	20.41	22.08	23.29
10	09.56 11.48-12.12/24 13.34-13.54/20	08.40 09.44-10.07/23 15.33-15.57/24	07.10 17.34-17.42/8	06.25	04.47	03.33
	15.22 12.45-13.10/25	16.53 14.37-14.59/22	18.16	20.43	22.11	23.30
11	09.54 10.58-11.02/4 12.45-13.11/26	08.37 09.45-10.07/22 15.32-15.57/25	07.06 17.31-17.44/13	06.22	04.44	03.31
	15.25 11.48-12.12/24 13.34-13.55/21	16.56 14.38-14.57/19	18.19	20.46	22.14	23.32
12	09.53 10.55-11.04/9 12.46-13.11/25	08.34 09.45-10.06/21 15.32-15.58/26	07.03 17.30-17.48/18	06.18	04.41	03.30
	15.27 11.48-12.13/25 13.34-13.56/22	16.59 14.40-14.55/15	18.22	20.49	22.17	23.34
13	09.51 10.53-11.06/13 12.46-13.12/26	08.31 09.46-10.06/20 15.31-15.57/26	07.00 17.28-17.48/20	06.15	04.38	03.29
	15.30 11.48-12.14/26 13.34-13.57/23	17.02 14.44-14.53/9	18.25	20.52	22.20	23.35
14	09.49 10.53-11.08/15 12.46-13.13/27	08.27 09.46-10.05/19	06.56 17.27-17.49/22	06.12	04.35	03.28
	15.33 11.49-12.15/26 13.34-13.58/24	17.06 15.32-15.57/25	18.28	20.55	22.23	23.36
15	09.47 10.52-11.09/17 12.47-13.13/26	08.24 09.48-10.04/16	06.53 17.27-17.49/22	06.08	04.32	03.27
	15.35 11.49-12.15/26 13.34-13.58/24	17.09 15.33-15.58/25	18.30	20.58	22.26	23.37
16	09.45 10.51-11.09/18 12.46-13.13/27	08.21 09.49-10.01/12	06.50 17.26-17.49/23	06.05	04.30	03.27
	15.38 11.48-12.15/27 13.33-13.58/25	17.12 15.33-15.57/24	18.33	21.00	22.29	23.38
17	09.43 10.51-11.10/19 12.47-13.14/27	08.18 09.53-09.58/5	06.46 17.26-17.49/23	06.02	04.27	03.26
	15.41 11.49-12.15/26 13.34-13.59/25	17.15 15.34-15.56/22	18.36	21.03	22.32	23.39
18	09.41 10.51-11.12/21 12.47-13.14/27	08.15 15.34-15.55/21	06.43 17.26-17.48/22	05.58	04.24	03.26
	15.44 11.50-12.16/26 13.34-14.00/26	17.18	18.39	21.06	22.34	23.40
19	09.39 10.51-11.13/22 12.48-13.15/27	08.12 15.36-15.54/18	06.39 17.26-17.47/21	05.55	04.21	03.25
	15.46 11.50-12.17/27 13.35-14.01/26	17.21	18.42	21.09	22.37	23.40
20	09.37 10.50-11.13/23 12.48-13.14/26	08.09 15.37-15.52/15	06.36 17.26-17.46/20	05.52	04.18	03.25
	15.49 11.50-12.16/26 13.34-14.00/26	17.24	18.44	21.12	22.40	23.41
21	09.34 10.51-11.14/23 12.49-13.15/26 14.39-14.48/9	08.05 15.40-15.50/10	06.33 17.28-17.45/17	05.48	04.15	03.25
	15.52 11.51-12.17/26 13.35-14.01/26	17.27	18.47	21.15	22.43	23.41
22	09.32 10.51-11.14/23 12.50-13.15/25 14.37-14.51/14	08.02	06.29 17.30-17.43/13	05.45	04.13	03.25
	15.55 11.52-12.17/25 13.35-14.01/26	17.30	18.50	21.18	22.46	23.41
23	09.29 10.50-11.14/24 12.50-13.14/24 14.35-14.53/18	07.59	06.26 17.32-17.39/7	05.42	04.10	03.26
	15.58 11.51-12.16/25 13.35-14.01/26	17.33	18.53	21.21	22.49	23.41
24	09.27 10.51-11.15/24 12.51-13.14/23 14.35-14.55/20	07.56	06.23	05.38	04.07	03.26
	16.01 11.52-12.17/25 13.36-14.01/25	17.36	18.56	21.24	22.51	23.41
25	09.24 10.52-11.15/23 12.52-13.14/22 14.34-14.56/22	07.53	06.19	05.35	04.05	03.27
	16.04 11.54-12.17/23 13.37-14.02/25	17.39	18.58	21.27	22.54	23.41
26	09.22 10.51-11.15/24 12.53-13.13/20 14.33-14.57/24	07.49	06.16	05.32	04.02	03.27
	16.07 11.54-12.16/22 13.37-14.01/24	17.41	19.01	21.30	22.57	23.41
27	09.19 10.52-11.15/23 12.54-13.12/18 14.33-14.58/25	07.46	06.12	05.29	04.00	03.28
	16.10 11.55-12.15/20 13.38-14.01/23	17.44	19.04	21.32	22.59	23.40
28	09.17 10.53-11.16/23 12.56-13.12/16 14.32-14.58/26	07.43	06.09	05.25	03.58	03.29
	16.13 11.57-12.15/18 13.38-14.00/22	17.47	19.07	21.35	23.02	23.40
29	09.14 10.53-11.15/22 12.58-13.09/11 14.32-14.59/27		07.06	05.22	03.55	03.30
	16.16 11.58-12.13/15 13.40-14.00/20		20.10	21.38	23.05	23.39
30	09.11 10.54-11.15/21 13.42-13.59/17		07.02	05.19	03.53	03.31
	16.19 12.01-12.11/10 14.33-15.00/27		20.12	21.41	23.07	23.38
31	09.09 09.52-09.58/6 13.43-13.57/14		06.59		03.51	
	16.22 10.55-11.14/19 14.32-15.00/28		20.15		23.10	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	2615	1052	249	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 05 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.33	04.47	06.15	07.37 18.09-18.28/19	08.05 09.13-09.37/24 15.02-15.26/24	09.32 10.40-10.44/4 12.28-12.53/25
	23.37	22.27	20.47	19.05	16.24 14.06-14.28/22	15.08 11.30-11.55/25 13.16-13.37/21
2	03.34	04.50	06.18	07.39 18.10-18.25/15	08.08 09.14-09.37/23 15.02-15.25/23	09.35 11.31-11.55/24 13.17-13.37/20
	23.36	22.24	20.43	19.02	16.21 14.04-14.29/25	15.06 12.28-12.53/25
3	03.35	04.53	06.21	07.42 18.10-18.21/11	08.11 09.13-09.37/24 15.03-15.25/22	09.37 11.31-11.54/23 13.17-13.36/19
	23.35	22.21	20.40	18.58	16.18 14.04-14.30/26	15.04 12.28-12.53/25
4	03.37	04.56	06.24	07.45 18.13-18.17/4	08.14 09.14-09.37/23 15.04-15.24/20	09.40 11.32-11.55/23 13.19-13.36/17
	23.33	22.18	20.37	18.55	16.15 14.03-14.30/27	15.03 12.29-12.53/24
5	03.39	04.59	06.26	07.48	08.17 09.14-09.36/22 15.05-15.23/18	09.42 11.33-11.55/22 13.20-13.36/16
	23.32	22.15	20.33	18.52	16.12 14.03-14.31/28	15.01 12.30-12.54/24
6	03.41	05.01	06.29	07.50	08.20 09.15-09.36/21 15.06-15.21/15	09.44 11.33-11.54/21 13.21-13.35/14
	23.31	22.12	20.30	18.48	16.09 14.03-14.32/29	15.00 12.30-12.53/23
7	03.42	05.04	06.32	07.53	08.23 09.15-09.35/20 15.09-15.19/10	09.47 11.35-11.55/20 13.22-13.35/13
	23.29	22.08	20.26	18.45	16.07 14.02-14.31/29	14.59 12.32-12.54/22
8	03.44	05.07	06.34	07.56	08.26 09.16-09.34/18 14.03-14.32/29	09.49 11.35-11.54/19 13.23-13.34/11
	23.27	22.05	20.23	18.42	16.04 10.30-10.40/10	14.57 12.32-12.53/21
9	03.47	05.10	06.37	07.59	08.29 09.18-09.34/16 14.02-14.31/29	09.51 11.36-11.55/19 13.25-13.34/9
	23.25	22.02	20.20	18.38	16.01 10.28-10.42/14	14.56 12.33-12.54/21
10	03.49	05.13	06.40	08.02	08.32 09.20-09.32/12 13.16-13.27/11	09.53 11.37-11.55/18 13.27-13.33/6
	23.23	21.59	20.16	18.35	15.58 10.27-10.44/17 14.03-14.32/29	14.55 12.34-12.54/20
11	03.51	05.16	06.43	08.04	08.35 09.24-09.30/6 13.14-13.29/15	09.54 11.38-11.55/17
	23.21	21.56	20.13	18.32	15.55 10.26-10.45/19 14.04-14.32/28	14.54 12.35-12.54/19
12	03.53	05.19	06.45	08.07	08.38 10.26-10.47/21 12.34-12.36/2 14.03-14.31/28	09.56 11.39-11.55/16
	23.19	21.53	20.09	18.28	15.52 11.32-11.42/10 13.12-13.30/18	14.54 12.35-12.54/19
13	03.56	05.22	06.48	08.10	08.41 10.25-10.47/22 12.30-12.41/11 14.04-14.31/27	09.58 11.40-11.55/15
	23.17	21.49	20.06	18.25	15.50 11.30-11.45/15 13.12-13.32/20	14.53 12.36-12.54/18
14	03.58	05.25	06.51	08.13	08.44 10.25-10.48/23 12.28-12.44/16 14.05-14.31/26	09.59 11.41-11.55/14
	23.15	21.46	20.03	18.22	15.47 11.29-11.47/18 13.11-13.33/22	14.52 12.37-12.54/17
15	04.00	05.27	06.53	08.16	08.47 10.25-10.48/23 12.27-12.45/18 14.06-14.31/25	10.01 11.41-11.55/14
	23.13	21.43	19.59	18.18	15.44 11.28-11.48/20 13.11-13.34/23	14.52 12.38-12.54/16
16	04.03	05.30	06.56	08.18	08.50 10.24-10.48/24 12.25-12.46/21 14.06-14.30/24	10.02 11.42-11.54/12
	23.10	21.40	19.56	18.15	15.42 11.27-11.48/21 13.10-13.34/24	14.52 12.38-12.54/16
17	04.05	05.33	06.59	08.21	08.53 10.25-10.48/23 12.25-12.47/22 14.07-14.29/22	10.03 11.43-11.54/11
	23.08	21.36	19.52	18.12	15.39 11.27-11.50/23 13.10-13.35/25	14.51 12.39-12.54/15
18	04.08	05.36	07.02	08.24	08.56 10.25-10.49/24 12.25-12.48/23 14.09-14.28/19	10.04 11.44-11.55/11
	23.06	21.33	19.49	18.09	15.36 11.26-11.51/25 13.10-13.35/25	14.51 12.40-12.55/15
19	04.11	05.39	07.04	08.27	08.59 10.25-10.49/24 12.25-12.49/24 14.10-14.28/18	10.05 11.45-11.55/10
	23.03	21.30	19.46	18.05	15.34 11.26-11.51/25 13.10-13.36/26	14.51 12.41-12.55/14
20	04.13	05.42	07.07 18.20-18.24/4	08.30 16.14-16.17/3	09.02 10.26-10.49/23 12.25-12.50/25 14.12-14.26/14	10.06 11.45-11.56/11
	23.01	21.27	19.42	18.02	15.31 11.27-11.52/25 13.10-13.36/26	14.52 12.41-12.56/15
21	04.16	05.45	07.10 18.15-18.27/12	08.33 16.09-16.21/12	09.05 10.27-10.50/23 12.24-12.50/26 14.14-14.23/9	10.07 11.46-11.56/10
	22.58	21.23	19.39	17.59	15.29 11.27-11.53/26 13.10-13.36/26	14.52 12.42-12.56/14
22	04.19	05.47	07.12 18.13-18.29/16	08.36 16.07-16.24/17	09.08 10.26-10.49/23 12.24-12.50/26	10.07 11.46-11.56/10
	22.55	21.20	19.35	17.56	15.27 11.26-11.52/26 13.10-13.36/26	14.52 12.42-12.56/14
23	04.21	05.50	07.15 18.12-18.30/18	08.39 16.05-16.25/20	09.11 10.27-10.49/22 12.24-12.51/27	10.08 11.46-11.56/10
	22.53	21.17	19.32	17.53	15.24 11.26-11.53/27 13.11-13.37/26	14.53 12.42-12.56/14
24	04.24	05.53	07.18 18.10-18.30/20	08.41 16.04-16.25/21	09.14 10.28-10.49/21 12.25-12.51/26	10.08 11.47-11.57/10
	22.50	21.13	19.29	17.49	15.22 11.27-11.53/26 13.11-13.37/26	14.53 12.43-12.57/14
25	04.27	05.56	07.20 18.09-18.31/22	07.44 09.22-09.30/8	09.16 10.29-10.49/20 12.25-12.52/27	10.08 11.47-11.58/11
	22.47	21.10	19.25	16.46 15.03-15.26/23	15.20 11.27-11.54/27 13.12-13.37/25	14.54 12.43-12.58/15
26	04.30	05.59	07.23 18.08-18.31/23	07.47 09.19-09.32/13	09.19 10.30-10.48/18 12.25-12.52/27	10.09 11.47-11.59/12
	22.44	21.07	19.22	16.43 15.03-15.27/24	15.18 11.28-11.54/26 13.13-13.37/24	14.55 12.43-12.59/16
27	04.33	06.01	07.26 18.08-18.31/23	07.50 09.17-09.33/16	09.22 10.31-10.48/17 12.26-12.53/27	10.09 11.47-12.00/13
	22.41	21.03	19.19	16.40 15.02-15.27/25	15.16 11.28-11.54/26 13.13-13.38/25	14.56 12.44-12.59/15
28	04.36	06.04	07.29 18.07-18.30/23	07.53 09.15-09.34/19	09.25 10.33-10.48/15 12.26-12.52/26	10.08 11.48-12.01/13
	22.39	21.00	19.15	16.37 15.01-15.27/26	15.14 11.28-11.54/26 13.13-13.37/24	14.57 12.44-13.00/16
29	04.38	06.07	07.31 18.07-18.29/22	07.56 09.15-09.36/21 15.02-15.27/25	09.27 10.33-10.46/13 12.26-12.52/26	10.08 11.47-12.01/14
	22.36	20.57	19.12	16.34 14.12-14.23/11	15.12 11.29-11.54/25 13.14-13.37/23	14.59 12.44-13.01/17
30	04.41	06.10	07.34 18.08-18.29/21	07.59 09.14-09.36/22 15.01-15.27/26	09.30 10.36-10.46/10 12.27-12.53/26	10.08 11.48-12.03/15
	22.33	20.53	19.08	16.31 14.09-14.25/16	15.10 11.29-11.54/25 13.15-13.37/22	15.00 12.45-13.02/17
31	04.44	06.13		08.02 09.14-09.37/23 15.01-15.26/25		10.07 11.48-12.03/15
	22.30	20.50		16.27 14.08-14.27/19		15.02 12.45-13.03/18
Potential sun hours	591	501	391	308	208	154
Sum of minutes with flicker	0	0	204	464	2653	1192

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 06 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 148,5 m (TOT: 230,0 m) (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.55	22.23	23.36	23.15	21.46	20.02	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.32	03.28	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.36	14.51
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.52	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.55	21.23	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 07 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.12	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.42	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.57
10	09.56	08.39	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.36	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.08	06.36	05.52	04.18	03.26	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.23	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 08 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.16	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.37	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.00	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.11	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	601	591	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 09 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.37	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.00	05.28	06.53	08.16	08.47	10.01
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.11	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.40	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	601	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 10 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06	09.06 10.05-10.29/24 14.44-15.11/27	07.39 17.00-17.14/14	06.55	05.15	03.48
	15.03	16.25 13.12-13.53/41	17.50	20.18	21.44	23.12
2	10.05	09.03 10.05-10.29/24 14.44-15.13/29	07.36 16.58-17.17/19	06.52	05.12	03.46
	15.05	16.28 13.12-13.53/41	17.53	20.21	21.47	23.14
3	10.05	09.00 10.06-10.29/23 14.43-15.14/31	07.33 16.58-17.19/21	06.48	05.09	03.44
	15.07	16.32 13.13-13.53/40	17.56	20.23	21.50	23.16
4	10.04	08.57 10.05-10.29/24 14.42-15.15/33	07.29 16.56-17.19/23	06.45	05.06	03.42
	15.09	16.35 13.13-13.53/40 15.38-15.46/8	17.59	20.26	21.53	23.18
5	10.03	08.54 10.06-10.29/23 14.41-15.16/35	07.26 16.56-17.19/23	06.42	05.03	03.40
	15.11	16.38 13.14-13.53/39 15.36-15.50/14	18.02	20.29	21.56	23.21
6	10.01 13.22-13.26/4	08.51 10.06-10.28/22 14.40-15.17/37	07.23 16.56-17.18/22	06.38	05.00	03.39
	15.13	16.41 13.14-13.52/38 15.33-15.51/18	18.05	20.32	21.59	23.23
7	10.00 13.19-13.30/11	08.48 10.07-10.28/21 14.40-15.18/38	07.19 16.56-17.18/22	06.35	04.56	03.37
	15.15	16.44 13.15-13.52/37 15.32-15.53/21	18.07	20.35	22.02	23.25
8	09.59 13.18-13.32/14	08.45 10.09-10.27/18 14.39-15.18/39	07.16 16.56-17.17/21	06.32	04.53	03.35
	15.17	16.47 13.15-13.51/36 15.31-15.54/23	18.10	20.37	22.05	23.27
9	09.57 13.16-13.34/18	08.42 10.10-10.26/16 14.39-15.19/40	07.13 16.56-17.17/21	06.28	04.50	03.34
	15.20	16.50 13.17-13.50/33 15.31-15.56/25	18.13	20.40	22.08	23.28
10	09.56 13.17-13.37/20	08.39 10.12-10.24/12 14.39-15.20/41	07.09 16.58-17.16/18	06.25	04.47	03.33
	15.22	16.53 13.19-13.50/31 15.30-15.57/27	18.16	20.43	22.11	23.30
11	09.54 13.15-13.37/22	08.36 10.15-10.20/5 14.39-15.19/40	07.06 16.58-17.14/16	06.21	04.44	03.31
	15.25	16.56 13.19-13.48/29 15.29-15.57/28	18.19	20.46	22.14	23.32
12	09.52 13.14-13.39/25	08.33 13.22-13.47/25 15.29-15.58/29	07.03 17.01-17.12/11	06.18	04.41	03.30
	15.27	16.59 14.39-15.20/41	18.22	20.49	22.17	23.33
13	09.51 13.14-13.40/26	08.30 13.24-13.44/20 15.29-15.58/29	06.59	06.15	04.38	03.29
	15.30	17.02 14.38-15.20/42	18.24	20.52	22.20	23.34
14	09.49 13.13-13.42/29	08.27 13.28-13.41/13 15.29-15.58/29	06.56	06.11	04.35	03.28
	15.32	17.05 14.39-15.20/41	18.27	20.54	22.22	23.36
15	09.47 13.13-13.43/30	08.24 14.38-15.19/41	06.53	06.08	04.32	03.27
	15.35	17.08 15.28-15.58/30	18.30	20.57	22.25	23.37
16	09.45 13.13-13.44/31	08.21 14.39-15.19/40	06.49	06.05	04.29	03.27
	15.38	17.11 15.29-15.58/29	18.33	21.00	22.28	23.38
17	09.43 13.13-13.45/32	08.18 14.39-15.18/39	06.46	06.01	04.27	03.26
	15.41	17.14 15.28-15.57/29	18.36	21.03	22.31	23.39
18	09.41 13.12-13.46/34	08.15 14.40-15.18/38	06.43	05.58	04.24	03.26
	15.43	17.17 15.29-15.57/28	18.39	21.06	22.34	23.39
19	09.38 13.12-13.47/35	08.12 14.40-15.17/37	06.39	05.55	04.21	03.25
	15.46	17.20 15.29-15.56/27	18.41	21.09	22.37	23.40
20	09.36 13.12-13.48/36	08.08 14.41-15.17/36	06.36	05.51	04.18	03.25
	15.49	17.23 15.30-15.55/25	18.44	21.12	22.40	23.40
21	09.34 13.12-13.49/37	08.05 14.42-15.17/35	06.32	05.48	04.15	03.25
	15.52	17.26 15.31-15.54/23	18.47	21.15	22.43	23.41
22	09.32 13.11-13.49/38	08.02 14.42-15.15/33	06.29	05.45	04.13	03.25
	15.55	17.29 15.33-15.53/20	18.50	21.18	22.45	23.41
23	09.29 13.11-13.50/39	07.59 14.44-15.14/30	06.26	05.41	04.10	03.26
	15.58	17.32 15.35-15.51/16	18.53	21.20	22.48	23.41
24	09.27 10.16-10.21/5	07.56 14.45-15.12/27	06.22	05.38	04.07	03.26
	16.01 13.12-13.51/39	17.35 15.38-15.48/10	18.55	21.23	22.51	23.41
25	09.24 10.12-10.23/11	07.52 14.48-15.10/22	06.19	05.35	04.05	03.27
	16.04 13.11-13.51/40	17.38	18.58	21.26	22.54	23.41
26	09.22 10.09-10.24/15	07.49 14.50-15.07/17	06.16	05.32	04.02	03.27
	16.07 13.11-13.52/41	17.41	19.01	21.29	22.56	23.40
27	09.19 10.07-10.26/19	07.46 14.57-15.01/4	06.12	05.28	04.00	03.28
	16.10 13.11-13.52/41	17.44 17.04-17.08/4	19.04	21.32	22.59	23.40
28	09.16 10.06-10.26/20 14.55-14.58/3	07.43 17.01-17.11/10	06.09	05.25	03.57	03.29
	16.13 13.11-13.52/41	17.47	19.07	21.35	23.02	23.39
29	09.14 10.06-10.27/21 14.51-15.04/13		07.05	05.22	03.55	03.30
	16.16 13.12-13.53/41		20.09	21.38	23.04	23.39
30	09.11 10.05-10.27/22 14.48-15.07/19		07.02	05.19	03.53	03.31
	16.19 13.11-13.53/42		20.12	21.41	23.07	23.38
31	09.08 10.05-10.28/23 14.46-15.09/23		06.59		03.51	
	16.22 13.12-13.53/41		20.15		23.09	
Potential sun hours	185	243	364	446	556	601
Sum of minutes with flicker	1001	2090	231	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 10 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.32	04.47	06.15	07.36 17.41-17.50/9	08.05 09.41-09.54/13 14.09-14.49/40	09.32 12.57-13.20/23
	23.37	22.27	20.46	19.05	16.24 12.48-13.19/31 15.00-15.26/26	15.08
2	03.34	04.50	06.18	07.39 17.37-17.51/14	08.08 09.39-09.55/16 14.09-14.48/39	09.35 12.59-13.19/20
	23.36	22.24	20.43	19.01	16.21 12.46-13.20/34 15.00-15.25/25	15.06
3	03.35	04.53	06.21	07.42 17.36-17.53/17	08.11 09.38-09.57/19 14.10-14.48/38	09.37 13.01-13.18/17
	23.34	22.20	20.40	18.58	16.18 12.46-13.21/35 15.01-15.24/23	15.04
4	03.37	04.56	06.23	07.45 17.34-17.54/20	08.14 09.37-09.57/20 14.10-14.47/37	09.39 13.02-13.17/15
	23.33	22.17	20.36	18.55	16.15 12.45-13.21/36 15.02-15.23/21	15.03
5	03.39	04.58	06.26	07.47 17.33-17.54/21	08.17 09.37-09.58/21 14.11-14.47/36	09.42 13.04-13.15/11
	23.32	22.14	20.33	18.51	16.12 12.44-13.23/39 15.04-15.22/18	15.01
6	03.41	05.01	06.29	07.50 17.33-17.55/22	08.20 09.36-09.58/22 14.11-14.46/35	09.44 13.08-13.13/5
	23.30	22.11	20.29	18.48	16.09 12.43-13.22/39 15.06-15.19/13	15.00
7	03.42	05.04	06.32	07.53 17.32-17.55/23	08.23 09.36-09.59/23 14.12-14.45/33	09.46
	23.28	22.08	20.26	18.45	16.06 12.43-13.23/40 15.09-15.16/7	14.59
8	03.44	05.07	06.34	07.56 17.31-17.54/23	08.26 09.36-10.00/24 14.13-14.44/31	09.48
	23.27	22.05	20.23	18.41	16.03 12.43-13.23/40	14.57
9	03.46	05.10	06.37	07.58 17.31-17.53/22	08.29 09.36-09.59/23 14.14-14.43/29	09.50
	23.25	22.02	20.19	18.38	16.01 12.43-13.24/41	14.56
10	03.49	05.13	06.40	08.01 17.31-17.53/22	08.32 09.36-10.00/24 14.16-14.42/26	09.52
	23.23	21.59	20.16	18.35	15.58 12.43-13.24/41	14.55
11	03.51	05.16	06.42	08.04 17.32-17.52/20	08.35 09.36-09.59/23 14.17-14.40/23	09.54
	23.21	21.56	20.13	18.31	15.55 12.43-13.24/41	14.54
12	03.53	05.19	06.45	08.07 17.32-17.49/17	08.38 09.37-09.59/22 14.20-14.38/18	09.56
	23.19	21.52	20.09	18.28	15.52 12.43-13.24/41	14.54
13	03.55	05.22	06.48	08.10 17.33-17.46/13	08.41 09.37-09.59/22 14.23-14.36/13	09.57
	23.17	21.49	20.06	18.25	15.49 12.44-13.25/41	14.53
14	03.58	05.24	06.51	08.12 17.35-17.42/7	08.44 09.38-09.59/21 14.28-14.29/1	09.59
	23.15	21.46	20.02	18.22	15.47 12.43-13.24/41	14.52
15	04.00	05.27	06.53	08.15 15.26-15.36/10	08.47 09.39-09.58/19	10.00
	23.12	21.43	19.59	18.18 17.38-17.39/1	15.44 12.44-13.25/41	14.52
16	04.03	05.30	06.56	08.18 15.21-15.40/19	08.50 09.42-09.57/15	10.02
	23.10	21.39	19.56	18.15	15.41 12.44-13.25/41	14.52
17	04.05	05.33	06.59	08.21 15.19-15.43/24	08.53 09.46-09.56/10	10.03
	23.08	21.36	19.52	18.12	15.39 12.45-13.25/40	14.51
18	04.08	05.36	07.01	08.24 15.16-15.44/28	08.56 09.50-09.55/5	10.04
	23.05	21.33	19.49	18.08 16.08-16.21/13	15.36 12.46-13.25/39	14.51
19	04.11	05.39	07.04	08.27 15.15-15.45/30	08.59 12.45-13.24/39	10.05
	23.03	21.30	19.45	18.05 16.05-16.23/18	15.34	14.51
20	04.13	05.42	07.07	08.30 15.13-15.46/33	09.02 12.46-13.24/38	10.06
	23.00	21.26	19.42	18.02 16.03-16.24/21	15.31	14.51
21	04.16	05.44	07.09	08.32 15.12-15.47/35	09.05 12.47-13.24/37	10.06
	22.58	21.23	19.39	17.59 16.02-16.25/23	15.29	14.52
22	04.19	05.47	07.12	08.35 15.10-15.47/37	09.08 12.48-13.24/36	10.07
	22.55	21.20	19.35	17.56 16.00-16.26/26	15.26	14.52
23	04.21	05.50	07.15	08.38 15.10-15.49/39	09.10 12.49-13.24/35	10.08
	22.52	21.16	19.32	17.52 16.00-16.27/27	15.24	14.53
24	04.24	05.53	07.17	08.41 15.10-15.49/39	09.13 12.50-13.24/34	10.08
	22.50	21.13	19.28	17.49 15.59-16.27/28	15.22	14.53
25	04.27	05.56	07.20	07.44 14.09-14.49/40	09.16 12.50-13.23/33	10.08
	22.47	21.10	19.25	16.46 14.58-15.27/29	15.20	14.54
26	04.30	05.58	07.23	07.47 14.08-14.49/41	09.19 12.51-13.22/31	10.08
	22.44	21.06	19.22	16.43 14.58-15.27/29	15.18	14.55
27	04.33	06.01	07.26	07.50 14.08-14.49/41	09.22 12.52-13.22/30	10.08
	22.41	21.03	19.18	16.40 14.58-15.28/30	15.15	14.56
28	04.35	06.04	07.28	07.53 12.56-13.11/15 14.58-15.27/29	09.24 12.54-13.22/28	10.08
	22.38	21.00	19.15	16.37 14.08-14.49/41	15.13	14.57
29	04.38	06.07	07.31	07.56 12.52-13.14/22 14.58-15.27/29	09.27 12.55-13.21/26	10.08
	22.35	20.56	19.12	16.33 14.08-14.49/41	15.11	14.59
30	04.41	06.10	07.34	07.59 12.51-13.16/25 14.59-15.27/28	09.30 12.56-13.21/25	10.07
	22.32	20.53	19.08	16.30 14.08-14.49/41	15.10	15.00
31	04.44	06.12		08.02 09.43-09.50/7 14.08-14.49/41		10.07
	22.30	20.50		16.27 12.49-13.17/28 14.59-15.26/27		15.01
Potential sun hours	591	501	391	308	208	155
Sum of minutes with flicker	0	0	0	1285	1967	91

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 11 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06 11.24-11.38/14 13.34-13.41/7	09.05 11.32-11.48/16 13.40-13.58/18	07.39	06.55	05.15	03.48
	15.03 12.17-12.36/19	16.25 12.23-12.50/27	17.50	20.18	21.44	23.12
2	10.05 11.22-11.39/17 13.34-13.45/11	09.03 11.35-11.46/11 13.42-13.57/15	07.36	06.52	05.12	03.46
	15.05 12.17-12.38/21	16.28 12.25-12.50/25 15.38-15.42/4	17.53	20.20	21.47	23.14
3	10.04 11.22-11.41/19 13.34-13.47/13	09.00 12.27-12.49/22 15.36-15.46/10	07.33 17.14-17.21/7	06.48	05.09	03.44
	15.07 12.18-12.39/21	16.31 13.46-13.55/9	17.56	20.23	21.50	23.16
4	10.04 11.21-11.41/20 13.33-13.47/14	08.57 12.28-12.47/19	07.29 17.11-17.23/12	06.45	05.06	03.42
	15.09 12.17-12.39/22	16.35 15.34-15.49/15	17.59	20.26	21.53	23.18
5	10.02 11.22-11.43/21 13.33-13.49/16	08.54 12.31-12.45/14	07.26 17.10-17.27/17	06.42	05.03	03.40
	15.11 12.17-12.41/24	16.38 15.33-15.53/20	18.02	20.29	21.56	23.21
6	10.01 11.21-11.43/22 13.32-13.50/18	08.51 12.36-12.39/3	07.23 17.09-17.29/20	06.38	05.00	03.39
	15.13 12.17-12.42/25	16.41 15.32-15.53/21	18.04	20.32	21.59	23.23
7	10.00 11.21-11.44/23 13.32-13.51/19	08.48 15.31-15.55/24	07.19 17.08-17.31/23	06.35	04.56	03.37
	15.15 12.17-12.42/25	16.44	18.07	20.35	22.02	23.25
8	09.59 11.21-11.45/24 13.32-13.52/20	08.45 15.30-15.55/25	07.16 17.07-17.31/24	06.31	04.53	03.35
	15.17 12.16-12.43/27	16.47	18.10	20.37	22.05	23.26
9	09.57 11.21-11.45/24 13.31-13.53/22	08.42 15.30-15.56/26	07.13 17.07-17.31/24	06.28	04.50	03.34
	15.20 12.16-12.44/28	16.50	18.13	20.40	22.08	23.28
10	09.56 11.22-11.47/25 13.31-13.54/23	08.39 15.29-15.56/27	07.09 17.07-17.31/24	06.25	04.47	03.33
	15.22 12.16-12.45/29	16.53	18.16	20.43	22.11	23.30
11	09.54 11.21-11.47/26 13.31-13.55/24	08.36 15.30-15.56/26	07.06 17.06-17.30/24	06.21	04.44	03.31
	15.25 12.16-12.45/29	16.56	18.19	20.46	22.14	23.31
12	09.52 11.21-11.48/27 13.31-13.55/24	08.33 15.30-15.57/27	07.03 17.07-17.30/23	06.18	04.41	03.30
	15.27 12.16-12.46/30	16.59	18.22	20.49	22.16	23.33
13	09.51 11.21-11.48/27 13.31-13.56/25	08.30 15.30-15.56/26	06.59 17.07-17.29/22	06.15	04.38	03.29
	15.30 12.16-12.47/31	17.02	18.24	20.52	22.19	23.34
14	09.49 11.21-11.49/28 13.31-13.57/26	08.27 15.30-15.57/27	06.56 17.08-17.28/20	06.11	04.35	03.28
	15.32 12.16-12.48/32	17.05	18.27	20.54	22.22	23.36
15	09.47 11.21-11.50/29 13.31-13.58/27	08.24 15.30-15.56/26	06.53 17.08-17.26/18	06.08	04.32	03.27
	15.35 12.17-12.49/32	17.08	18.30	20.57	22.25	23.37
16	09.45 11.22-11.51/29 13.32-13.59/27	08.21 15.31-15.56/25	06.49 17.10-17.24/14	06.05	04.29	03.27
	15.38 12.17-12.50/33	17.11	18.33	21.00	22.28	23.38
17	09.43 11.22-11.52/30 13.32-14.00/28	08.18 15.31-15.54/23	06.46 17.12-17.21/9	06.01	04.27	03.26
	15.41 12.17-12.51/34	17.14	18.36	21.03	22.31	23.39
18	09.41 11.22-11.51/29 13.31-14.00/29	08.15 15.33-15.54/21	06.43	05.58	04.24	03.26
	15.43 12.17-12.50/33	17.17	18.39	21.06	22.34	23.39
19	09.38 11.22-11.52/30 13.32-14.00/28	08.11 15.34-15.52/18	06.39	05.55	04.21	03.25
	15.46 12.17-12.51/34	17.20	18.41	21.09	22.37	23.40
20	09.36 11.23-11.53/30 13.32-14.01/29	08.08 15.36-15.50/14	06.36	05.51	04.18	03.25
	15.49 12.17-12.52/35	17.23	18.44	21.12	22.40	23.40
21	09.34 11.23-11.53/30 13.32-14.01/29	08.05 15.39-15.46/7	06.32	05.48	04.15	03.25
	15.52 12.17-12.51/34	17.26	18.47	21.15	22.43	23.41
22	09.31 11.23-11.53/30 13.32-14.01/29	08.02	06.29	05.45	04.13	03.25
	15.55 12.18-12.52/34	17.29	18.50	21.17	22.45	23.41
23	09.29 11.24-11.53/29 13.33-14.02/29	07.59	06.26	05.41	04.10	03.26
	15.58 12.18-12.53/35	17.32	18.53	21.20	22.48	23.41
24	09.27 11.25-11.54/29 13.34-14.02/28	07.55	06.22	05.38	04.07	03.26
	16.01 12.19-12.53/34	17.35	18.55	21.23	22.51	23.41
25	09.24 11.25-11.53/28 13.33-14.02/29	07.52	06.19	05.35	04.05	03.27
	16.04 12.19-12.53/34	17.38	18.58	21.26	22.54	23.41
26	09.22 11.26-11.53/27 13.34-14.02/28	07.49	06.15	05.32	04.02	03.27
	16.07 12.19-12.53/34	17.41	19.01	21.29	22.56	23.40
27	09.19 11.26-11.52/26 13.34-14.01/27	07.46	06.12	05.28	04.00	03.28
	16.10 12.19-12.52/33	17.44	19.04	21.32	22.59	23.40
28	09.16 11.27-11.52/25 13.35-14.01/26	07.42	06.09	05.25	03.57	03.29
	16.13 12.20-12.53/33	17.47	19.06	21.35	23.02	23.39
29	09.14 11.28-11.52/24 13.37-14.01/24		07.05	05.22	03.55	03.30
	16.16 12.21-12.53/32		20.09	21.38	23.04	23.38
30	09.11 11.29-11.51/22 13.37-14.00/23		07.02	05.19	03.53	03.31
	16.19 12.21-12.52/31		20.12	21.41	23.07	23.38
31	09.08 11.31-11.50/19 13.39-14.00/21		06.59		03.51	
	16.22 12.23-12.52/29		20.15		23.09	
Potential sun hours	185	243	364	446	556	600
Sum of minutes with flicker	2433	591	281	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 11 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.32	04.47	06.15	07.36 17.45-18.08/23	08.05 15.00-15.26/26	09.32 11.03-11.29/26 13.13-13.37/24
	23.37	22.26	20.46	19.05	16.24	15.08 11.58-12.28/30
2	03.34	04.50	06.18	07.39 17.45-18.08/23	08.08 15.00-15.25/25	09.35 11.04-11.29/25 13.14-13.37/23
	23.36	22.23	20.43	19.01	16.21	15.06 11.59-12.28/29
3	03.35	04.53	06.21	07.42 17.44-18.09/25	08.11 15.00-15.24/24	09.37 11.05-11.30/25 13.16-13.37/21
	23.34	22.20	20.40	18.58	16.18	15.04 12.00-12.28/28
4	03.37	04.56	06.23	07.45 17.44-18.09/25	08.14 15.01-15.24/23	09.39 11.05-11.29/24 13.16-13.36/20
	23.33	22.17	20.36	18.55	16.15	15.03 12.01-12.27/26
5	03.39	04.58	06.26	07.47 17.44-18.08/24	08.17 12.05-12.11/6	09.42 11.06-11.29/23 13.17-13.36/19
	23.32	22.14	20.33	18.51	16.12 15.02-15.24/22	15.01 12.02-12.28/26
6	03.41	05.01	06.29	07.50 17.44-18.08/24	08.20 12.00-12.15/15	09.44 11.08-11.30/22 13.19-13.36/17
	23.30	22.11	20.29	18.48	16.09 15.03-15.22/19	15.00 12.03-12.28/25
7	03.42	05.04	06.32	07.53 17.45-18.07/22	08.23 11.58-12.18/20	09.46 11.08-11.29/21 13.19-13.36/17
	23.28	22.08	20.26	18.45	16.06 15.05-15.19/14	14.59 12.04-12.27/23
8	03.44	05.07	06.34	07.56 17.44-18.03/19	08.26 11.56-12.19/23 15.06-15.15/9	09.48 11.09-11.29/20 13.21-13.36/15
	23.27	22.05	20.23	18.41	16.03 13.15-13.25/10	14.57 12.05-12.28/23
9	03.46	05.10	06.37	07.58 17.45-18.00/15	08.29 11.05-11.17/12 13.13-13.28/15	09.50 11.10-11.29/19 13.22-13.35/13
	23.25	22.02	20.19	18.38	16.01 11.55-12.21/26 15.09-15.12/3	14.56 12.06-12.27/21
10	03.49	05.13	06.40	08.01 17.47-17.56/9	08.32 11.03-11.20/17 13.11-13.30/19	09.52 11.11-11.29/18 13.23-13.34/11
	23.23	21.59	20.16	18.35	15.58 11.55-12.22/27	14.55 12.06-12.27/21
11	03.51	05.16	06.42	08.04 17.49-17.53/4	08.35 11.01-11.21/20 13.09-13.31/22	09.54 11.14-11.28/14 13.24-13.32/8
	23.21	21.55	20.13	18.31	15.55 11.53-12.23/30	14.54 12.07-12.27/20
12	03.53	05.19	06.45	08.07	08.38 11.01-11.22/21 13.09-13.32/23	09.56 11.17-11.28/11 13.26-13.30/4
	23.19	21.52	20.09	18.28	15.52 11.53-12.24/31	14.54 12.08-12.27/19
13	03.55	05.22	06.48	08.10	08.41 11.00-11.24/24 13.08-13.33/25	09.57 11.20-11.28/8
	23.17	21.49	20.06	18.25	15.49 11.53-12.25/32	14.53 12.09-12.27/18
14	03.58	05.24	06.50	08.12	08.44 10.59-11.24/25 13.07-13.33/26	09.59 11.23-11.29/6
	23.15	21.46	20.02	18.21	15.47 11.52-12.25/33	14.52 12.11-12.27/16
15	04.00	05.27	06.53	08.15	08.47 10.59-11.25/26 13.07-13.34/27	10.00 11.25-11.28/3
	23.12	21.43	19.59	18.18	15.44 11.52-12.25/33	14.52 12.11-12.26/15
16	04.03	05.30	06.56	08.18	08.50 10.58-11.26/28 13.07-13.35/28	10.02 11.28-11.29/1
	23.10	21.39	19.56	18.15	15.41 11.52-12.26/34	14.52 12.13-12.27/14
17	04.05	05.33	06.59	08.21	08.53 10.58-11.27/29 13.07-13.36/29	10.03 12.14-12.27/13
	23.08	21.36	19.52	18.12	15.39 11.53-12.27/34	14.51
18	04.08	05.36	07.01	08.24	08.56 10.59-11.28/29 13.07-13.35/28	10.04 12.14-12.27/13
	23.05	21.33	19.49	18.08	15.36 11.53-12.27/34	14.51
19	04.11	05.39	07.04	08.27	08.59 10.58-11.27/29 13.07-13.36/29	10.05 12.15-12.27/12
	23.03	21.30	19.45	18.05	15.34 11.52-12.27/35	14.51
20	04.13	05.42	07.07	08.30	09.02 10.58-11.28/30 13.07-13.36/29	10.06 12.16-12.27/11
	23.00	21.26	19.42	18.02	15.31 11.53-12.27/34	14.51
21	04.16	05.44	07.09	08.32 16.09-16.19/10	09.05 10.58-11.28/30 13.08-13.37/29	10.06 12.16-12.28/12
	22.57	21.23	19.39	17.59	15.29 11.53-12.27/34	14.52
22	04.19	05.47	07.12	08.35 16.05-16.21/16	09.07 10.59-11.29/30 13.08-13.37/29	10.07 12.16-12.28/12
	22.55	21.20	19.35	17.56	15.26 11.54-12.28/34	14.52
23	04.21	05.50	07.15	08.38 16.03-16.22/19	09.10 10.59-11.29/30 13.09-13.37/28	10.07 12.17-12.28/11
	22.52	21.16	19.32	17.52	15.24 11.54-12.28/34	14.53
24	04.24	05.53	07.17	08.41 16.03-16.24/21	09.13 11.00-11.29/29 13.08-13.37/29	10.08 12.17-12.29/12
	22.49	21.13	19.28	17.49	15.22 11.54-12.27/33	14.53
25	04.27	05.56	07.20	07.44 15.01-15.25/24	09.16 10.59-11.29/30 13.09-13.37/28	10.08 12.18-12.30/12
	22.47	21.10	19.25	16.46	15.20 11.54-12.28/34	14.54
26	04.30	05.58	07.23 17.57-18.02/5	07.47 15.00-15.25/25	09.19 11.00-11.29/29 13.10-13.37/27	10.08 12.17-12.31/14
	22.44	21.06	19.22	16.43	15.18 11.55-12.28/33	14.55
27	04.33	06.01	07.26 17.52-18.05/13	07.50 15.00-15.26/26	09.22 11.01-11.29/28 13.10-13.37/27	10.08 12.17-12.31/14
	22.41	21.03	19.18	16.40	15.15 11.56-12.28/32	14.56
28	04.35	06.04	07.28 17.50-18.07/17	07.53 14.59-15.26/27	09.24 11.01-11.29/28 13.11-13.37/26	10.08 11.32-11.34/2
	22.38	21.00	19.15	16.37	15.13 11.57-12.28/31	14.57 12.18-12.33/15
29	04.38	06.07	07.31 17.48-18.08/20	07.56 14.59-15.26/27	09.27 11.02-11.30/28 13.12-13.38/26	10.08 11.31-11.36/5
	22.35	20.56	19.11	16.33	15.11 11.57-12.28/31	14.59 12.17-12.33/16
30	04.41	06.10	07.34 17.47-18.09/22	07.59 14.59-15.26/27	09.29 11.03-11.30/27 13.12-13.37/25	10.07 11.29-11.36/7
	22.32	20.53	19.08	16.30	15.10 11.57-12.28/31	15.00 12.18-12.35/17
31	04.44	06.12		08.02 14.59-15.26/27		10.07 11.27-11.37/10 13.36-13.38/2
	22.29	20.50		16.27		15.01 12.18-12.35/17
Potential sun hours	590	501	391	308	208	155
Sum of minutes with flicker	0	0	77	462	2102	1039

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 12 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April		May		June	
1	10.06	09.05	07.39	06.55		05.15		03.48	21.06-21.23/17
	15.04	16.25	17.50	20.18		21.44		23.11	
2	10.05	09.03	07.36	06.52		05.12		03.46	21.08-21.23/15
	15.05	16.28	17.53	20.20		21.47		23.14	
3	10.04	09.00	07.33	06.48		05.09		03.44	21.09-21.22/13
	15.07	16.32	17.56	20.23		21.50		23.16	
4	10.03	08.57	07.29	06.45		05.06		03.42	21.10-21.21/11
	15.09	16.35	17.59	20.26		21.53		23.18	
5	10.02	08.54	07.26	06.42		05.03	21.09-21.13/4	03.41	21.12-21.20/8
	15.11	16.38	18.02	20.29		21.56		23.20	
6	10.01	08.51	07.23	06.38		05.00	21.06-21.15/9	03.39	21.14-21.18/4
	15.13	16.41	18.04	20.32		21.59		23.22	
7	10.00	08.48	07.19	06.35		04.57	21.04-21.18/14	03.37	
	15.15	16.44	18.07	20.35		22.02		23.24	
8	09.59	08.45	07.16	06.31		04.53	21.04-21.21/17	03.36	
	15.18	16.47	18.10	20.37		22.05		23.26	
9	09.57	08.42	07.13	06.28	20.03-20.05/2	04.50	21.02-21.23/21	03.34	
	15.20	16.50	18.13	20.40		22.08		23.28	
10	09.56	08.39	07.09	06.25	20.00-20.07/7	04.47	21.02-21.26/24	03.33	
	15.22	16.53	18.16	20.43		22.11		23.30	
11	09.54	08.36	07.06	06.21	19.58-20.10/12	04.44	21.01-21.26/25	03.31	
	15.25	16.56	18.19	20.46		22.13		23.31	
12	09.52	08.33	07.03	06.18	19.56-20.12/16	04.41	21.00-21.26/26	03.30	
	15.27	16.59	18.22	20.49		22.16		23.33	
13	09.50	08.30	06.59	06.15	19.55-20.15/20	04.38	21.00-21.27/27	03.29	
	15.30	17.02	18.24	20.52		22.19		23.34	
14	09.49	08.27	06.56	06.11	19.54-20.18/24	04.35	20.59-21.27/28	03.28	
	15.32	17.05	18.27	20.54		22.22		23.35	
15	09.47	08.24	06.53	06.08	19.54-20.19/25	04.32	21.00-21.28/28	03.27	
	15.35	17.08	18.30	20.57		22.25		23.37	
16	09.45	08.21	06.49	06.05	19.53-20.19/26	04.29	21.00-21.28/28	03.27	
	15.38	17.11	18.33	21.00		22.28		23.38	
17	09.43	08.18	06.46	06.01	19.52-20.18/26	04.27	20.59-21.28/29	03.26	
	15.41	17.14	18.36	21.03		22.31		23.38	
18	09.40	08.15	06.43	05.58	19.52-20.18/26	04.24	20.59-21.28/29	03.26	
	15.43	17.17	18.39	21.06		22.34		23.39	
19	09.38	08.11	06.39	05.55	19.52-20.17/25	04.21	21.00-21.28/28	03.26	
	15.46	17.20	18.41	21.09		22.37		23.40	
20	09.36	08.08	06.36	05.51	19.53-20.17/24	04.18	20.59-21.27/28	03.25	
	15.49	17.23	18.44	21.12		22.40		23.40	
21	09.34	08.05	06.32	05.48	19.53-20.16/23	04.15	21.00-21.27/27	03.25	
	15.52	17.26	18.47	21.15		22.42		23.41	
22	09.31	08.02	06.29	05.45	19.54-20.15/21	04.13	21.00-21.27/27	03.26	
	15.55	17.29	18.50	21.17		22.45		23.41	
23	09.29	07.59	06.26	05.41	19.55-20.14/19	04.10	21.00-21.27/27	03.26	
	15.58	17.32	18.52	21.20		22.48		23.41	
24	09.26	07.55	06.22	05.38	19.56-20.12/16	04.07	21.01-21.27/26	03.26	
	16.01	17.35	18.55	21.23		22.51		23.41	
25	09.24	07.52	06.19	05.35	19.58-20.10/12	04.05	21.01-21.26/25	03.27	
	16.04	17.38	18.58	21.26		22.54		23.41	
26	09.21	07.49	06.15	05.32	20.01-20.07/6	04.02	21.02-21.26/24	03.27	
	16.07	17.41	19.01	21.29		22.56		23.40	
27	09.19	07.46	06.12	05.28		04.00	21.02-21.25/23	03.28	
	16.10	17.44	19.04	21.32		22.59		23.40	
28	09.16	07.42	06.09	05.25		03.57	21.04-21.26/22	03.29	
	16.13	17.47	19.06	21.35		23.02		23.39	
29	09.14		07.05	05.22		03.55	21.04-21.25/21	03.30	
	16.16		20.09	21.38		23.04		23.38	
30	09.11		07.02	05.19		03.53	21.05-21.24/19	03.31	
	16.19		20.12	21.41		23.07		23.37	
31	09.08		06.59			03.51	21.06-21.24/18		
	16.22		20.15			23.09			
Potential sun hours	185	243	364	446		556		600	
Sum of minutes with flicker	0	0	0	330		624		68	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 12 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.33	04.47 21.11-21.37/26	06.15 19.57-20.09/12	07.36	08.05	09.32
	23.36	22.26	20.46	19.05	16.24	15.08
2	03.34	04.50 21.11-21.36/25	06.18 19.58-20.05/7	07.39	08.08	09.34
	23.35	22.23	20.43	19.01	16.21	15.06
3	03.36	04.53 21.12-21.35/23	06.21 20.01-20.03/2	07.42	08.11	09.37
	23.34	22.20	20.40	18.58	16.18	15.04
4	03.37	04.56 21.13-21.32/19	06.23	07.45	08.14	09.39
	23.33	22.17	20.36	18.55	16.15	15.03
5	03.39	04.58 21.14-21.30/16	06.26	07.47	08.17	09.42
	23.31	22.14	20.33	18.51	16.12	15.01
6	03.41	05.01 21.15-21.27/12	06.29	07.50	08.20	09.44
	23.30	22.11	20.29	18.48	16.09	15.00
7	03.43 21.19-21.26/7	05.04 21.17-21.25/8	06.32	07.53	08.23	09.46
	23.28	22.08	20.26	18.45	16.06	14.59
8	03.45 21.17-21.27/10	05.07 21.19-21.21/2	06.34	07.56	08.26	09.48
	23.27	22.05	20.23	18.41	16.03	14.57
9	03.47 21.17-21.29/12	05.10	06.37	07.58	08.29	09.50
	23.25	22.02	20.19	18.38	16.01	14.56
10	03.49 21.16-21.30/14	05.13	06.40	08.01	08.32	09.52
	23.23	21.59	20.16	18.35	15.58	14.55
11	03.51 21.15-21.31/16	05.16	06.42	08.04	08.35	09.54
	23.21	21.55	20.12	18.31	15.55	14.54
12	03.53 21.14-21.32/18	05.19	06.45	08.07	08.38	09.56
	23.19	21.52	20.09	18.28	15.52	14.54
13	03.56 21.14-21.33/19	05.22	06.48	08.10	08.41	09.57
	23.17	21.49	20.06	18.25	15.49	14.53
14	03.58 21.13-21.34/21	05.24	06.50	08.12	08.44	09.59
	23.14	21.46	20.02	18.21	15.47	14.52
15	04.00 21.13-21.34/21	05.27	06.53	08.15	08.47	10.00
	23.12	21.43	19.59	18.18	15.44	14.52
16	04.03 21.12-21.35/23	05.30	06.56	08.18	08.50	10.01
	23.10	21.39	19.56	18.15	15.41	14.52
17	04.05 21.12-21.36/24	05.33 20.06-20.14/8	06.59	08.21	08.53	10.03
	23.07	21.36	19.52	18.12	15.39	14.51
18	04.08 21.12-21.36/24	05.36 20.04-20.17/13	07.01	08.24	08.56	10.04
	23.05	21.33	19.49	18.08	15.36	14.51
19	04.11 21.11-21.37/26	05.39 20.01-20.18/17	07.04	08.27	08.59	10.05
	23.03	21.30	19.45	18.05	15.34	14.51
20	04.13 21.11-21.37/26	05.42 20.00-20.20/20	07.07	08.29	09.02	10.05
	23.00	21.26	19.42	18.02	15.31	14.52
21	04.16 21.10-21.37/27	05.44 19.58-20.20/22	07.09	08.32	09.05	10.06
	22.57	21.23	19.39	17.59	15.29	14.52
22	04.19 21.10-21.37/27	05.47 19.57-20.21/24	07.12	08.35	09.07	10.07
	22.55	21.20	19.35	17.56	15.27	14.52
23	04.21 21.10-21.38/28	05.50 19.57-20.21/24	07.15	08.38	09.10	10.07
	22.52	21.16	19.32	17.52	15.24	14.53
24	04.24 21.10-21.38/28	05.53 19.56-20.21/25	07.17	08.41	09.13	10.08
	22.49	21.13	19.28	17.49	15.22	14.53
25	04.27 21.10-21.38/28	05.56 19.56-20.21/25	07.20	07.44	09.16	10.08
	22.47	21.10	19.25	16.46	15.20	14.54
26	04.30 21.09-21.38/29	05.58 19.55-20.20/25	07.23	07.47	09.19	10.08
	22.44	21.06	19.22	16.43	15.18	14.55
27	04.33 21.10-21.39/29	06.01 19.55-20.21/26	07.26	07.50	09.21	10.08
	22.41	21.03	19.18	16.40	15.15	14.56
28	04.35 21.10-21.38/28	06.04 19.55-20.19/24	07.28	07.53	09.24	10.08
	22.38	21.00	19.15	16.37	15.13	14.57
29	04.38 21.11-21.39/28	06.07 19.55-20.19/24	07.31	07.56	09.27	10.08
	22.35	20.56	19.11	16.33	15.12	14.59
30	04.41 21.10-21.38/28	06.10 19.56-20.16/20	07.34	07.59	09.29	10.07
	22.32	20.53	19.08	16.30	15.10	15.00
31	04.44 21.10-21.37/27	06.12 19.56-20.12/16		08.02		10.07
	22.29	20.50		16.27		15.02
Potential sun hours	590	501	391	308	208	155
Sum of minutes with flicker	568	444	21	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 13 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June		July		August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.16	03.49		03.33	04.33-04.49/16	04.47	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.12		23.37		22.26	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46		03.34	04.35-04.50/15	04.50	06.18	07.39	08.08	09.35
	15.05	16.28	17.53	20.21	21.47	23.14		23.35		22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.33	06.48	05.09	03.44	04.38-04.39/1	03.36	04.36-04.49/13	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16		23.34		22.20	20.40	18.58	16.18	15.04
4	10.04	08.57	07.29	06.45	05.06	03.42	04.36-04.40/4	03.37	04.37-04.49/12	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18		23.33		22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	04.35-04.41/6	03.39	04.38-04.48/10	04.59	06.26	07.47	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21		23.32		22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	04.34-04.42/8	03.41	04.40-04.49/9	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23		23.30		22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	04.33-04.43/10	03.43	04.41-04.48/7	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.35	22.02	23.25		23.28		22.08	20.26	18.45	16.06	14.59
8	09.59	08.45	07.16	06.32	04.53	03.36	04.32-04.43/11	03.45	04.43-04.48/5	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.05	23.26		23.27		22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	04.31-04.44/13	03.47	04.44-04.46/2	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28		23.25		22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.09	06.25	04.47	03.33	04.30-04.44/14	03.49		05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30		23.23		21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	04.30-04.45/15	03.51		05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.31		23.21		21.56	20.13	18.31	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	04.29-04.45/16	03.53		05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33		23.19		21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	06.59	06.15	04.38	03.29	04.28-04.45/17	03.56		05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.19	23.34		23.17		21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	04.28-04.46/18	03.58		05.25	06.51	08.12	08.44	09.59
	15.33	17.05	18.27	20.54	22.22	23.36		23.15		21.46	20.02	18.22	15.47	14.52
15	09.47	08.24	06.53	06.08	04.32	03.28	04.27-04.46/19	04.00		05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.37		23.12		21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.27-04.47/20	04.03		05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.38		23.10		21.39	19.56	18.15	15.41	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.27-04.47/20	04.05		05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39		23.08		21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.27-04.48/21	04.08		05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39		23.05		21.33	19.49	18.08	15.36	14.51
19	09.38	08.11	06.39	05.55	04.21	03.26	04.27-04.48/21	04.11		05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.41	21.09	22.37	23.40		23.03		21.30	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.27-04.48/21	04.13		05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40		23.00		21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	03.25	04.27-04.48/21	04.16		05.44	07.09	08.32	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41		22.57		21.23	19.39	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.27-04.48/21	04.19		05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.41		22.55		21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.41	04.10	03.26	04.28-04.49/21	04.21		05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.53	21.20	22.48	23.41		22.52		21.16	19.32	17.52	15.24	14.53
24	09.27	07.55	06.22	05.38	04.07	03.26	04.28-04.49/21	04.24		05.53	07.17	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41		22.49		21.13	19.28	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.29-04.49/20	04.27		05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41		22.47		21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.29-04.49/20	04.30		05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40		22.44		21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.30-04.49/19	04.33		06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40		22.41		21.03	19.18	16.40	15.16	14.56
28	09.16	07.42	06.09	05.25	03.58	03.29	04.31-04.50/19	04.35		06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39		22.38		21.00	19.15	16.37	15.14	14.57
29	09.14		07.05	05.22	03.55	03.30	04.31-04.49/18	04.38		06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38		22.35		20.56	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.32-04.49/17	04.41		06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.07	23.38		22.32		20.53	19.08	16.30	15.10	15.00
31	09.08		06.59		03.51			04.44		06.12		08.02		10.07
	16.22		20.15		23.09			22.29		20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600		590		501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	452		89		0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** K 14 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06 14.46-15.08/22	07.39	06.55	05.16	03.48	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08
2	10.05	09.03 14.47-15.08/21	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.01	16.21	15.06
3	10.05	09.00 14.49-15.08/19	07.33	06.48	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.04
4	10.04	08.57 14.49-15.07/18	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14 14.25-14.32/7	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.03	08.54 14.51-15.07/16	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.47	08.17 14.22-14.35/13	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51 14.52-15.04/12	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20 14.20-14.36/16	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48 14.56-15.02/6	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23 14.20-14.38/18	09.46
	15.15	16.44	18.07	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.06	14.59
8	09.59	08.45	07.16	06.32	04.53	03.36	03.45	05.07	06.34	07.56	08.26 14.18-14.38/20	09.48
	15.18	16.47	18.10	20.37	22.05	23.27	23.27	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.59	08.29 14.18-14.39/21	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32 14.18-14.40/22	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35 14.17-14.40/23	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38 14.18-14.40/22	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41 14.18-14.41/23	09.57
	15.30	17.02	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44 14.17-14.40/23	09.59
	15.33	17.05	18.27	20.55	22.22	23.36	23.15	21.46	20.02	18.22	15.47	14.52
15	09.47	08.24	06.53	06.08	04.32	03.28	04.00	05.27	06.53	08.15	08.47 14.18-14.41/23	10.00
	15.35	17.08	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50 14.19-14.41/22	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53 14.20-14.41/21	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56 14.20-14.41/21	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.36	14.51
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59 14.20-14.38/18	10.05
	15.46	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36 14.48-14.52/4	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02 14.21-14.35/14	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34 14.48-14.56/8	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.33	09.05 14.23-14.31/8	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32 14.46-15.00/14	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.08 14.24-14.28/4	10.07
	15.55	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29 14.46-15.04/18	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.27 14.46-15.07/21	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.50	21.13	19.28	17.49	15.22	14.54
25	09.24 14.46-15.07/21	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22 14.46-15.08/22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19 14.45-15.08/23	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16 14.46-15.08/22	07.43	06.09	05.25	03.58	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14 14.46-15.09/23		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.56	19.12	16.34	15.12	14.59
30	09.11 14.46-15.09/23		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08 14.47-15.09/22		06.59		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	221	114	0	0	0	0	0	0	0	0	339	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** WTG 01 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.07 11.58-12.09/11	09.06 11.15-11.30/15 12.57-13.16/19	07.40	06.55	05.16	03.49
	15.04 12.53-12.59/6	16.26 12.07-12.21/14 13.59-14.02/3	17.50	20.18	21.44	23.12
2	10.06 11.58-12.10/12	09.03 11.18-11.28/10 12.59-13.15/16	07.36	06.52	05.13	03.46
	15.05 12.52-13.01/9	16.29 12.10-12.18/8	17.53	20.21	21.47	23.14
3	10.05 11.58-12.12/14	09.00 13.01-13.13/12	07.33	06.49	05.09	03.44
	15.07 12.51-13.02/11	16.32	17.56	20.24	21.50	23.17
4	10.04 11.57-12.13/16	08.57	07.30	06.45	05.06	03.43
	15.09 12.51-13.04/13	16.35	17.59	20.26	21.53	23.19
5	10.03 11.56-12.13/17	08.55	07.26	06.42	05.03	03.41
	15.11 12.50-13.05/15	16.38	18.02	20.29	21.56	23.21
6	10.02 11.57-12.15/18 13.50-13.55/5	08.52	07.23	06.39	05.00	03.39
	15.13 12.51-13.07/16	16.41	18.05	20.32	21.59	23.23
7	10.01 11.56-12.16/20 13.48-13.57/9	08.49	07.20	06.35	04.57	03.37
	15.15 12.50-13.08/18	16.44	18.08	20.35	22.02	23.25
8	09.59 11.12-11.19/7 12.50-13.09/19	08.46	07.16	06.32	04.54	03.36
	15.18 11.56-12.17/21 13.47-13.59/12	16.47	18.11	20.38	22.05	23.27
9	09.58 11.10-11.21/11 12.49-13.10/21	08.43	07.13	06.28	04.51	03.34
	15.20 11.56-12.17/21 13.47-14.00/13	16.50	18.13	20.41	22.08	23.29
10	09.56 11.09-11.22/13 12.49-13.11/22	08.40	07.10	06.25	04.48	03.33
	15.22 11.56-12.18/22 13.46-14.01/15	16.53	18.16	20.43	22.11	23.31
11	09.55 11.09-11.24/15 12.49-13.12/23	08.37	07.06 07.38-07.40/2	06.22	04.44	03.31
	15.25 11.56-12.19/23 13.46-14.03/17	16.56	18.19	20.46	22.14	23.32
12	09.53 11.08-11.25/17 12.49-13.13/24	08.34	07.03 07.34-07.43/9	06.18	04.41	03.30
	15.27 11.56-12.20/24 13.46-14.04/18	17.00	18.22	20.49	22.17	23.34
13	09.51 11.08-11.26/18 12.49-13.14/25	08.31	07.00 07.31-07.45/14	06.15	04.38	03.29
	15.30 11.56-12.21/25 13.46-14.05/19	17.03	18.25	20.52	22.20	23.35
14	09.49 11.08-11.27/19 12.49-13.15/26	08.28	06.56 07.27-07.46/19	06.12	04.36	03.28
	15.33 11.56-12.22/26 13.46-14.06/20	17.06	18.28	20.55	22.23	23.36
15	09.47 11.08-11.28/20 12.49-13.16/27	08.24	06.53 07.25-07.47/22	06.08	04.33	03.28
	15.35 11.56-12.23/27 13.46-14.07/21	17.09	18.30	20.58	22.26	23.37
16	09.45 11.08-11.30/22 12.49-13.16/27	08.21	06.50 07.24-07.48/24	06.05	04.30	03.27
	15.38 11.56-12.22/26 13.45-14.07/22	17.12	18.33	21.01	22.29	23.38
17	09.43 11.07-11.30/23 12.49-13.17/28	08.18	06.46 07.23-07.48/25	06.02	04.27	03.26
	15.41 11.56-12.23/27 13.45-14.08/23	17.15	18.36	21.03	22.32	23.39
18	09.41 11.07-11.30/23 12.49-13.17/28	08.15	06.43 07.23-07.48/25	05.58	04.24	03.26
	15.44 11.56-12.24/28 13.46-14.08/22	17.18	18.39	21.06	22.35	23.40
19	09.39 11.08-11.31/23 12.50-13.18/28	08.12	06.40 07.22-07.47/25	05.55	04.21	03.26
	15.47 11.57-12.25/28 13.46-14.09/23	17.21	18.42	21.09	22.37	23.40
20	09.37 11.07-11.31/24 12.49-13.18/29	08.09	06.36 07.22-07.47/25	05.52	04.18	03.25
	15.49 11.56-12.24/28 13.46-14.09/23	17.24	18.45	21.12	22.40	23.41
21	09.34 11.07-11.32/25 12.50-13.19/29	08.06	06.33 07.21-07.46/25	05.48	04.16	03.25
	15.52 11.57-12.25/28 13.46-14.10/24	17.27	18.47	21.15	22.43	23.41
22	09.32 11.08-11.33/25 12.50-13.19/29	08.02	06.29 07.22-07.45/23	05.45	04.13	03.26
	15.55 11.58-12.26/28 13.47-14.10/23	17.30	18.50	21.18	22.46	23.41
23	09.30 11.09-11.33/24 12.50-13.19/29	07.59	06.26 07.23-07.45/22	05.42	04.10	03.26
	15.58 11.57-12.25/28 13.46-14.10/24	17.33	18.53	21.21	22.49	23.42
24	09.27 11.08-11.33/25 12.51-13.19/28	07.56	06.23 07.23-07.43/20	05.38	04.08	03.26
	16.01 11.58-12.26/28 13.47-14.10/23	17.36	18.56	21.24	22.51	23.41
25	09.25 11.09-11.33/24 12.51-13.20/29	07.53	06.19 07.25-07.41/16	05.35	04.05	03.27
	16.04 11.59-12.26/27 13.48-14.10/22	17.39	18.58	21.27	22.54	23.41
26	09.22 11.09-11.33/24 12.51-13.19/28	07.49	06.16 07.26-07.38/12	05.32	04.03	03.27
	16.07 11.59-12.25/26 13.48-14.10/22	17.42	19.01	21.30	22.57	23.41
27	09.19 11.10-11.33/23 12.52-13.19/27	07.46	06.12	05.29	04.00	03.28
	16.10 12.00-12.25/25 13.49-14.10/21	17.45	19.04	21.33	23.00	23.40
28	09.17 11.11-11.33/22 12.53-13.20/27	07.43	06.09	05.25	03.58	03.29
	16.13 12.01-12.25/24 13.51-14.10/19	17.47	19.07	21.35	23.02	23.40
29	09.14 11.11-11.32/21 12.53-13.19/26		07.06	05.22	03.55	03.30
	16.16 12.02-12.24/22 13.51-14.08/17		20.10	21.38	23.05	23.39
30	09.11 11.12-11.32/20 12.55-13.18/23		07.02	05.19	03.53	03.31
	16.19 12.03-12.24/21 13.53-14.08/15		20.12	21.41	23.07	23.38
31	09.09 11.13-11.31/18 12.55-13.17/22		06.59		03.51	
	16.23 12.04-12.22/18 13.55-14.05/10		20.15		23.10	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	2389	97	308	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** WTG 01 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.33	04.47	06.15	07.37 08.12-08.23/11	08.05	09.33 10.51-11.06/15 12.31-12.54/23
	23.37	22.27	20.47	19.05	16.25	15.08 11.38-12.02/24 13.28-13.45/17
2	03.34	04.50	06.18	07.40 08.15-08.20/5	08.08	09.35 10.53-11.06/13 12.32-12.54/22
	23.36	22.24	20.43	19.02	16.22	15.06 11.39-12.02/23 13.29-13.45/16
3	03.36	04.53	06.21	07.42	08.11	09.37 10.54-11.05/11 12.33-12.53/20
	23.35	22.21	20.40	18.58	16.18	15.05 11.39-12.01/22 13.30-13.44/14
4	03.37	04.56	06.24	07.45	08.14	09.40 10.56-11.03/7 12.34-12.54/20
	23.34	22.18	20.37	18.55	16.15	15.03 11.40-12.01/21 13.31-13.43/12
5	03.39	04.59	06.26	07.48	08.17	09.42 11.42-12.01/19 13.33-13.43/10
	23.32	22.15	20.33	18.52	16.13	15.02 12.35-12.54/19
6	03.41	05.02	06.29	07.51	08.20	09.44 11.42-12.00/18 13.35-13.41/6
	23.31	22.12	20.30	18.48	16.10	15.00 12.36-12.53/17
7	03.43	05.05	06.32	07.53	08.23	09.47 11.44-12.01/17
	23.29	22.09	20.26	18.45	16.07	14.59 12.38-12.53/15
8	03.45	05.07	06.35	07.56	08.26 10.52-10.54/2	09.49 11.44-12.00/16
	23.27	22.05	20.23	18.42	16.04 12.32-12.43/11	14.58 12.38-12.52/14
9	03.47	05.10	06.37	07.59	08.29 10.48-10.59/11 12.30-12.46/16	09.51 11.46-12.00/14
	23.25	22.02	20.20	18.38	16.01 11.40-11.49/9	14.56 12.40-12.52/12
10	03.49	05.13	06.40	08.02	08.32 10.46-11.01/15 12.28-12.47/19	09.53 11.47-12.00/13
	23.23	21.59	20.16	18.35	15.58 11.37-11.52/15 13.29-13.34/5	14.55 12.42-12.51/9
11	03.51	05.16	06.43	08.04	08.35 10.45-11.03/18 12.27-12.49/22	09.54 11.48-11.59/11
	23.22	21.56	20.13	18.32	15.55 11.36-11.54/18 13.26-13.37/11	14.55 12.43-12.50/7
12	03.53	05.19	06.45	08.07	08.38 10.44-11.04/20 12.26-12.50/24	09.56 11.49-11.59/10
	23.19	21.53	20.10	18.28	15.52 11.35-11.55/20 13.25-13.40/15	14.54
13	03.56	05.22	06.48	08.10	08.41 10.43-11.04/21 12.25-12.50/25	09.58 11.51-11.58/7
	23.17	21.50	20.06	18.25	15.50 11.33-11.56/23 13.23-13.40/17	14.53
14	03.58	05.25	06.51	08.13	08.44 10.43-11.05/22 12.25-12.51/26	09.59 11.54-11.57/3
	23.15	21.46	20.03	18.22	15.47 11.33-11.57/24 13.22-13.42/20	14.53
15	04.00	05.28	06.54	08.16	08.47 10.43-11.06/23 12.25-12.52/27	10.01
	23.13	21.43	19.59	18.19	15.44 11.33-11.58/25 13.22-13.43/21	14.52
16	04.03	05.30	06.56	08.19	08.50 10.43-11.07/24 12.24-12.52/28	10.02
	23.11	21.40	19.56	18.15	15.42 11.33-11.59/26 13.21-13.43/22	14.52
17	04.06	05.33	06.59 08.15-08.26/11	08.21	08.53 10.42-11.06/24 12.24-12.53/29	10.03
	23.08	21.37	19.53	18.12	15.39 11.32-11.59/27 13.21-13.43/22	14.52
18	04.08	05.36	07.02 08.13-08.28/15	08.24	08.56 10.42-11.07/25 12.24-12.53/29	10.04
	23.06	21.33	19.49	18.09	15.37 11.32-11.59/27 13.21-13.44/23	14.51
19	04.11	05.39	07.04 08.10-08.29/19	08.27	08.59 10.43-11.07/24 12.25-12.54/29	10.05
	23.03	21.30	19.46	18.05	15.34 11.32-12.00/28 13.21-13.45/24	14.52
20	04.13	05.42	07.07 08.09-08.30/21	08.30	09.02 10.43-11.08/25 12.25-12.54/29	10.06
	23.01	21.27	19.42	18.02	15.32 11.33-12.01/28 13.22-13.45/23	14.52
21	04.16	05.45	07.10 08.08-08.31/23	08.33	09.05 10.43-11.08/25 12.26-12.55/29	10.07
	22.58	21.23	19.39	17.59	15.29 11.33-12.01/28 13.22-13.46/24	14.52
22	04.19	05.48	07.12 08.06-08.31/25	08.36	09.08 10.43-11.07/24 12.25-12.54/29	10.07
	22.55	21.20	19.36	17.56	15.27 11.32-12.00/28 13.22-13.45/23	14.52
23	04.22	05.50	07.15 08.06-08.31/25	08.39	09.11 10.44-11.07/23 12.26-12.54/28	10.08
	22.53	21.17	19.32	17.53	15.24 11.33-12.01/28 13.22-13.45/23	14.53
24	04.24	05.53	07.18 08.06-08.31/25	08.42	09.14 10.44-11.08/24 12.26-12.55/29	10.08
	22.50	21.14	19.29	17.49	15.22 11.33-12.01/28 13.23-13.46/23	14.54
25	04.27	05.56	07.21 08.06-08.31/25	07.44	09.16 10.45-11.08/23 12.27-12.55/28	10.09
	22.47	21.10	19.25	16.46	15.20 11.34-12.01/27 13.23-13.46/23	14.54
26	04.30	05.59	07.23 08.05-08.30/25	07.47	09.19 10.46-11.08/22 12.28-12.55/27	10.09
	22.44	21.07	19.22	16.43	15.18 11.35-12.02/27 13.24-13.46/22	14.55
27	04.33	06.02	07.26 08.05-08.29/24	07.50	09.22 10.47-11.08/21 12.28-12.55/27	10.09
	22.42	21.04	19.19	16.40	15.16 11.35-12.02/27 13.25-13.46/21	14.56
28	04.36	06.04	07.29 08.06-08.28/22	07.53	09.25 10.48-11.08/20 12.28-12.54/26	10.09
	22.39	21.00	19.15	16.37	15.14 11.36-12.02/26 13.26-13.46/20	14.57
29	04.38	06.07	07.31 08.07-08.27/20	07.56	09.27 10.48-11.06/18 12.29-12.54/25	10.08 12.01-12.02/1
	22.36	20.57	19.12	16.34	15.12 11.36-12.01/25 13.26-13.45/19	14.59
30	04.41	06.10	07.34 08.09-08.25/16	07.59	09.30 10.50-11.06/16 12.30-12.54/24	10.08 12.00-12.06/6
	22.33	20.53	19.08	16.31	15.10 11.37-12.01/24 13.27-13.45/18	15.00
31	04.44	06.13		08.02		10.07 11.59-12.07/8
	22.30	20.50		16.28		15.02
Potential sun hours	591	501	391	308	208	154
Sum of minutes with flicker	0	0	296	16	2013	532

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.34/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 **WTG:** WTG 02 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.37	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.13	20.41	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.16	08.47	10.01
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.01	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.09	06.36	05.52	04.18	03.26	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.14	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.03	03.27	04.30	05.59	07.23	07.47	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.02	07.26	07.50	09.22	10.09
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.08
	16.13	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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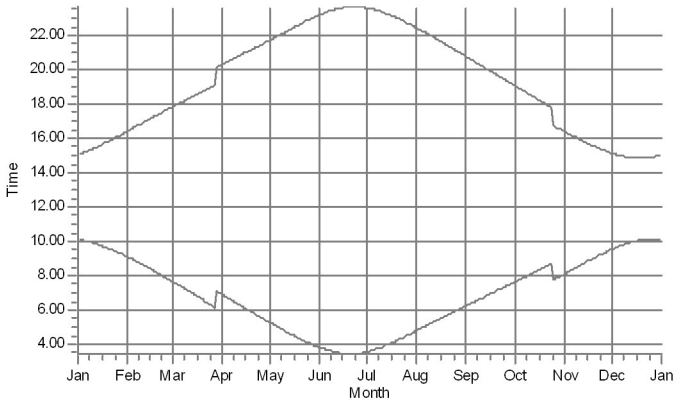
Calculated:
29/11/2024 10.34/4.0.552

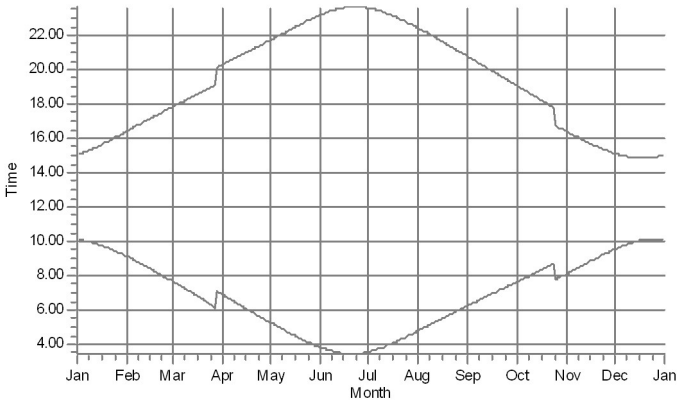
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

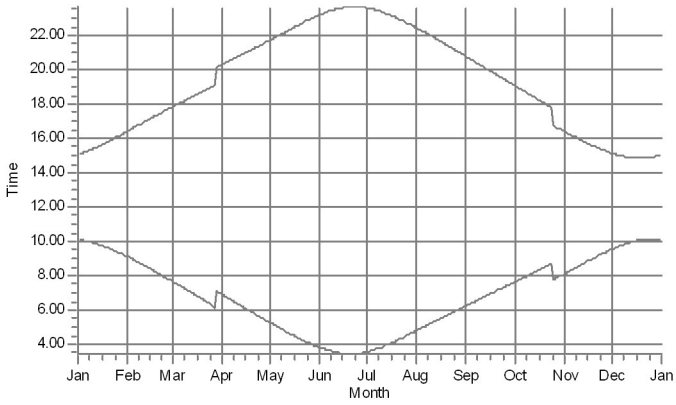
A: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (93)



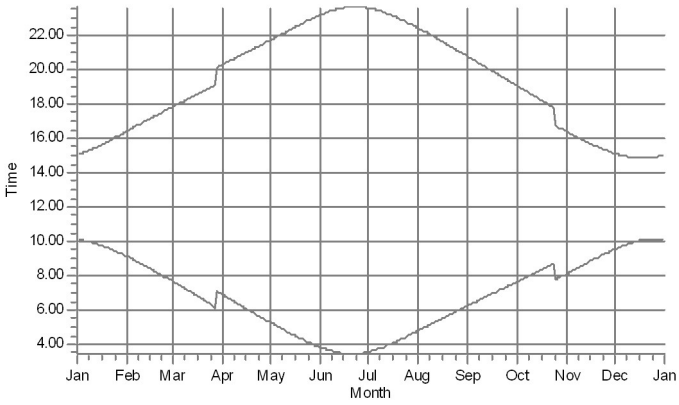
B: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (92)



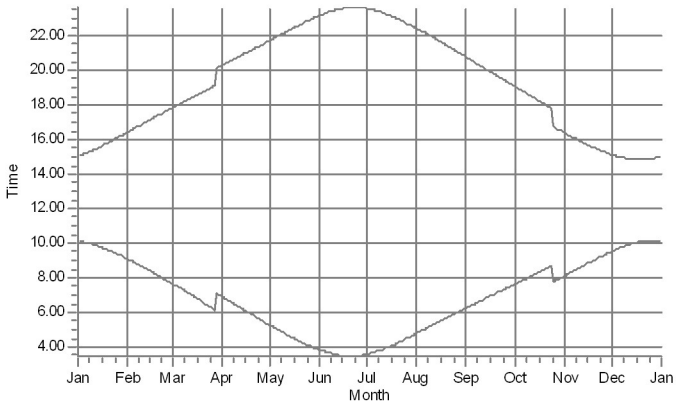
C: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (91)



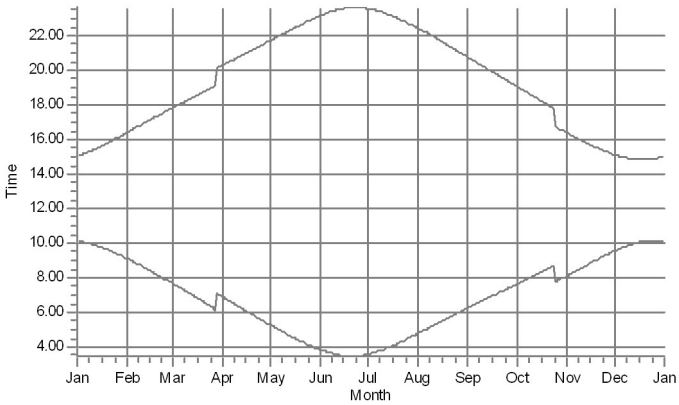
D: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (90)



E: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (89)



F: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (88)



WTGs

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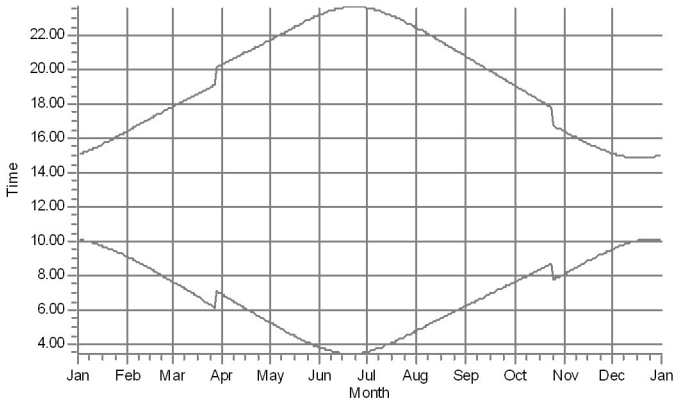
Calculated:
29/11/2024 10.34/4.0.552

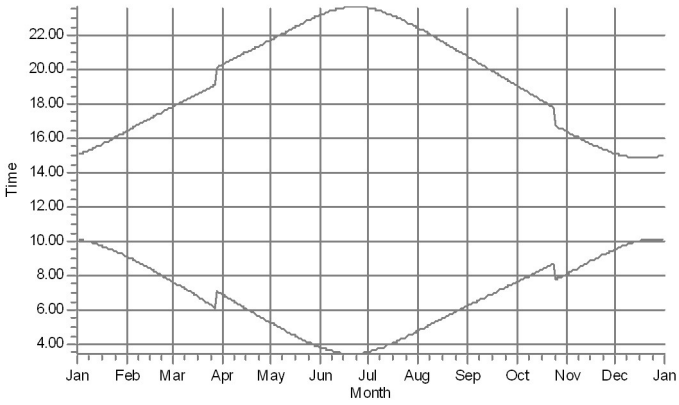
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

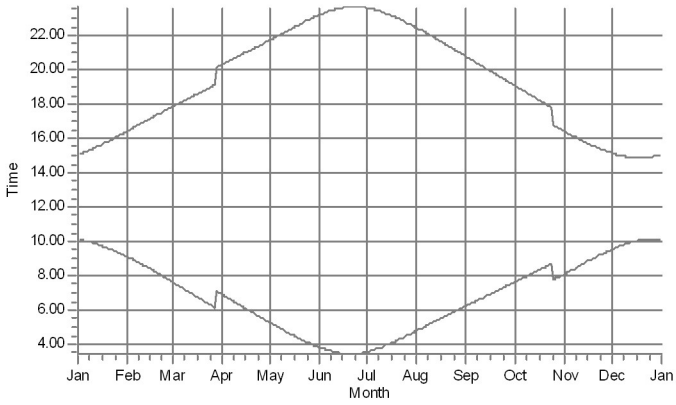
G: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (87)



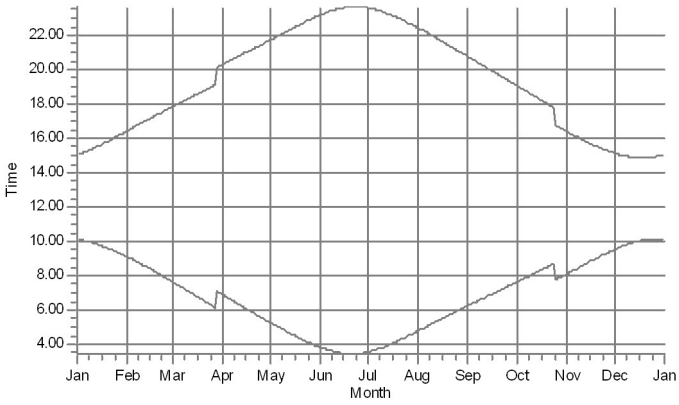
H: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (86)



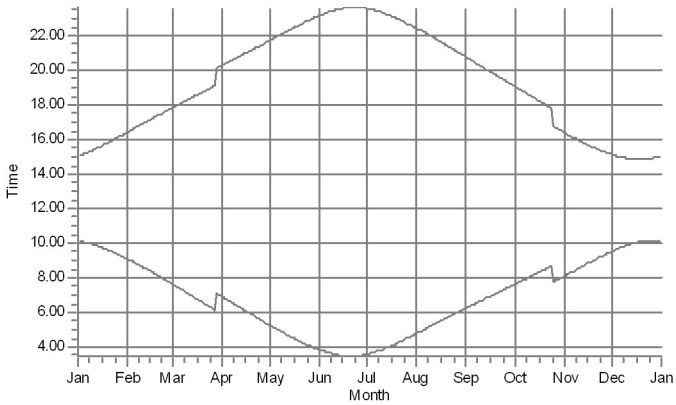
I: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (85)



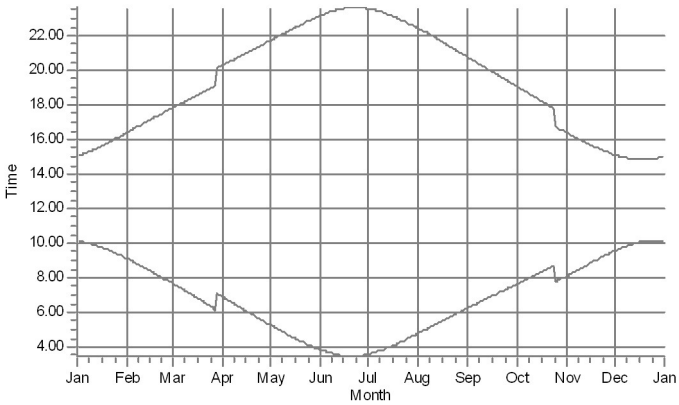
J: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (84)



K: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (83)



L: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (82)



WTGs

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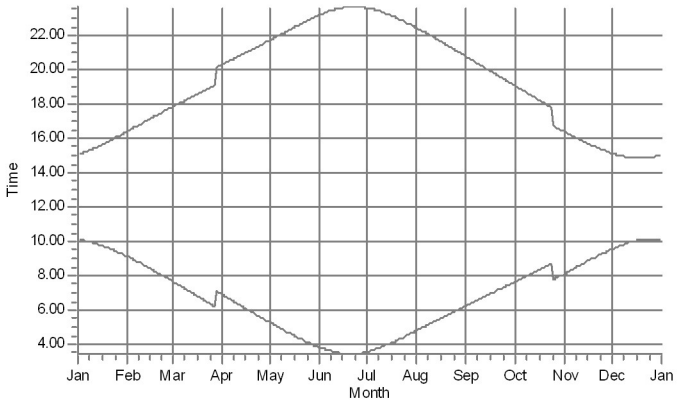
29/11/2024 10.34/4.0.552

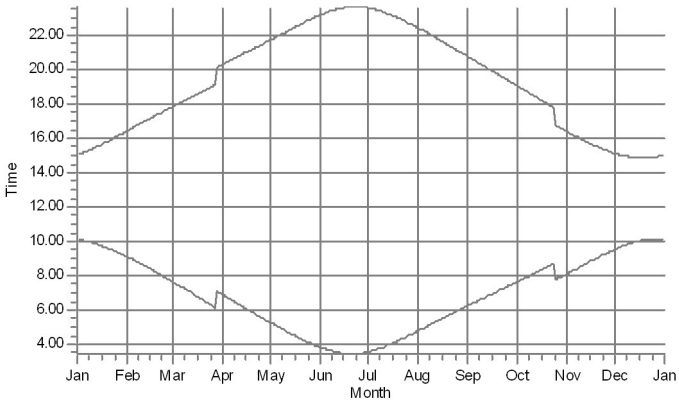
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

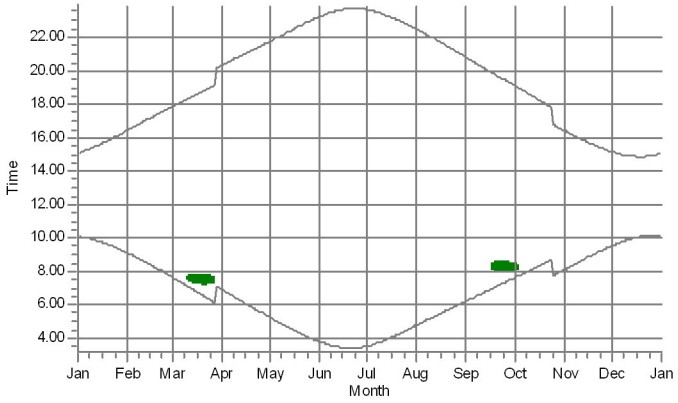
M: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (81)



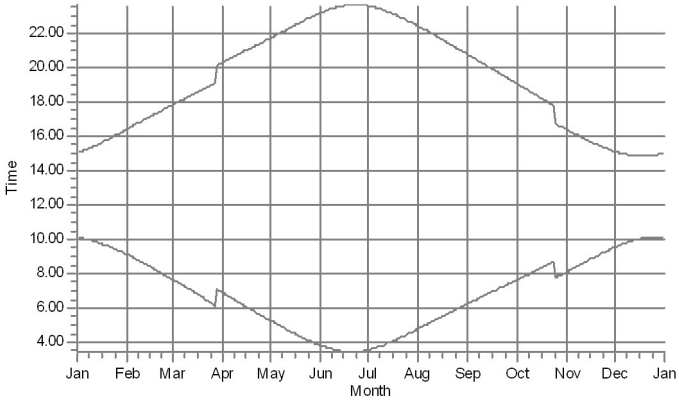
N: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80)



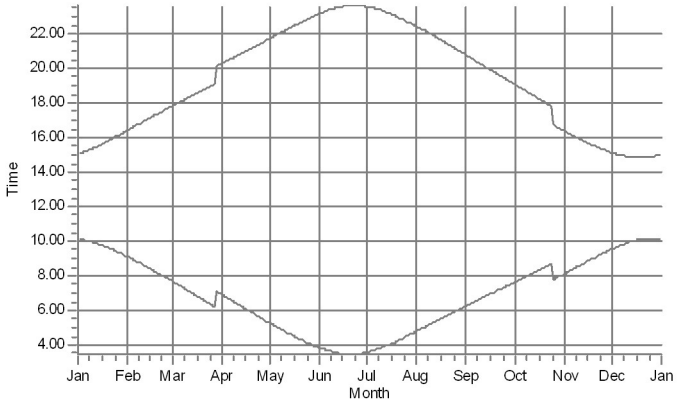
O: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)



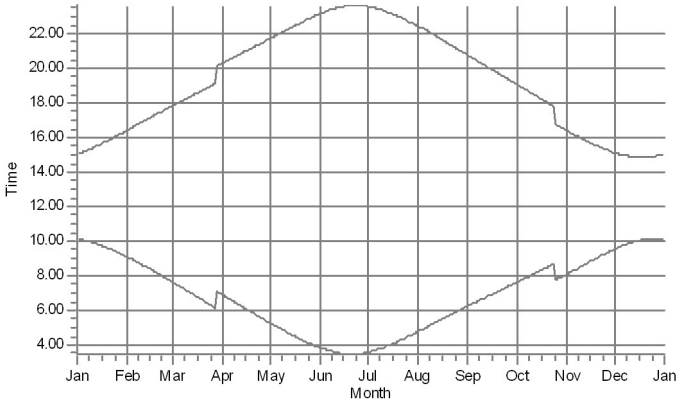
P: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (78)



Q: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (77)



R: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (76)



WTGs

WTG 01: NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

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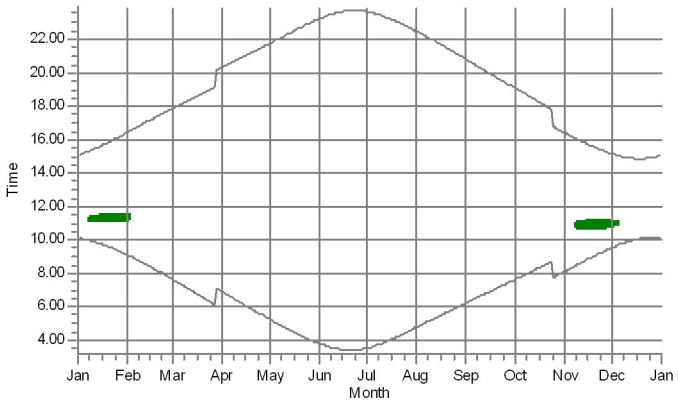
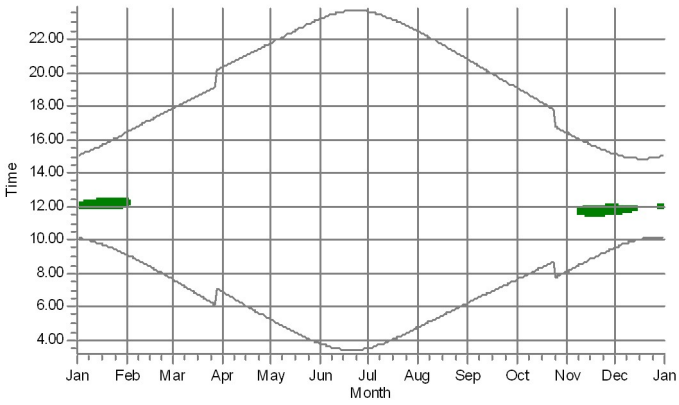
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

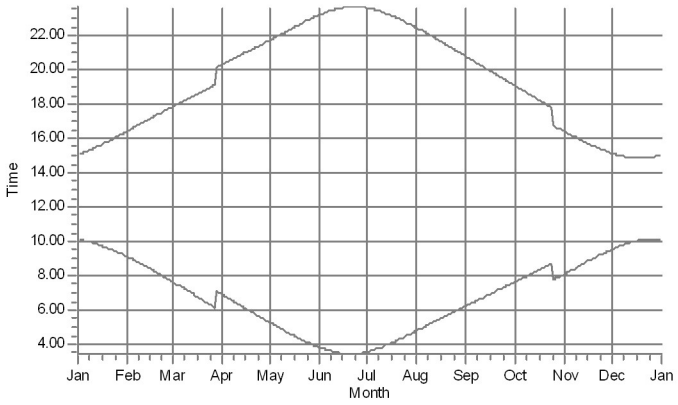
S: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)



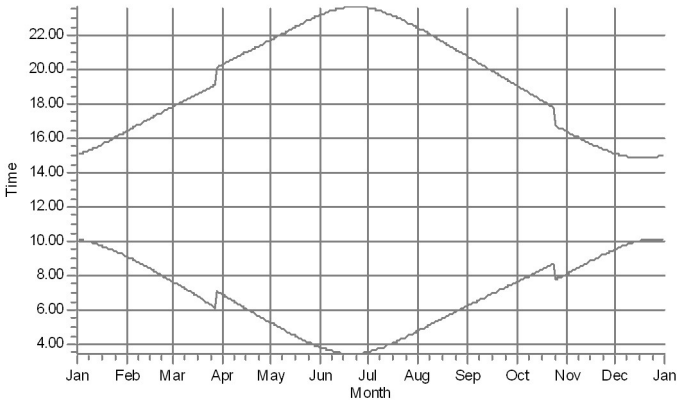
T: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)



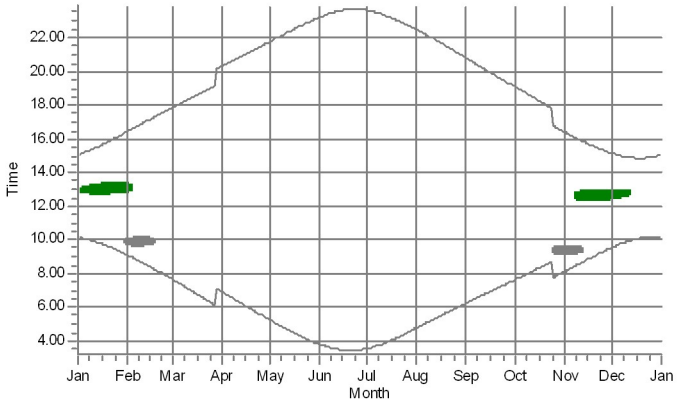
U: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (73)



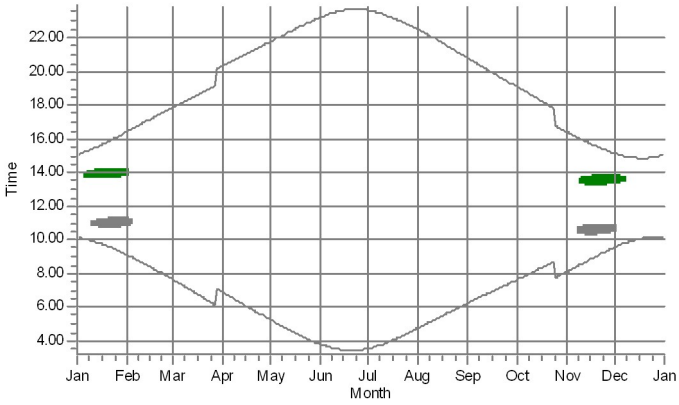
V: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (72)



W: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)



X: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)



WTGs

WTG 01: NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

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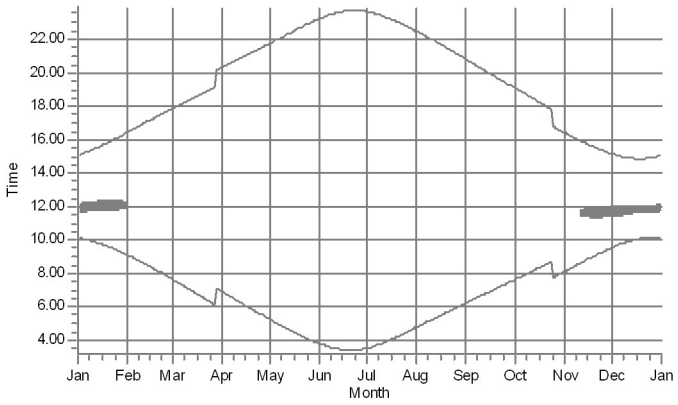
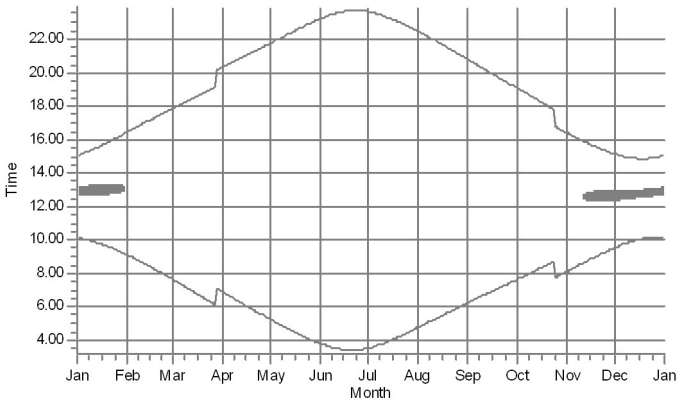
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

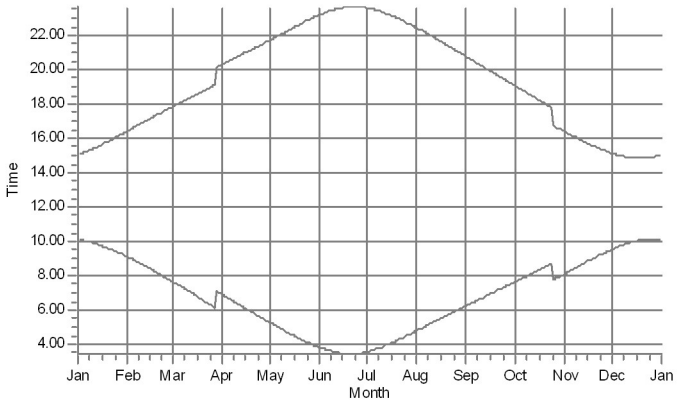
Y: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)



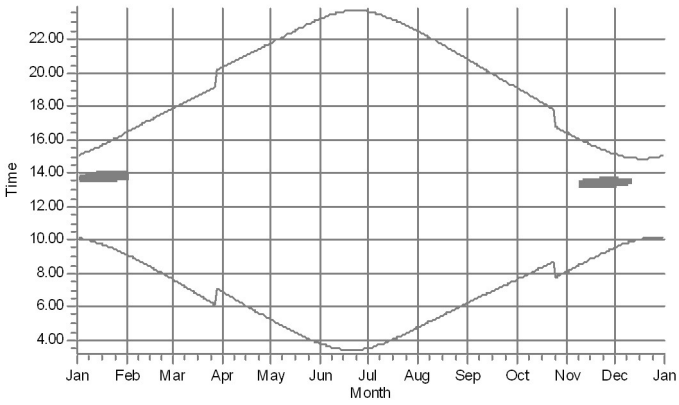
Z: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)



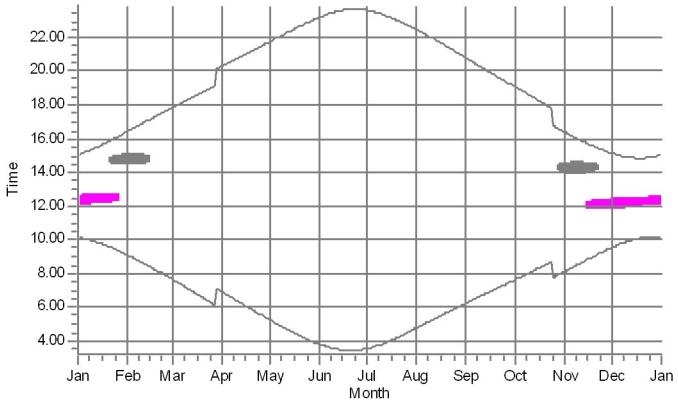
AA: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (67)



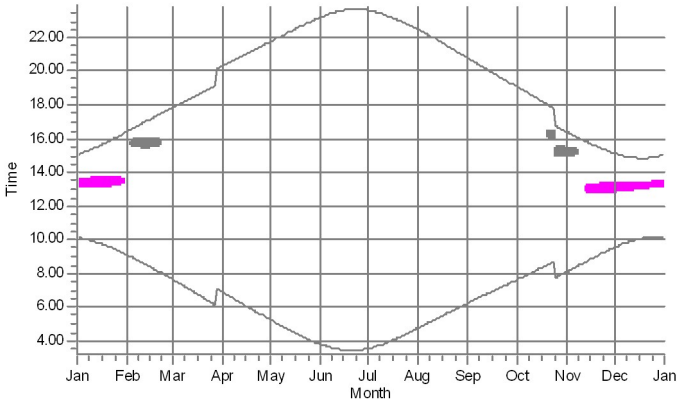
AB: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)



AC: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)



AD: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)



WTGs

K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

K 03: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)

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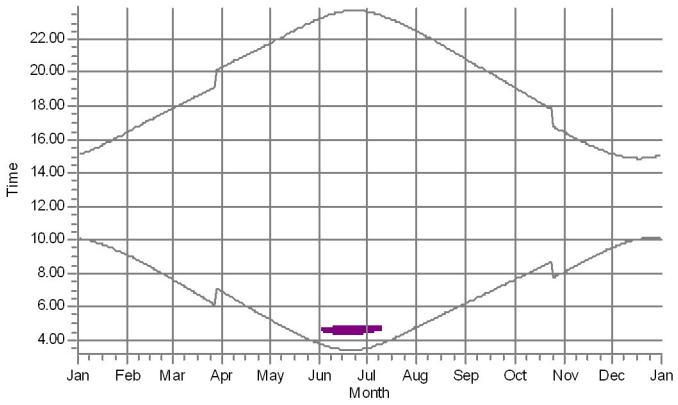
29/11/2024 10.34/4.0.552

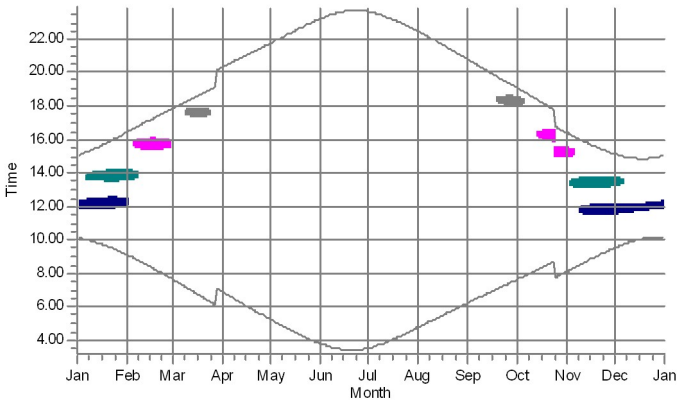
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

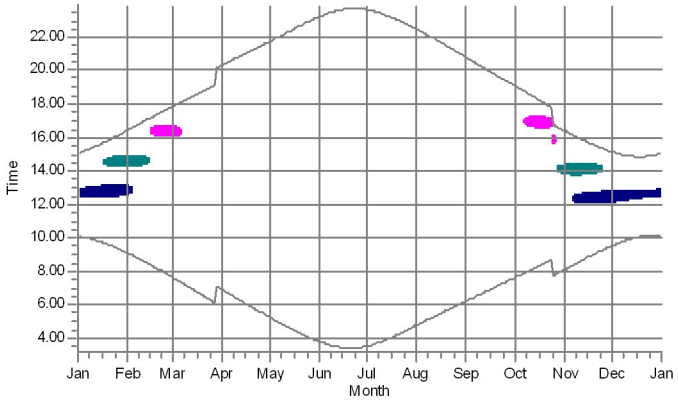
AE: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)



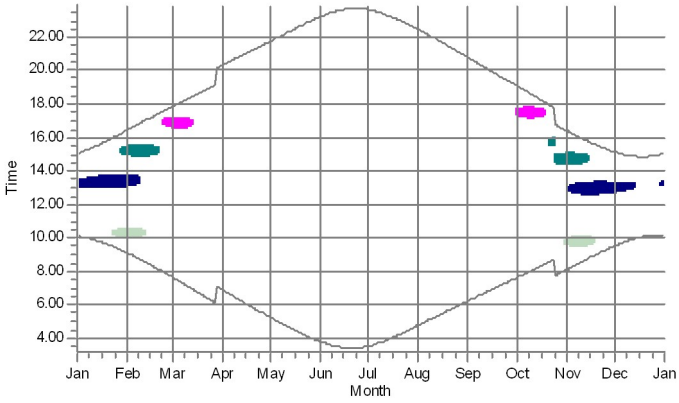
AF: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)



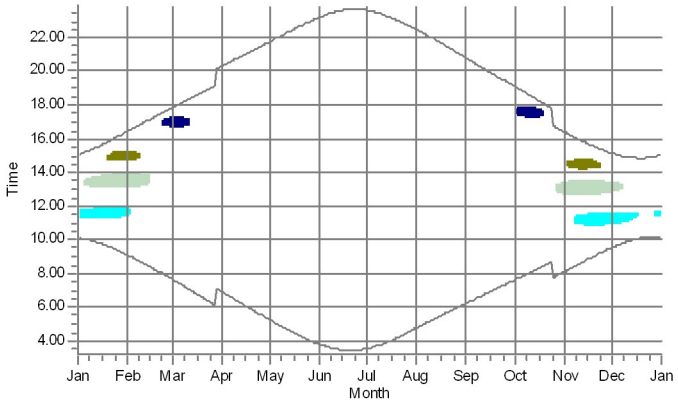
AG: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)



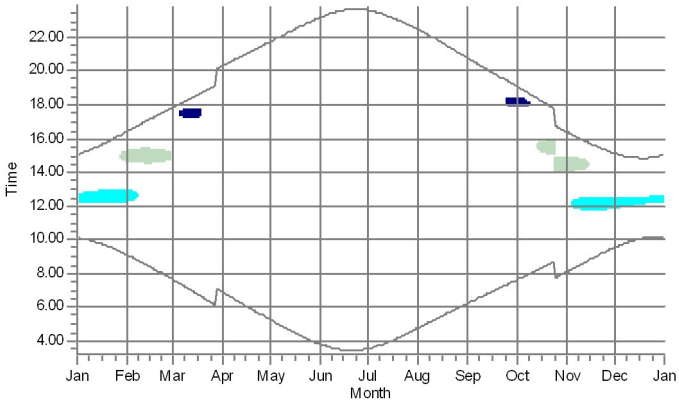
AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)



AI: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)



AJ: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)



WTGs

- K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)
- K 03: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)
- K 02: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)
- K 01: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)
- K 14: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (152)
- K 13: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (153)
- K 11: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)
- K 10: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)

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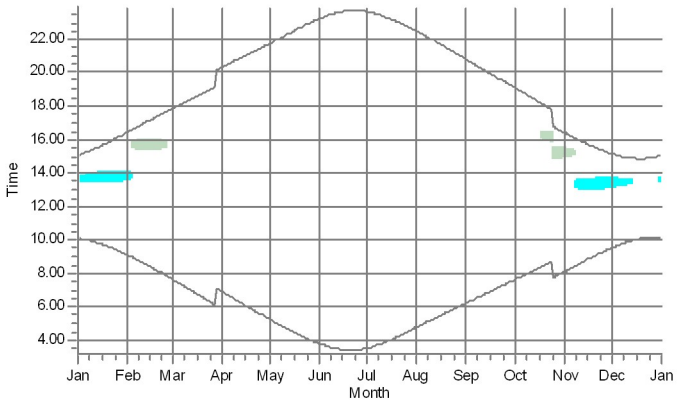
29/11/2024 10.34/4.0.552

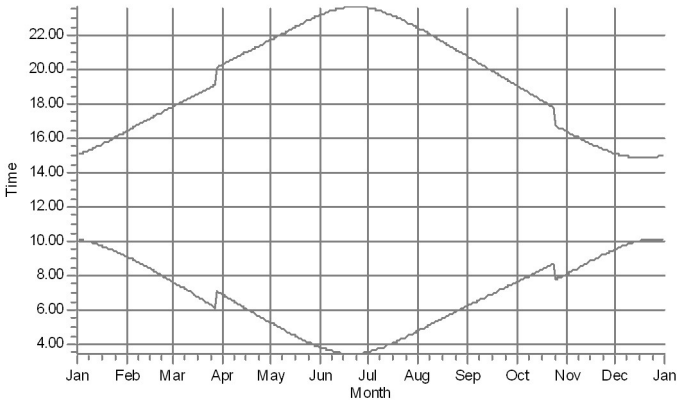
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163

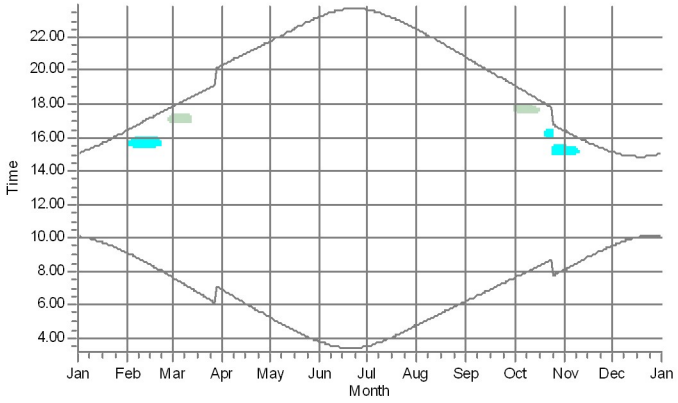
AK: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)



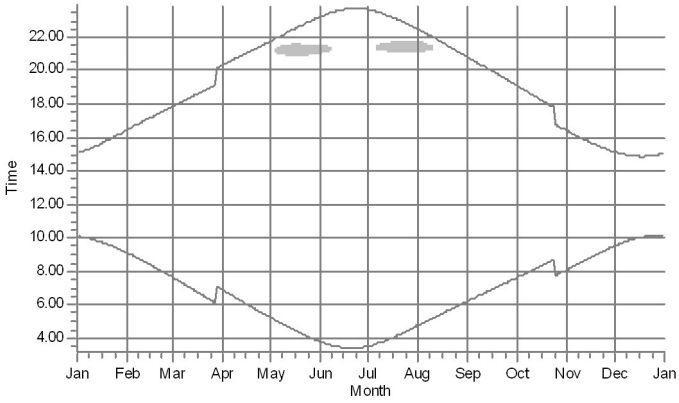
AL: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (56)



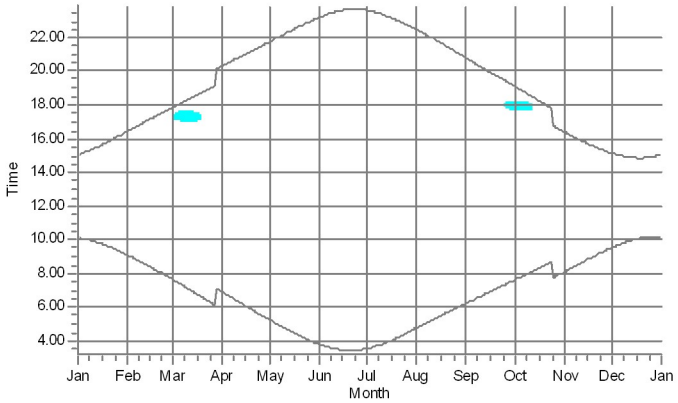
AM: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)



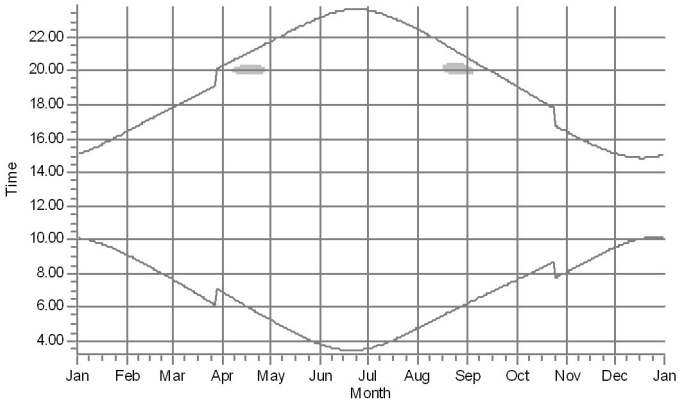
AN: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)



AO: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (53)



AP: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (52)



WTGs

K 12: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (154)
K 11: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)
K 10: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)

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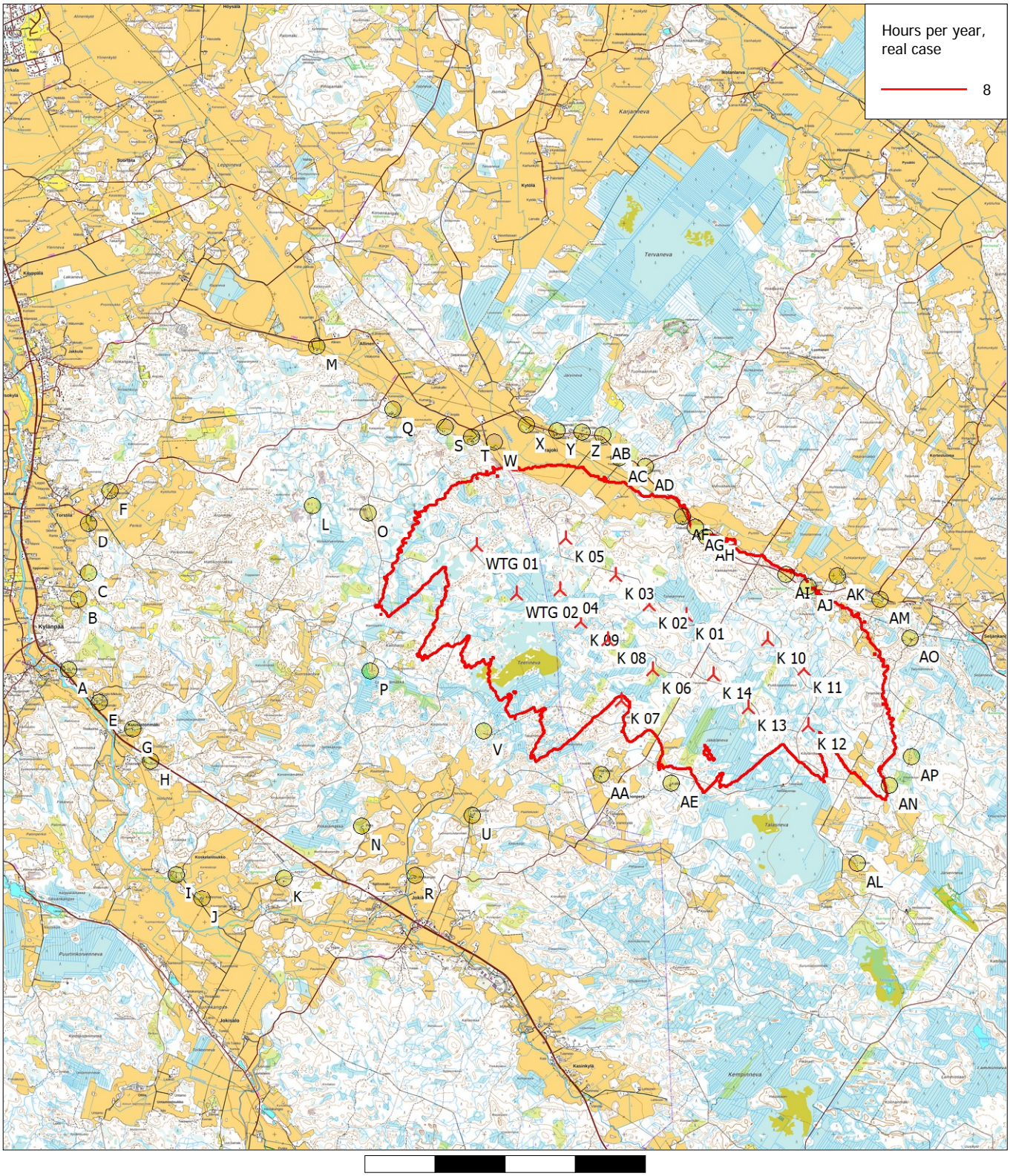
29/11/2024 10.34/4.0.552

SHADOW - Map

Calculation: 16 x WTG : 2 x N175 + 14 x N163



Map: Peruskartta 5/2023 , Print scale 1:80 000, Map center Finish TM ETRS-TM35FIN-ETRS89 East: 255 480,0 North: 6 984 300,0

New WTG Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_20220502 Kattiharju extension_1.wpo (2)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m

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SHADOW - Main Result

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

Assumptions for shadow calculations

Maximum distance for influence
Calculate only when more than 20 % of sun is covered by the blade
Please look in WTG table

Minimum sun height over horizon for influence	3 °
Day step for calculation	1 days
Time step for calculation	1 minutes

Sunshine probability S (Average daily sunshine hours) []

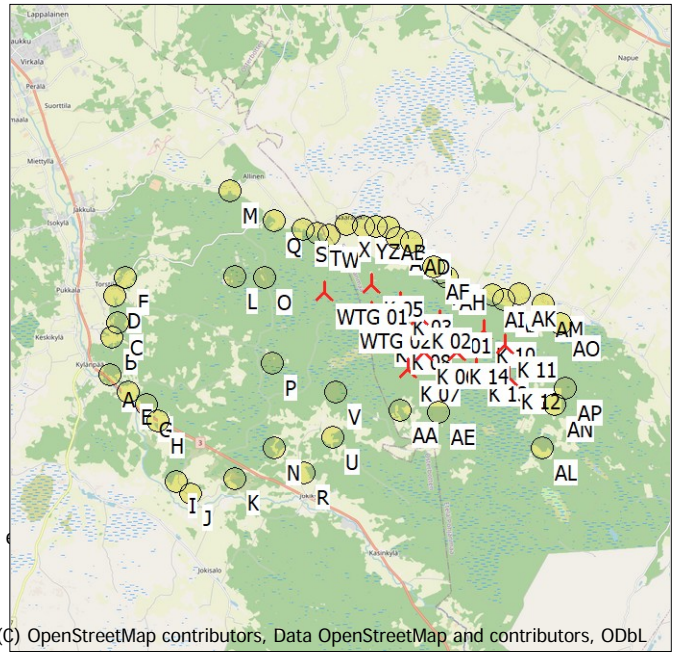
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

Monthly aggregation of real case reduction
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: CONTOURLINE_20220502 Kattiharju
Area object(s) used in calculation:
Luke 2021
Receptor grid resolution: 1,0 m

All coordinates are in
Finish TM ETRS-TM35FIN-ETRS89



Scale 1:200 000

New WTG Shadow receptor

WTGs

	East	North	Z	Row data/Description	WTG type Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Shadow data Calculation distance	RPM
			[m]					[kW]	[m]	[m]	[m]	[RPM]
K 01	258 892,0	6 984 359,0	45,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 02	258 361,0	6 984 512,0	52,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	149,5	1 786	10,0
K 03	257 878,0	6 984 922,0	48,3	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 04	257 087,0	6 984 720,0	50,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 05	257 163,0	6 985 462,0	49,2	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 06	258 414,0	6 983 575,0	52,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	148,5	1 786	10,0
K 07	257 962,0	6 983 145,0	54,9	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	149,5	1 786	10,0
K 08	257 766,0	6 984 006,0	52,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	149,5	1 786	10,0
K 09	257 382,0	6 984 262,0	50,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 10	260 052,0	6 984 010,0	50,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 11	260 574,0	6 983 589,0	45,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 12	260 637,0	6 982 769,0	47,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 13	259 773,0	6 983 040,0	51,0	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
K 14	259 278,0	6 983 511,0	52,5	NORDEX N163/6.X-6...	Yes	NORDEX	N163/6.X-6800-6 800	6 800	163,0	150,5	1 786	10,0
WTG 01	255 892,0	6 985 353,0	50,0	NORDEX N175/6.X-6...	Yes	NORDEX	N175/6.X-6800-6 800	6 800	175,0	171,5	1 900	9,0
WTG 02	256 462,0	6 984 661,0	50,0	NORDEX N175/6.X-6...	Yes	NORDEX	N175/6.X-6800-6 800	6 800	175,0	171,5	1 900	9,0

Shadow receptor-Input

No.	East	North	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
A	250 049,0	6 983 575,0	30,7	5,0	5,0	2,0	90,0	"Green house mode"	7,0
B	250 198,0	6 984 576,0	26,7	5,0	5,0	2,0	90,0	"Green house mode"	7,0
C	250 341,0	6 984 961,0	25,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
D	250 343,0	6 985 667,0	26,2	5,0	5,0	2,0	90,0	"Green house mode"	7,0
E	250 494,0	6 983 108,0	30,4	5,0	5,0	2,0	90,0	"Green house mode"	7,0
F	250 645,0	6 986 141,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
G	250 968,0	6 982 726,0	35,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
H	251 226,0	6 982 266,0	32,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
I	251 592,0	6 980 644,0	35,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
J	251 960,0	6 980 299,0	35,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
K	253 131,0	6 980 587,0	42,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0

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29/11/2024 10.37/4.0.552

SHADOW - Main Result

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

...continued from previous page

No.	East	North	Z	Width	Height	Elevation a.g.l.	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
L	253 546,0	6 985 931,0	45,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
M	253 607,0	6 988 208,0	22,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
N	254 248,0	6 981 332,0	42,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
O	254 339,0	6 985 826,0	55,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
P	254 373,0	6 983 560,0	45,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
Q	254 693,0	6 987 302,0	28,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
R	255 007,0	6 980 631,0	40,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
S	255 437,0	6 987 054,0	29,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
T	255 814,0	6 986 908,0	28,4	5,0	5,0	2,0	90,0	"Green house mode"	7,0
U	255 826,0	6 981 493,0	40,8	5,0	5,0	2,0	90,0	"Green house mode"	7,0
V	255 991,0	6 982 694,0	43,4	5,0	5,0	2,0	90,0	"Green house mode"	7,0
W	256 145,0	6 986 833,0	25,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
X	256 601,0	6 987 078,0	25,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
Y	257 040,0	6 987 001,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
Z	257 405,0	6 986 979,0	28,1	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AA	257 676,0	6 982 066,0	49,8	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AB	257 698,0	6 986 934,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AC	257 931,0	6 986 612,0	27,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AD	258 308,0	6 986 493,0	29,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AE	258 674,0	6 981 951,0	52,2	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AF	258 840,0	6 985 771,0	30,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AG	259 027,0	6 985 623,0	32,1	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AH	259 178,0	6 985 473,0	37,3	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AI	260 319,0	6 984 939,0	44,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AJ	260 630,0	6 984 768,0	35,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AK	261 049,0	6 984 913,0	35,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AL	261 344,0	6 980 808,0	48,3	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AM	261 661,0	6 984 584,0	36,9	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AN	261 796,0	6 981 916,0	47,5	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AO	262 098,0	6 984 032,0	39,6	5,0	5,0	2,0	90,0	"Green house mode"	7,0
AP	262 110,0	6 982 324,0	50,0	5,0	5,0	2,0	90,0	"Green house mode"	7,0

Calculation Results

Shadow receptor

	Shadow, worst case			Shadow, expected values
No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	0:00	0	0:00	0:00
B	0:00	0	0:00	0:00
C	0:00	0	0:00	0:00
D	0:00	0	0:00	0:00
E	0:00	0	0:00	0:00
F	0:00	0	0:00	0:00
G	0:00	0	0:00	0:00
H	0:00	0	0:00	0:00
I	0:00	0	0:00	0:00
J	0:00	0	0:00	0:00
K	0:00	0	0:00	0:00
L	0:00	0	0:00	0:00
M	0:00	0	0:00	0:00
N	0:00	0	0:00	0:00
O	0:00	0	0:00	0:00
P	0:00	0	0:00	0:00
Q	0:00	0	0:00	0:00
R	0:00	0	0:00	0:00
S	0:00	0	0:00	0:00
T	25:02	72	0:28	2:30
U	0:00	0	0:00	0:00
V	0:00	0	0:00	0:00
W	36:16	96	0:32	4:14
X	31:22	58	0:48	3:13
Y	26:32	80	0:27	2:30

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Calculated:
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SHADOW - Main Result

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

...continued from previous page

No.	Shadow, worst case: Shadow hours per year [h/year]	Shadow, worst case: Shadow days per year [days/year]	Shadow, worst case: Max shadow hours per day [h/day]	Shadow, expected values: Shadow hours per year [h/year]
Z	27:41	79	0:27	2:37
AA	0:00	0	0:00	0:00
AB	20:54	62	0:26	2:05
AC	43:11	108	0:36	4:40
AD	37:40	116	0:26	4:21
AE	0:00	0	0:00	0:00
AF	41:41	103	0:31	5:28
AG	50:16	128	0:32	6:08
AH	35:47	82	0:36	3:52
AI	0:00	0	0:00	0:00
AJ	39:26	94	0:35	4:00
AK	42:01	112	0:30	5:14
AL	0:00	0	0:00	0:00
AM	13:46	40	0:27	2:10
AN	0:00	0	0:00	0:00
AO	9:31	31	0:25	1:54
AP	0:00	0	0:00	0:00

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
K 01	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)	71:23	7:24
K 02	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)	24:20	2:37
K 03	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)	81:48	10:06
K 04	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (145)	0:00	0:00
K 05	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)	132:07	14:46
K 06	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 148,5 m (TOT: 230,0 m) (151)	0:00	0:00
K 07	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (150)	0:00	0:00
K 08	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (158)	0:00	0:00
K 09	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (157)	0:00	0:00
K 10	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)	16:18	2:38
K 11	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)	88:26	10:41
K 12	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (154)	0:00	0:00
K 13	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (153)	0:00	0:00
K 14	NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (152)	0:00	0:00
WTG 01	NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)	66:44	6:48
WTG 02	NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (140)	0:00	0:00

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** A - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (93)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.56	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.18	09.42
	15.12	16.39	18.02	20.30	21.57	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.40	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.41	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	21.59	20.17	18.36	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.26	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.16	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.07	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.11	21.40	19.56	18.16	15.42	14.52
17	09.43	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.03
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	09.00	10.05
	15.47	17.21	18.42	21.10	22.38	23.41	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.57	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.11	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.41	15.16	14.57
28	09.17	07.43	06.10	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** B - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (92)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	22.00	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.45	14.53
16	09.46	08.22	06.50	06.05	04.30	03.27	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.43	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.24	03.27	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.06
	15.50	17.24	18.45	21.12	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.42	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.41	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.05	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.10	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	556	601	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** C - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (91)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.38	22.27	20.47	19.06	16.25	15.08
2	10.06	09.04	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	22.00	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.06	23.27	23.28	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.57	08.40	07.10	06.26	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	22.00	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.57
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.54
14	09.50	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.47	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.45	14.53
16	09.46	08.22	06.50	06.05	04.30	03.27	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.44	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.24	03.26	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.06
	15.50	17.24	18.45	21.13	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.42	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.42	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.15		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.53	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** D - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (90)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.19	21.45	23.13	23.38	22.27	20.47	19.06	16.25	15.08
2	10.06	09.04	07.37	06.53	05.13	03.47	03.34	04.50	06.19	07.40	08.09	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.37	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	18.00	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.22	23.33	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.33	22.00	23.24	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.26	23.29	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.57	08.27	09.49
	15.18	16.48	18.11	20.38	22.06	23.27	23.28	22.06	20.24	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.20	16.51	18.14	20.41	22.09	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.57	08.40	07.10	06.26	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	22.00	20.17	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.17	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.33	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.04	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.57
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.54
14	09.50	08.28	06.57	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.16	21.47	20.03	18.22	15.47	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.44	20.00	18.19	15.45	14.53
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.44	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.40	23.09	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.24	03.26	04.09	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.39	07.05	08.28	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.07
	15.50	17.24	18.45	21.13	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.06	10.07
	15.53	17.27	18.48	21.15	22.44	23.42	22.58	21.24	19.39	17.59	15.30	14.52
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.05	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.42	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.00	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.05	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.03	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.15		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.53	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** E - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (89)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.11	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	18.00	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.40	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.42	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.30	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.25	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.11	23.31	23.24	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.55
	15.26	16.57	18.20	20.47	22.14	23.32	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.51	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.11	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.03
	15.41	17.15	18.37	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.25	08.56	10.04
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.10	22.38	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.41	22.56	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.52	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.11	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.19	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.40	22.42	21.04	19.19	16.41	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.34	08.00	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.07
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** F - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (88)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.13	23.38	22.27	20.47	19.06	16.25	15.08
2	10.06	09.04	07.37	06.53	05.13	03.47	03.34	04.50	06.19	07.40	08.09	09.36
	15.06	16.29	17.54	20.21	21.48	23.15	23.37	22.24	20.44	19.02	16.22	15.07
3	10.05	09.01	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.43	08.12	09.38
	15.08	16.32	17.57	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.05	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.15	09.40
	15.10	16.35	17.59	20.27	21.54	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.18	09.43
	15.12	16.38	18.02	20.30	21.57	23.22	23.33	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.24	06.39	05.00	03.39	03.41	05.02	06.30	07.51	08.21	09.45
	15.14	16.41	18.05	20.33	22.00	23.24	23.31	22.12	20.30	18.49	16.10	15.00
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.24	09.47
	15.16	16.45	18.08	20.35	22.03	23.26	23.29	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.27	09.49
	15.18	16.48	18.11	20.38	22.06	23.28	23.28	22.06	20.24	18.42	16.04	14.58
9	09.58	08.43	07.14	06.29	04.51	03.34	03.47	05.11	06.38	07.59	08.30	09.51
	15.20	16.51	18.14	20.41	22.09	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.57	08.40	07.10	06.25	04.48	03.33	03.49	05.14	06.40	08.02	08.33	09.53
	15.23	16.54	18.17	20.44	22.12	23.31	23.24	22.00	20.17	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.57	18.20	20.47	22.14	23.33	23.22	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.08	08.39	09.57
	15.28	17.00	18.22	20.50	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.07	18.26	15.50	14.53
14	09.50	08.28	06.57	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.16	21.47	20.03	18.22	15.47	14.53
15	09.48	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.38	23.13	21.44	20.00	18.19	15.45	14.52
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.57	08.19	08.51	10.03
	15.38	17.12	18.34	21.01	22.29	23.39	23.11	21.40	19.56	18.16	15.42	14.52
17	09.44	08.19	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.54	10.04
	15.41	17.15	18.37	21.04	22.32	23.40	23.09	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.59	04.24	03.26	04.08	05.37	07.02	08.25	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.50	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.05	08.27	09.00	10.06
	15.47	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.03	10.07
	15.50	17.24	18.45	21.13	22.41	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.35	08.06	06.33	05.49	04.16	03.26	04.16	05.45	07.10	08.33	09.06	10.07
	15.53	17.27	18.48	21.15	22.44	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.56	17.30	18.51	21.18	22.46	23.42	22.56	21.21	19.36	17.56	15.27	14.53
23	09.30	08.00	06.26	05.42	04.11	03.26	04.22	05.51	07.16	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.33	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.09
	16.02	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.05	03.27	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.55	23.42	22.48	21.11	19.26	16.47	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.24	07.48	09.20	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.45	21.07	19.22	16.44	15.18	14.56
27	09.20	07.47	06.13	05.29	04.00	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.29	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.03	23.40	22.39	21.01	19.16	16.37	15.14	14.58
29	09.15		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.28	10.09
	16.17		20.10	21.39	23.05	23.40	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.53	03.32	04.42	06.10	07.35	08.00	09.30	10.08
	16.20		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.03		10.08
	16.23		20.16		23.10		22.30	20.51		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** G - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (87)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.05	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.06	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.11	09.38
	15.08	16.32	17.57	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	18.00	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.23	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.29	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.53
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.36	09.54
	15.26	16.57	18.20	20.47	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.39	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.42	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.45	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.11	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.53	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.38	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.37	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.33	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.52	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.17	10.09
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.19	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.44	21.07	19.22	16.44	15.18	14.56
27	09.20	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	23.00	23.40	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.09
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.57	09.27	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** H - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (86)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.34	04.48	06.16	07.37	08.05	09.33
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.54	06.21	07.43	08.11	09.37
	15.08	16.32	17.57	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.34	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.01	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.54	08.23	09.47
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.38	07.59	08.29	09.51
	15.21	16.51	18.14	20.41	22.08	23.29	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.53
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.17	18.35	15.59	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.20	20.47	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.08	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.49	08.10	08.41	09.58
	15.31	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.22	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.27	03.27	04.06	05.34	06.59	08.22	08.53	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.11	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.37	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	17.59	15.30	14.53
22	09.32	08.03	06.30	05.46	04.14	03.26	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.25	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.17	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.31	05.59	07.24	07.48	09.19	10.09
	16.08	17.42	19.02	21.30	22.57	23.41	22.44	21.07	19.22	16.44	15.18	14.56
27	09.20	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.51	09.22	10.09
	16.11	17.45	19.04	21.33	22.59	23.40	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.54	09.25	10.08
	16.14	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.56	09.27	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	15.00
30	09.12		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.16		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** I - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (85)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.50	03.34	04.48	06.16	07.37	08.05	09.32
	15.05	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.06	09.03	07.37	06.53	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.37	04.54	06.21	07.43	08.11	09.37
	15.08	16.32	17.57	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.42	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.30	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.01	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.36	04.57	03.38	03.44	05.05	06.32	07.54	08.23	09.46
	15.16	16.45	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.37	03.46	05.08	06.35	07.56	08.26	09.48
	15.19	16.48	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.48	05.11	06.38	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.17	18.35	15.59	14.56
11	09.54	08.37	07.07	06.22	04.45	03.33	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.57	05.22	06.49	08.10	08.41	09.58
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.50	20.06	18.26	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.29	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	20.00	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.28	03.27	04.06	05.34	06.59	08.22	08.53	10.03
	15.42	17.15	18.36	21.04	22.31	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.12	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.36	08.09	06.36	05.52	04.19	03.27	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.43	18.03	15.32	14.53
21	09.34	08.06	06.33	05.49	04.16	03.27	04.17	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.24	19.39	18.00	15.30	14.53
22	09.32	08.02	06.30	05.46	04.14	03.27	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.53	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.14	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.55
25	09.24	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.29	04.31	05.59	07.24	07.48	09.19	10.08
	16.08	17.42	19.02	21.30	22.57	23.40	22.44	21.07	19.22	16.44	15.19	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.34	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.33	22.59	23.40	22.41	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.59	03.30	04.36	06.05	07.29	07.53	09.25	10.08
	16.14	17.48	19.07	21.36	23.02	23.39	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	15.00
30	09.11		07.03	05.20	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.41	23.07	23.38	22.33	20.54	19.09	16.31	15.11	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.03
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** J - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (84)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.50	03.34	04.48	06.16	07.37	08.05	09.32
	15.05	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.06	09.03	07.36	06.52	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.44	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.37	04.54	06.21	07.43	08.11	09.37
	15.08	16.32	17.57	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.44	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.55	07.27	06.42	05.04	03.42	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.39	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.52	07.23	06.39	05.01	03.40	03.42	05.02	06.30	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.36	04.57	03.38	03.44	05.05	06.32	07.54	08.23	09.46
	15.16	16.45	18.08	20.35	22.02	23.25	23.28	22.08	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.37	03.46	05.08	06.35	07.56	08.26	09.48
	15.19	16.48	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.48	05.11	06.38	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.26	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.16	18.35	15.59	14.56
11	09.54	08.37	07.07	06.22	04.45	03.33	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.20	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.57	05.22	06.49	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.50	20.06	18.25	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.25	06.53	06.09	04.33	03.29	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.12	21.43	20.00	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.57	08.19	08.50	10.02
	15.39	17.12	18.34	21.01	22.29	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.47	06.02	04.28	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.42	17.15	18.36	21.04	22.31	23.39	23.08	21.37	19.53	18.12	15.40	14.53
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.12	05.40	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.36	08.09	06.36	05.52	04.19	03.27	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.43	18.03	15.32	14.53
21	09.34	08.06	06.33	05.49	04.16	03.27	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.48	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.30	05.46	04.14	03.27	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.55
25	09.24	07.53	06.20	05.36	04.06	03.28	04.28	05.56	07.21	07.45	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.50	06.16	05.32	04.03	03.29	04.31	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.02	21.30	22.57	23.40	22.44	21.07	19.22	16.44	15.19	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.34	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.33	22.59	23.40	22.41	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.59	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.39	21.00	19.16	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.08	07.32	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.36	20.57	19.12	16.34	15.12	15.00
30	09.11		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.41	23.07	23.38	22.33	20.54	19.09	16.31	15.11	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.03
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** K - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (83)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.34	04.48	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.09
2	10.05	09.03	07.36	06.52	05.13	03.47	03.35	04.51	06.19	07.40	08.08	09.35
	15.06	16.29	17.54	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.18	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.54	07.27	06.42	05.04	03.42	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.52	07.23	06.39	05.00	03.40	03.42	05.02	06.29	07.51	08.20	09.44
	15.14	16.42	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.36	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.45	18.08	20.35	22.02	23.25	23.28	22.08	20.27	18.45	16.07	15.00
8	09.59	08.46	07.17	06.32	04.54	03.37	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.48	18.11	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.48	05.11	06.38	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.34	03.50	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.17	20.44	22.11	23.30	23.23	21.59	20.16	18.35	15.59	14.56
11	09.54	08.37	07.07	06.22	04.45	03.32	03.52	05.17	06.43	08.05	08.35	09.54
	15.26	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.55
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.28	06.57	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.48	14.53
15	09.47	08.24	06.53	06.09	04.33	03.29	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.56	08.19	08.50	10.02
	15.39	17.12	18.33	21.01	22.28	23.38	23.10	21.40	19.56	18.16	15.42	14.53
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.37	19.53	18.12	15.40	14.52
18	09.41	08.15	06.43	05.59	04.25	03.27	04.09	05.37	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.27	04.11	05.39	07.05	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.35	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.42	18.03	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.30	05.45	04.14	03.27	04.20	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.54	07.18	08.42	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.23	14.54
25	09.24	07.53	06.19	05.36	04.06	03.28	04.28	05.56	07.21	07.44	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.47	15.21	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.31	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.01	21.30	22.57	23.40	22.44	21.07	19.22	16.44	15.18	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.23	03.56	03.31	04.39	06.07	07.32	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.36	20.57	19.12	16.34	15.12	15.00
30	09.11		07.03	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.13	21.41	23.07	23.38	22.33	20.53	19.09	16.31	15.10	15.01
31	09.09		06.59		03.52		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** L - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (82)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.33
	15.04	16.26	17.51	20.18	21.45	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.06
3	10.05	09.01	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.38
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.46	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.17	09.42
	15.11	16.38	18.02	20.30	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.45
	15.13	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.49	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.47
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.33	09.53
	15.23	16.54	18.16	20.44	22.11	23.31	23.24	21.59	20.16	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.57	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.19	04.42	03.30	03.53	05.19	06.46	08.07	08.39	09.56
	15.28	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.29	03.56	05.22	06.48	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.57	06.12	04.36	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.47	20.03	18.22	15.47	14.53
15	09.47	08.25	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.44	14.52
16	09.45	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.51	10.02
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.22	08.54	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.05	08.27	08.59	10.06
	15.47	17.21	18.42	21.09	22.38	23.41	23.03	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.36	05.52	04.18	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.43	18.02	15.32	14.52
21	09.34	08.06	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.03	06.30	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.53
23	09.30	07.59	06.26	05.42	04.10	03.26	04.22	05.51	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.22	14.54
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.54	23.42	22.47	21.10	19.26	16.46	15.20	14.55
26	09.22	07.50	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.48	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.51	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.26	03.58	03.29	04.36	06.05	07.29	07.54	09.25	10.09
	16.13	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.39	06.07	07.32	07.56	09.28	10.08
	16.17		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.08
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** M - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (81)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.48	03.32	04.47	06.16	07.37	08.06	09.33
	15.04	16.26	17.51	20.18	21.45	23.13	23.38	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.37	06.52	05.13	03.46	03.34	04.50	06.18	07.40	08.09	09.36
	15.05	16.29	17.53	20.21	21.48	23.15	23.37	22.24	20.44	19.02	16.22	15.06
3	10.06	09.01	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.43	08.12	09.38
	15.07	16.32	17.56	20.24	21.51	23.17	23.35	22.21	20.40	18.59	16.19	15.04
4	10.05	08.58	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.15	09.40
	15.09	16.35	17.59	20.27	21.54	23.20	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.40	03.39	04.59	06.27	07.48	08.18	09.43
	15.11	16.38	18.02	20.30	21.57	23.22	23.33	22.15	20.34	18.52	16.13	15.01
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.21	09.45
	15.13	16.41	18.05	20.32	22.00	23.24	23.31	22.12	20.30	18.49	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.42	05.05	06.32	07.54	08.24	09.47
	15.15	16.44	18.08	20.35	22.03	23.26	23.30	22.09	20.27	18.45	16.07	14.59
8	10.00	08.46	07.17	06.32	04.54	03.35	03.44	05.07	06.35	07.56	08.27	09.49
	15.18	16.47	18.11	20.38	22.06	23.28	23.28	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.46	05.10	06.37	07.59	08.30	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.38	16.01	14.56
10	09.57	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.33	09.53
	15.22	16.53	18.16	20.44	22.11	23.31	23.24	21.59	20.17	18.35	15.58	14.55
11	09.55	08.37	07.07	06.22	04.44	03.31	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.57	18.19	20.47	22.14	23.33	23.22	21.56	20.13	18.32	15.55	14.54
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.46	08.07	08.39	09.57
	15.27	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.36	23.18	21.50	20.06	18.25	15.50	14.53
14	09.50	08.28	06.57	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.16	21.47	20.03	18.22	15.47	14.52
15	09.48	08.25	06.53	06.08	04.33	03.27	04.00	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	20.00	18.19	15.44	14.52
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.51	10.03
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.44	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.22	08.54	10.04
	15.41	17.15	18.36	21.04	22.32	23.40	23.09	21.37	19.53	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.41	23.06	21.34	19.49	18.09	15.37	14.51
19	09.39	08.12	06.40	05.55	04.21	03.25	04.11	05.39	07.04	08.27	09.00	10.06
	15.46	17.21	18.42	21.10	22.38	23.41	23.04	21.30	19.46	18.06	15.34	14.51
20	09.37	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.03	10.07
	15.49	17.24	18.45	21.12	22.41	23.42	23.01	21.27	19.43	18.02	15.32	14.52
21	09.35	08.06	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.48	21.15	22.44	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.03	06.30	05.45	04.13	03.25	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.52
23	09.30	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.39	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.22	14.53
25	09.25	07.53	06.19	05.35	04.05	03.26	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.55	23.42	22.48	21.10	19.26	16.46	15.20	14.54
26	09.22	07.50	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.48	09.20	10.09
	16.07	17.42	19.01	21.30	22.57	23.42	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.51	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.54	09.25	10.09
	16.13	17.48	19.07	21.36	23.03	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.15		07.06	05.22	03.55	03.30	04.38	06.07	07.32	07.57	09.28	10.09
	16.16		20.10	21.39	23.05	23.40	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.41	06.10	07.34	08.00	09.30	10.08
	16.19		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.03		10.08
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	184	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** N - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.35	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.46	05.07	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.10	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.04
5	10.03	08.54	07.26	06.42	05.03	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.52	07.23	06.39	05.00	03.40	03.41	05.02	06.29	07.51	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.49	16.10	15.01
7	10.00	08.49	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.48	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.39	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.52	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.56	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.27	06.56	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.09	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.26	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.56	08.19	08.50	10.02
	15.39	17.12	18.33	21.01	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.59	04.24	03.27	04.09	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.22	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.11	10.08
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.42	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.23	14.54
25	09.24	07.53	06.19	05.35	04.06	03.28	04.28	05.56	07.21	07.44	09.16	10.08
	16.05	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.25	16.47	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.01	21.29	22.57	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.13	21.41	23.07	23.38	22.33	20.53	19.09	16.31	15.10	15.01
31	09.09		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** O - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.33
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.15	23.36	22.24	20.44	19.02	16.22	15.06
3	10.05	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.38
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.58	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.45
	15.13	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.47
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.53
	15.23	16.54	18.16	20.44	22.11	23.31	23.24	21.59	20.16	18.35	15.58	14.56
11	09.55	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.05	08.35	09.55
	15.25	16.57	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.42	03.30	03.53	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.56	06.12	04.36	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.25	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.01
	15.35	17.09	18.31	20.58	22.26	23.37	23.13	21.43	19.59	18.19	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.50	10.02
	15.38	17.12	18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.05
	15.44	17.18	18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.38	23.41	23.03	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.36	05.52	04.18	03.26	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.32	14.52
21	09.34	08.06	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.52
23	09.30	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.39	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.08
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.50	15.22	14.54
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.26	16.46	15.20	14.54
26	09.22	07.50	06.16	05.32	04.03	03.27	04.30	05.59	07.23	07.48	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.50	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.09
	16.13	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.39	06.07	07.31	07.56	09.28	10.08
	16.16		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.42	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.08
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** P - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (78)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.59	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.26	06.42	05.03	03.41	03.39	04.59	06.27	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.47
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.51
	15.20	16.51	18.14	20.41	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.53
	15.23	16.54	18.16	20.44	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.07	06.22	04.45	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.10	18.29	15.53	14.54
13	09.51	08.31	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.01
	15.36	17.09	18.31	20.58	22.26	23.37	23.13	21.43	19.59	18.19	15.45	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.19	08.50	10.02
	15.38	17.12	18.33	21.01	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.40	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.37	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.32	14.52
21	09.34	08.06	06.33	05.49	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.07
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.13	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.26	04.22	05.51	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.42	09.14	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.14	19.29	17.50	15.22	14.54
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.16	10.08
	16.04	17.39	18.59	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.13	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.09
	16.10	17.45	19.04	21.33	22.59	23.40	22.42	21.04	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.25	10.08
	16.14	17.48	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.13	21.41	23.07	23.38	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** Q - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (77)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.48	03.32	04.47	06.15	07.37	08.05	09.33
	15.04	16.26	17.50	20.18	21.45	23.12	23.38	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.46	03.34	04.50	06.18	07.40	08.08	09.35
	15.05	16.29	17.53	20.21	21.48	23.15	23.36	22.24	20.44	19.02	16.22	15.06
3	10.05	09.01	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11	09.38
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.19	15.04
4	10.04	08.58	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.16	15.03
5	10.03	08.55	07.27	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.01
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.45
	15.13	16.41	18.05	20.32	21.59	23.24	23.31	22.12	20.30	18.48	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23	09.47
	15.15	16.44	18.08	20.35	22.02	23.26	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.35	03.44	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.28	22.06	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.29	04.51	03.34	03.47	05.10	06.37	07.59	08.30	09.51
	15.20	16.50	18.14	20.41	22.08	23.29	23.26	22.03	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.02	08.33	09.53
	15.22	16.53	18.16	20.44	22.11	23.31	23.24	21.59	20.16	18.35	15.58	14.55
11	09.55	08.37	07.07	06.22	04.44	03.31	03.51	05.16	06.43	08.05	08.36	09.55
	15.25	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	14.54
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.46	08.07	08.39	09.56
	15.27	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.42	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.37	23.15	21.47	20.03	18.22	15.47	14.52
15	09.48	08.25	06.53	06.08	04.33	03.27	04.00	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	19.59	18.19	15.44	14.52
16	09.46	08.22	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.19	08.51	10.02
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.22	08.54	10.04
	15.41	17.15	18.36	21.04	22.32	23.40	23.08	21.37	19.53	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.57	10.05
	15.44	17.18	18.39	21.07	22.35	23.40	23.06	21.34	19.49	18.09	15.36	14.51
19	09.39	08.12	06.40	05.55	04.21	03.25	04.11	05.39	07.04	08.27	08.59	10.06
	15.46	17.21	18.42	21.09	22.38	23.41	23.03	21.30	19.46	18.06	15.34	14.51
20	09.37	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.45	21.12	22.41	23.41	23.01	21.27	19.42	18.02	15.31	14.52
21	09.35	08.06	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.25	04.19	05.48	07.13	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.52
23	09.30	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.08	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.49	15.22	14.53
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.55	23.42	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.50	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.48	09.20	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.13	05.29	04.00	03.28	04.33	06.02	07.26	07.51	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.09
	16.13	17.48	19.07	21.36	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.28	10.09
	16.16		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.13	21.42	23.08	23.39	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.08
	16.22		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	184	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** R - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (76)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.33	04.48	06.16	07.37	08.05	09.32
	15.04	16.26	17.51	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.05	09.03	07.36	06.52	05.13	03.47	03.35	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.58	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.39
	15.10	16.35	17.59	20.26	21.53	23.18	23.33	22.18	20.37	18.55	16.16	15.04
5	10.02	08.54	07.26	06.42	05.03	03.41	03.40	04.59	06.27	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.20	23.31	22.14	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.39	05.00	03.40	03.41	05.02	06.29	07.51	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.01
7	10.00	08.48	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.48	18.11	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.50
	15.21	16.51	18.14	20.41	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.34	03.49	05.14	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.52	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.56	14.55
12	09.52	08.34	07.03	06.19	04.42	03.31	03.54	05.19	06.46	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.29	15.53	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.31	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.27	06.56	06.12	04.36	03.29	03.59	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.35	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.31	20.58	22.25	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.28	04.04	05.31	06.56	08.18	08.50	10.02
	15.39	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.38	23.08	21.36	19.53	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.27	04.09	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.40	05.55	04.22	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.45	21.12	22.40	23.40	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.49	04.16	03.26	04.17	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.30	14.53
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.27	04.22	05.51	07.15	08.39	09.10	10.07
	15.59	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.54
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.41	09.13	10.08
	16.02	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.23	14.54
25	09.24	07.53	06.19	05.35	04.06	03.28	04.28	05.56	07.21	07.44	09.16	10.08
	16.05	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.47	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.08	17.42	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.13	05.29	04.01	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.05	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.54	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.12	21.41	23.07	23.37	22.33	20.53	19.09	16.31	15.10	15.01
31	09.08		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** S - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.56	05.16	03.48	03.32	04.47	06.15	07.37	08.05	09.33
	15.04	16.26	17.50	20.18	21.44	23.12	23.38	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.40	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11	09.38
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.04
4	10.04	08.58	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.27	21.53	23.19	23.34	22.18	20.37	18.55	16.15	15.03
5	10.03	08.55	07.26	06.42	05.03	03.40	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.51	08.20	09.45
	15.13	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.10	15.00
7	10.01	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23	09.47
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.27	18.45	16.07	14.59
8	09.59	08.46	07.17	06.32	04.54	03.35	03.44	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.06	20.23	18.42	16.04	14.57
9	09.58	08.43	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.13	20.41	22.08	23.29	23.26	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.02	08.32	09.53
	15.22	16.53	18.16	20.44	22.11	23.31	23.24	21.59	20.16	18.35	15.58	14.55
11	09.55	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.05	08.35	09.55
	15.25	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	14.54
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	17.00	18.22	20.49	22.17	23.34	23.20	21.53	20.10	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.18	21.50	20.06	18.25	15.50	14.53
14	09.49	08.28	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.45	10.00
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.52
15	09.47	08.25	06.53	06.08	04.32	03.27	04.00	05.28	06.54	08.16	08.48	10.01
	15.35	17.09	18.31	20.58	22.26	23.38	23.13	21.43	19.59	18.19	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.19	08.50	10.02
	15.38	17.12	18.33	21.01	22.29	23.39	23.11	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.04
	15.41	17.15	18.36	21.04	22.32	23.39	23.08	21.37	19.53	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.05
	15.44	17.18	18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.40	05.55	04.21	03.25	04.11	05.39	07.04	08.27	08.59	10.06
	15.46	17.21	18.42	21.09	22.38	23.41	23.03	21.30	19.46	18.05	15.34	14.51
20	09.37	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.45	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31	14.52
21	09.34	08.06	06.33	05.48	04.15	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.42	22.58	21.24	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08	10.08
	15.55	17.30	18.50	21.18	22.46	23.42	22.56	21.20	19.36	17.56	15.27	14.52
23	09.30	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.07	03.26	04.24	05.53	07.18	08.42	09.14	10.09
	16.01	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.49	15.22	14.53
25	09.25	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.45	09.17	10.09
	16.04	17.39	18.59	21.27	22.54	23.42	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.48	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.45	21.07	19.22	16.43	15.18	14.55
27	09.20	07.46	06.12	05.29	04.00	03.28	04.33	06.02	07.26	07.50	09.22	10.09
	16.10	17.45	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.57	03.29	04.36	06.04	07.29	07.53	09.25	10.09
	16.13	17.47	19.07	21.36	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.28	10.09
	16.16		20.10	21.39	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.12		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.13	21.42	23.07	23.39	22.33	20.54	19.09	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.08
	16.22		20.15		23.10		22.30	20.50		16.28		15.01
Potential sun hours	184	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** T - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07		11.58 (WTG 01)	09.06		12.07 (WTG 01)	07.40	06.55	05.16	03.48
	15.04	11	12.09 (WTG 01)	16.26	14	12.21 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06		11.58 (WTG 01)	09.03		12.10 (WTG 01)	07.36	06.52	05.12	03.46
	15.05	12	12.10 (WTG 01)	16.29	8	12.18 (WTG 01)	17.53	20.21	21.47	23.15
3	10.05		11.58 (WTG 01)	09.00			07.33	06.49	05.09	03.44
	15.07	14	12.12 (WTG 01)	16.32			17.56	20.24	21.50	23.17
4	10.04		11.57 (WTG 01)	08.58			07.30	06.45	05.06	03.42
	15.09	16	12.13 (WTG 01)	16.35			17.59	20.27	21.53	23.19
5	10.03		11.56 (WTG 01)	08.55			07.26	06.42	05.03	03.40
	15.11	17	12.13 (WTG 01)	16.38			18.02	20.29	21.56	23.21
6	10.02		11.57 (WTG 01)	08.52			07.23	06.39	05.00	03.39
	15.13	18	12.15 (WTG 01)	16.41			18.05	20.32	21.59	23.23
7	10.01		11.56 (WTG 01)	08.49			07.20	06.35	04.57	03.37
	15.15	20	12.16 (WTG 01)	16.44			18.08	20.35	22.02	23.25
8	09.59		11.56 (WTG 01)	08.46			07.16	06.32	04.54	03.35
	15.18	21	12.17 (WTG 01)	16.47			18.11	20.38	22.05	23.27
9	09.58		11.56 (WTG 01)	08.43			07.13	06.28	04.50	03.34
	15.20	21	12.17 (WTG 01)	16.50			18.13	20.41	22.08	23.29
10	09.56		11.56 (WTG 01)	08.40			07.10	06.25	04.47	03.33
	15.22	22	12.18 (WTG 01)	16.53			18.16	20.44	22.11	23.31
11	09.55		11.56 (WTG 01)	08.37			07.06	06.22	04.44	03.31
	15.25	23	12.19 (WTG 01)	16.56			18.19	20.46	22.14	23.32
12	09.53		11.56 (WTG 01)	08.34			07.03	06.18	04.41	03.30
	15.27	24	12.20 (WTG 01)	16.59			18.22	20.49	22.17	23.34
13	09.51		11.56 (WTG 01)	08.31			07.00	06.15	04.38	03.29
	15.30	25	12.21 (WTG 01)	17.03			18.25	20.52	22.20	23.35
14	09.49		11.56 (WTG 01)	08.28			06.56	06.12	04.35	03.28
	15.33	26	12.22 (WTG 01)	17.06			18.28	20.55	22.23	23.36
15	09.47		11.56 (WTG 01)	08.25			06.53	06.08	04.32	03.27
	15.35	27	12.23 (WTG 01)	17.09			18.30	20.58	22.26	23.38
16	09.45		11.56 (WTG 01)	08.21			06.50	06.05	04.30	03.27
	15.38	26	12.22 (WTG 01)	17.12			18.33	21.01	22.29	23.39
17	09.43		11.56 (WTG 01)	08.18			06.46	06.02	04.27	03.26
	15.41	27	12.23 (WTG 01)	17.15			18.36	21.04	22.32	23.39
18	09.41		11.56 (WTG 01)	08.15			06.43	05.58	04.24	03.26
	15.44	28	12.24 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		11.57 (WTG 01)	08.12			06.40	05.55	04.21	03.25
	15.46	28	12.25 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		11.56 (WTG 01)	08.09			06.36	05.52	04.18	03.25
	15.49	28	12.24 (WTG 01)	17.24			18.45	21.12	22.40	23.41
21	09.34		11.57 (WTG 01)	08.06			06.33	05.48	04.15	03.25
	15.52	28	12.25 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		11.58 (WTG 01)	08.02			06.29	05.45	04.13	03.25
	15.55	28	12.26 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		11.57 (WTG 01)	07.59			06.26	05.42	04.10	03.26
	15.58	28	12.25 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		11.58 (WTG 01)	07.56			06.23	05.38	04.07	03.26
	16.01	28	12.26 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		11.59 (WTG 01)	07.53			06.19	05.35	04.05	03.26
	16.04	27	12.26 (WTG 01)	17.39			18.59	21.27	22.54	23.42
26	09.22		11.59 (WTG 01)	07.49			06.16	05.32	04.02	03.27
	16.07	26	12.25 (WTG 01)	17.42			19.01	21.30	22.57	23.41
27	09.20		12.00 (WTG 01)	07.46			06.12	05.29	04.00	03.28
	16.10	25	12.25 (WTG 01)	17.44			19.04	21.33	23.00	23.41
28	09.17		12.01 (WTG 01)	07.43			06.09	05.25	03.57	03.29
	16.13	24	12.25 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		12.02 (WTG 01)				07.06	05.22	03.55	03.30
	16.16	22	12.24 (WTG 01)				20.10	21.39	23.05	23.39
30	09.12		12.03 (WTG 01)				07.02	05.19	03.53	03.31
	16.19	21	12.24 (WTG 01)				20.12	21.41	23.07	23.38
31	09.09		12.04 (WTG 01)				06.59		03.51	
	16.22	18	12.22 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		709			22					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,68			0,68					
Total reduction		0,11			0,19					
Total, real		77			4					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** T - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November			December		
1	03.32	04.47	06.15	07.37	08.05			09.33		11.38 (WTG 01)
	23.37	22.27	20.47	19.05	16.24			15.08	24	12.02 (WTG 01)
2	03.34	04.50	06.18	07.40	08.08			09.35		11.39 (WTG 01)
	23.36	22.24	20.43	19.02	16.21			15.06	23	12.02 (WTG 01)
3	03.35	04.53	06.21	07.42	08.11			09.38		11.39 (WTG 01)
	23.35	22.21	20.40	18.58	16.18			15.04	22	12.01 (WTG 01)
4	03.37	04.56	06.24	07.45	08.14			09.40		11.40 (WTG 01)
	23.34	22.18	20.37	18.55	16.15			15.03	21	12.01 (WTG 01)
5	03.39	04.59	06.26	07.48	08.17			09.42		11.42 (WTG 01)
	23.32	22.15	20.33	18.52	16.12			15.01	19	12.01 (WTG 01)
6	03.40	05.02	06.29	07.51	08.20			09.45		11.42 (WTG 01)
	23.31	22.12	20.30	18.48	16.10			15.00	18	12.00 (WTG 01)
7	03.42	05.04	06.32	07.53	08.23			09.47		11.44 (WTG 01)
	23.29	22.09	20.27	18.45	16.07			14.59	17	12.01 (WTG 01)
8	03.44	05.07	06.35	07.56	08.26			09.49		11.44 (WTG 01)
	23.27	22.06	20.23	18.42	16.04			14.57	16	12.00 (WTG 01)
9	03.46	05.10	06.37	07.59	08.29		11.40 (WTG 01)	09.51		11.46 (WTG 01)
	23.26	22.02	20.20	18.38	16.01	9	11.49 (WTG 01)	14.56	14	12.00 (WTG 01)
10	03.49	05.13	06.40	08.02	08.32		11.37 (WTG 01)	09.53		11.47 (WTG 01)
	23.24	21.59	20.16	18.35	15.58	15	11.52 (WTG 01)	14.55	13	12.00 (WTG 01)
11	03.51	05.16	06.43	08.04	08.35		11.36 (WTG 01)	09.55		11.48 (WTG 01)
	23.22	21.56	20.13	18.32	15.55	18	11.54 (WTG 01)	14.54	11	11.59 (WTG 01)
12	03.53	05.19	06.45	08.07	08.38		11.35 (WTG 01)	09.56		11.49 (WTG 01)
	23.20	21.53	20.10	18.28	15.52	20	11.55 (WTG 01)	14.54	10	11.59 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41		11.33 (WTG 01)	09.58		11.51 (WTG 01)
	23.18	21.50	20.06	18.25	15.50	23	11.56 (WTG 01)	14.53	7	11.58 (WTG 01)
14	03.58	05.25	06.51	08.13	08.44		11.33 (WTG 01)	10.00		11.54 (WTG 01)
	23.15	21.46	20.03	18.22	15.47	24	11.57 (WTG 01)	14.52	3	11.57 (WTG 01)
15	04.00	05.28	06.54	08.16	08.47		11.33 (WTG 01)	10.01		
	23.13	21.43	19.59	18.19	15.44	25	11.58 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19	08.50		11.33 (WTG 01)	10.02		
	23.11	21.40	19.56	18.15	15.42	26	11.59 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21	08.53		11.32 (WTG 01)	10.03		
	23.08	21.37	19.53	18.12	15.39	27	11.59 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24	08.56		11.32 (WTG 01)	10.05		
	23.06	21.33	19.49	18.09	15.36	27	11.59 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27	08.59		11.32 (WTG 01)	10.06		
	23.03	21.30	19.46	18.05	15.34	28	12.00 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30	09.02		11.33 (WTG 01)	10.06		
	23.01	21.27	19.42	18.02	15.31	28	12.01 (WTG 01)	14.52		
21	04.16	05.45	07.10	08.33	09.05		11.33 (WTG 01)	10.07		
	22.58	21.24	19.39	17.59	15.29	28	12.01 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36	09.08		11.32 (WTG 01)	10.08		
	22.56	21.20	19.36	17.56	15.27	28	12.00 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39	09.11		11.33 (WTG 01)	10.08		
	22.53	21.17	19.32	17.53	15.24	28	12.01 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42	09.14		11.33 (WTG 01)	10.09		
	22.50	21.14	19.29	17.49	15.22	28	12.01 (WTG 01)	14.53		
25	04.27	05.56	07.21	07.45	09.17		11.34 (WTG 01)	10.09		
	22.47	21.10	19.25	16.46	15.20	27	12.01 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.47	09.19		11.35 (WTG 01)	10.09		
	22.45	21.07	19.22	16.43	15.18	27	12.02 (WTG 01)	14.55		
27	04.33	06.02	07.26	07.50	09.22		11.35 (WTG 01)	10.09		
	22.42	21.04	19.19	16.40	15.16	27	12.02 (WTG 01)	14.56		
28	04.36	06.04	07.29	07.53	09.25		11.36 (WTG 01)	10.09		
	22.39	21.00	19.15	16.37	15.14	26	12.02 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56	09.28		11.36 (WTG 01)	10.08		12.01 (WTG 01)
	22.36	20.57	19.12	16.34	15.12	25	12.01 (WTG 01)	14.59	1	12.02 (WTG 01)
30	04.41	06.10	07.34	07.59	09.30		11.37 (WTG 01)	10.08		12.00 (WTG 01)
	22.33	20.54	19.08	16.31	15.10	24	12.01 (WTG 01)	15.00	6	12.06 (WTG 01)
31	04.44	06.13		08.02				10.08		11.59 (WTG 01)
	22.30	20.50		16.28				15.01	8	12.07 (WTG 01)
Potential sun hours	591	501	391	308	208			154		
Total, worst case						538			233	
Sun reduction						0,15			0,11	
Oper. time red.						0,97			0,97	
Wind dir. red.						0,68			0,68	
Total reduction						0,10			0,07	
Total, real						53			17	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** U - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (73)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.56	05.16	03.49	03.33	04.47	06.16	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.05	09.03	07.36	06.52	05.13	03.47	03.35	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.24	20.43	19.02	16.22	15.07
3	10.05	09.00	07.33	06.49	05.10	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.58	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.39
	15.10	16.35	17.59	20.26	21.53	23.18	23.33	22.18	20.37	18.55	16.16	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.12	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.01
7	10.00	08.48	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.47	18.11	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.29	04.51	03.35	03.47	05.11	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.52	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.42	03.31	03.54	05.19	06.45	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.53	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.54
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.30	20.58	22.25	23.37	23.12	21.43	19.59	18.19	15.45	14.53
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.34	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.09	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.44	21.12	22.40	23.40	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.06
	15.53	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.56	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.11	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.21	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.42	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.12	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.11	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.26	03.58	03.30	04.36	06.04	07.29	07.53	09.24	10.08
	16.14	17.48	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.38	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.42	06.10	07.34	07.59	09.30	10.07
	16.20		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.01
31	09.08		06.59		03.51		04.45	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	244	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** V - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (72)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.40	06.56	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.40	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.22	15.06
3	10.05	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.08	16.32	17.56	20.24	21.50	23.16	23.34	22.21	20.40	18.58	16.19	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.38	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.37	18.55	16.16	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.14	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.38	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.08	06.35	07.56	08.26	09.48
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.41	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.23	16.54	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.45	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.57	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.42	03.31	03.54	05.19	06.45	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.53	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.54	08.16	08.47	10.00
	15.36	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.19	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.31	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.06	15.34	14.52
20	09.36	08.09	06.36	05.52	04.19	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.50	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.36	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.23	05.39	04.08	03.27	04.25	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.50	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.42	19.01	21.29	22.57	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.12	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.10	17.45	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.57
28	09.17	07.43	06.09	05.25	03.58	03.30	04.36	06.04	07.29	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.56	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.17		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.42	06.10	07.34	07.59	09.30	10.08
	16.20		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** W - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07		12.53 (WTG 01)	09.06		09.49 (K 05)	07.40	06.55	05.16	03.48
	15.04	6	12.59 (WTG 01)	16.25	31	13.16 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06		12.52 (WTG 01)	09.03		09.47 (K 05)	07.36	06.52	05.12	03.46
	15.05	9	13.01 (WTG 01)	16.29	32	13.15 (WTG 01)	17.53	20.21	21.47	23.15
3	10.05		12.51 (WTG 01)	09.00		09.46 (K 05)	07.33	06.49	05.09	03.44
	15.07	11	13.02 (WTG 01)	16.32	30	13.13 (WTG 01)	17.56	20.24	21.50	23.17
4	10.04		12.51 (WTG 01)	08.58		09.45 (K 05)	07.30	06.45	05.06	03.42
	15.09	13	13.04 (WTG 01)	16.35	20	10.05 (K 05)	17.59	20.27	21.53	23.19
5	10.03		12.50 (WTG 01)	08.55		09.44 (K 05)	07.26	06.42	05.03	03.40
	15.11	15	13.05 (WTG 01)	16.38	21	10.05 (K 05)	18.02	20.29	21.56	23.21
6	10.02		12.51 (WTG 01)	08.52		09.44 (K 05)	07.23	06.39	05.00	03.39
	15.13	16	13.07 (WTG 01)	16.41	22	10.06 (K 05)	18.05	20.32	21.59	23.23
7	10.01		12.50 (WTG 01)	08.49		09.44 (K 05)	07.20	06.35	04.57	03.37
	15.15	18	13.08 (WTG 01)	16.44	22	10.06 (K 05)	18.08	20.35	22.02	23.25
8	09.59		12.50 (WTG 01)	08.46		09.44 (K 05)	07.16	06.32	04.54	03.35
	15.18	19	13.09 (WTG 01)	16.47	23	10.07 (K 05)	18.11	20.38	22.05	23.27
9	09.58		12.49 (WTG 01)	08.43		09.43 (K 05)	07.13	06.28	04.50	03.34
	15.20	21	13.10 (WTG 01)	16.50	24	10.07 (K 05)	18.13	20.41	22.08	23.29
10	09.56		12.49 (WTG 01)	08.40		09.44 (K 05)	07.10	06.25	04.47	03.33
	15.22	22	13.11 (WTG 01)	16.53	23	10.07 (K 05)	18.16	20.43	22.11	23.31
11	09.55		12.49 (WTG 01)	08.37		09.45 (K 05)	07.06	06.22	04.44	03.31
	15.25	23	13.12 (WTG 01)	16.56	22	10.07 (K 05)	18.19	20.46	22.14	23.32
12	09.53		12.49 (WTG 01)	08.34		09.45 (K 05)	07.03	06.18	04.41	03.30
	15.27	24	13.13 (WTG 01)	16.59	21	10.06 (K 05)	18.22	20.49	22.17	23.34
13	09.51		12.49 (WTG 01)	08.31		09.46 (K 05)	07.00	06.15	04.38	03.29
	15.30	25	13.14 (WTG 01)	17.03	20	10.06 (K 05)	18.25	20.52	22.20	23.35
14	09.49		12.49 (WTG 01)	08.28		09.46 (K 05)	06.56	06.12	04.35	03.28
	15.32	26	13.15 (WTG 01)	17.06	19	10.05 (K 05)	18.28	20.55	22.23	23.36
15	09.47		12.49 (WTG 01)	08.24		09.48 (K 05)	06.53	06.08	04.32	03.27
	15.35	27	13.16 (WTG 01)	17.09	16	10.04 (K 05)	18.30	20.58	22.26	23.38
16	09.45		12.49 (WTG 01)	08.21		09.49 (K 05)	06.50	06.05	04.30	03.27
	15.38	27	13.16 (WTG 01)	17.12	12	10.01 (K 05)	18.33	21.01	22.29	23.39
17	09.43		12.49 (WTG 01)	08.18		09.53 (K 05)	06.46	06.02	04.27	03.26
	15.41	28	13.17 (WTG 01)	17.15	5	09.58 (K 05)	18.36	21.03	22.32	23.39
18	09.41		12.49 (WTG 01)	08.15			06.43	05.58	04.24	03.26
	15.44	28	13.17 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		12.50 (WTG 01)	08.12			06.40	05.55	04.21	03.25
	15.46	28	13.18 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		12.49 (WTG 01)	08.09			06.36	05.52	04.18	03.25
	15.49	29	13.18 (WTG 01)	17.24			18.44	21.12	22.40	23.41
21	09.34		12.50 (WTG 01)	08.06			06.33	05.48	04.15	03.25
	15.52	29	13.19 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		12.50 (WTG 01)	08.02			06.29	05.45	04.13	03.25
	15.55	29	13.19 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		12.50 (WTG 01)	07.59			06.26	05.42	04.10	03.26
	15.58	29	13.19 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		12.51 (WTG 01)	07.56			06.23	05.38	04.07	03.26
	16.01	28	13.19 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		12.51 (WTG 01)	07.53			06.19	05.35	04.05	03.26
	16.04	29	13.20 (WTG 01)	17.39			18.58	21.27	22.54	23.41
26	09.22		12.51 (WTG 01)	07.49			06.16	05.32	04.02	03.27
	16.07	28	13.19 (WTG 01)	17.42			19.01	21.30	22.57	23.41
27	09.20		12.52 (WTG 01)	07.46			06.12	05.29	04.00	03.28
	16.10	27	13.19 (WTG 01)	17.44			19.04	21.33	23.00	23.41
28	09.17		12.53 (WTG 01)	07.43			06.09	05.25	03.57	03.29
	16.13	27	13.20 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		12.53 (WTG 01)				07.06	05.22	03.55	03.30
	16.16	26	13.19 (WTG 01)				20.10	21.38	23.05	23.39
30	09.12		12.55 (WTG 01)				07.02	05.19	03.53	03.31
	16.19	23	13.18 (WTG 01)				20.12	21.41	23.07	23.38
31	09.09		09.52 (K 05)				06.59		03.51	
	16.22	28	13.17 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		718			363					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,69			0,64					
Total reduction		0,11			0,18					
Total, real		79			66					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** W - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		09.13 (K 05)	09.33		12.31 (WTG 01)
	23.37	22.27	20.47	19.05			16.24	24	09.37 (K 05)	15.08	23	12.54 (WTG 01)
2	03.34	04.50	06.18	07.40			08.08		09.14 (K 05)	09.35		12.32 (WTG 01)
	23.36	22.24	20.43	19.02			16.21	23	09.37 (K 05)	15.06	22	12.54 (WTG 01)
3	03.35	04.53	06.21	07.42			08.11		09.13 (K 05)	09.38		12.33 (WTG 01)
	23.35	22.21	20.40	18.58			16.18	24	09.37 (K 05)	15.04	20	12.53 (WTG 01)
4	03.37	04.56	06.24	07.45			08.14		09.14 (K 05)	09.40		12.34 (WTG 01)
	23.34	22.18	20.37	18.55			16.15	23	09.37 (K 05)	15.03	20	12.54 (WTG 01)
5	03.39	04.59	06.26	07.48			08.17		09.14 (K 05)	09.42		12.35 (WTG 01)
	23.32	22.15	20.33	18.52			16.12	22	09.36 (K 05)	15.01	19	12.54 (WTG 01)
6	03.40	05.01	06.29	07.51			08.20		09.15 (K 05)	09.45		12.36 (WTG 01)
	23.31	22.12	20.30	18.48			16.09	21	09.36 (K 05)	15.00	17	12.53 (WTG 01)
7	03.42	05.04	06.32	07.53			08.23		09.15 (K 05)	09.47		12.38 (WTG 01)
	23.29	22.09	20.26	18.45			16.07	20	09.35 (K 05)	14.59	15	12.53 (WTG 01)
8	03.44	05.07	06.35	07.56			08.26		09.16 (K 05)	09.49		12.38 (WTG 01)
	23.27	22.06	20.23	18.42			16.04	29	12.43 (WTG 01)	14.57	14	12.52 (WTG 01)
9	03.46	05.10	06.37	07.59			08.29		09.18 (K 05)	09.51		12.40 (WTG 01)
	23.26	22.02	20.20	18.38			16.01	32	12.46 (WTG 01)	14.56	12	12.52 (WTG 01)
10	03.49	05.13	06.40	08.02			08.32		09.20 (K 05)	09.53		12.42 (WTG 01)
	23.24	21.59	20.16	18.35			15.58	31	12.47 (WTG 01)	14.55	9	12.51 (WTG 01)
11	03.51	05.16	06.43	08.04			08.35		09.24 (K 05)	09.55		12.43 (WTG 01)
	23.22	21.56	20.13	18.32			15.55	28	12.49 (WTG 01)	14.54	7	12.50 (WTG 01)
12	03.53	05.19	06.45	08.07			08.38		12.26 (WTG 01)	09.56		
	23.20	21.53	20.10	18.28			15.52	24	12.50 (WTG 01)	14.54		
13	03.55	05.22	06.48	08.10			08.41		12.25 (WTG 01)	09.58		
	23.17	21.50	20.06	18.25			15.50	25	12.50 (WTG 01)	14.53		
14	03.58	05.25	06.51	08.13			08.44		12.25 (WTG 01)	09.59		
	23.15	21.46	20.03	18.22			15.47	26	12.51 (WTG 01)	14.52		
15	04.00	05.28	06.54	08.16			08.47		12.25 (WTG 01)	10.01		
	23.13	21.43	19.59	18.18			15.44	27	12.52 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19			08.50		12.24 (WTG 01)	10.02		
	23.11	21.40	19.56	18.15			15.42	28	12.52 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21			08.53		12.24 (WTG 01)	10.03		
	23.08	21.37	19.53	18.12			15.39	29	12.53 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24			08.56		12.24 (WTG 01)	10.05		
	23.06	21.33	19.49	18.09			15.36	29	12.53 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27			08.59		12.25 (WTG 01)	10.05		
	23.03	21.30	19.46	18.05			15.34	29	12.54 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30			09.02		12.25 (WTG 01)	10.06		
	23.01	21.27	19.42	18.02			15.31	29	12.54 (WTG 01)	14.51		
21	04.16	05.45	07.10	08.33			09.05		12.26 (WTG 01)	10.07		
	22.58	21.24	19.39	17.59			15.29	29	12.55 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36			09.08		12.25 (WTG 01)	10.08		
	22.56	21.20	19.36	17.56			15.27	29	12.54 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39			09.11		12.26 (WTG 01)	10.08		
	22.53	21.17	19.32	17.53			15.24	28	12.54 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42			09.14		12.26 (WTG 01)	10.08		
	22.50	21.14	19.29	17.49			15.22	29	12.55 (WTG 01)	14.53		
25	04.27	05.56	07.21	07.45		09.22 (K 05)	09.17		12.27 (WTG 01)	10.09		
	22.47	21.10	19.25	16.46	8	09.30 (K 05)	15.20	28	12.55 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.47		09.19 (K 05)	09.19		12.28 (WTG 01)	10.09		
	22.45	21.07	19.22	16.43	13	09.32 (K 05)	15.18	27	12.55 (WTG 01)	14.55		
27	04.33	06.01	07.26	07.50		09.17 (K 05)	09.22		12.28 (WTG 01)	10.09		
	22.42	21.04	19.19	16.40	16	09.33 (K 05)	15.16	27	12.55 (WTG 01)	14.56		
28	04.35	06.04	07.29	07.53		09.15 (K 05)	09.25		12.28 (WTG 01)	10.09		
	22.39	21.00	19.15	16.37	19	09.34 (K 05)	15.13	26	12.54 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56		09.15 (K 05)	09.28		12.29 (WTG 01)	10.08		
	22.36	20.57	19.12	16.34	21	09.36 (K 05)	15.12	25	12.54 (WTG 01)	14.59		
30	04.41	06.10	07.34	07.59		09.14 (K 05)	09.30		12.30 (WTG 01)	10.08		
	22.33	20.54	19.08	16.31	22	09.36 (K 05)	15.10	24	12.54 (WTG 01)	15.00		
31	04.44	06.13		08.02		09.14 (K 05)				10.08		
	22.30	20.50		16.28	23	09.37 (K 05)				15.01		
Potential sun hours	591	501	391	308			208			154		
Total, worst case					122			795			178	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,63			0,67			0,69	
Total reduction					0,16			0,10			0,07	
Total, real					19			78			13	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** X - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07			09.06		10.56 (K 05)	07.40	06.55	05.16	03.48
	15.03			16.25	20	14.02 (WTG 01)	17.50	20.18	21.44	23.12
2	10.06			09.03		10.58 (K 05)	07.36	06.52	05.12	03.46
	15.05			16.29	14	11.12 (K 05)	17.53	20.21	21.47	23.15
3	10.05			09.00		11.00 (K 05)	07.33	06.49	05.09	03.44
	15.07			16.32	9	11.09 (K 05)	17.56	20.24	21.50	23.17
4	10.04			08.57			07.30	06.45	05.06	03.42
	15.09			16.35			17.59	20.26	21.53	23.19
5	10.03			08.55			07.26	06.42	05.03	03.40
	15.11			16.38			18.02	20.29	21.56	23.21
6	10.02		13.50 (WTG 01)	08.52			07.23	06.38	05.00	03.39
	15.13	5	13.55 (WTG 01)	16.41			18.05	20.32	21.59	23.23
7	10.01		13.48 (WTG 01)	08.49			07.20	06.35	04.57	03.37
	15.15	9	13.57 (WTG 01)	16.44			18.08	20.35	22.02	23.25
8	09.59		13.47 (WTG 01)	08.46			07.16	06.32	04.53	03.35
	15.17	12	13.59 (WTG 01)	16.47			18.11	20.38	22.05	23.27
9	09.58		13.47 (WTG 01)	08.43			07.13	06.28	04.50	03.34
	15.20	13	14.00 (WTG 01)	16.50			18.13	20.41	22.08	23.29
10	09.56		13.46 (WTG 01)	08.40			07.10	06.25	04.47	03.32
	15.22	15	14.01 (WTG 01)	16.53			18.16	20.43	22.11	23.31
11	09.55		10.58 (K 05)	08.37			07.06	06.22	04.44	03.31
	15.25	21	14.03 (WTG 01)	16.56			18.19	20.46	22.14	23.32
12	09.53		10.55 (K 05)	08.34			07.03	06.18	04.41	03.30
	15.27	27	14.04 (WTG 01)	16.59			18.22	20.49	22.17	23.34
13	09.51		10.53 (K 05)	08.31			07.00	06.15	04.38	03.29
	15.30	32	14.05 (WTG 01)	17.02			18.25	20.52	22.20	23.35
14	09.49		10.53 (K 05)	08.28			06.56	06.12	04.35	03.28
	15.32	35	14.06 (WTG 01)	17.06			18.28	20.55	22.23	23.36
15	09.47		10.52 (K 05)	08.24			06.53	06.08	04.32	03.27
	15.35	38	14.07 (WTG 01)	17.09			18.30	20.58	22.26	23.38
16	09.45		10.51 (K 05)	08.21			06.50	06.05	04.29	03.27
	15.38	40	14.07 (WTG 01)	17.12			18.33	21.01	22.29	23.39
17	09.43		10.51 (K 05)	08.18			06.46	06.01	04.27	03.26
	15.41	42	14.08 (WTG 01)	17.15			18.36	21.03	22.32	23.39
18	09.41		10.51 (K 05)	08.15			06.43	05.58	04.24	03.26
	15.43	43	14.08 (WTG 01)	17.18			18.39	21.06	22.35	23.40
19	09.39		10.51 (K 05)	08.12			06.39	05.55	04.21	03.25
	15.46	45	14.09 (WTG 01)	17.21			18.42	21.09	22.38	23.41
20	09.37		10.50 (K 05)	08.09			06.36	05.52	04.18	03.25
	15.49	46	14.09 (WTG 01)	17.24			18.44	21.12	22.40	23.41
21	09.34		10.51 (K 05)	08.06			06.33	05.48	04.15	03.25
	15.52	47	14.10 (WTG 01)	17.27			18.47	21.15	22.43	23.42
22	09.32		10.51 (K 05)	08.02			06.29	05.45	04.13	03.25
	15.55	46	14.10 (WTG 01)	17.30			18.50	21.18	22.46	23.42
23	09.30		10.50 (K 05)	07.59			06.26	05.42	04.10	03.25
	15.58	48	14.10 (WTG 01)	17.33			18.53	21.21	22.49	23.42
24	09.27		10.51 (K 05)	07.56			06.23	05.38	04.07	03.26
	16.01	47	14.10 (WTG 01)	17.36			18.56	21.24	22.52	23.42
25	09.25		10.52 (K 05)	07.53			06.19	05.35	04.05	03.26
	16.04	45	14.10 (WTG 01)	17.39			18.58	21.27	22.54	23.41
26	09.22		10.51 (K 05)	07.49			06.16	05.32	04.02	03.27
	16.07	46	14.10 (WTG 01)	17.41			19.01	21.30	22.57	23.41
27	09.20		10.52 (K 05)	07.46			06.12	05.28	04.00	03.28
	16.10	44	14.10 (WTG 01)	17.44			19.04	21.33	23.00	23.41
28	09.17		10.53 (K 05)	07.43			06.09	05.25	03.57	03.29
	16.13	42	14.10 (WTG 01)	17.47			19.07	21.36	23.02	23.40
29	09.14		10.53 (K 05)				07.06	05.22	03.55	03.30
	16.16	39	14.08 (WTG 01)				20.10	21.38	23.05	23.39
30	09.12		10.54 (K 05)				07.02	05.19	03.53	03.31
	16.19	36	14.08 (WTG 01)				20.12	21.41	23.07	23.38
31	09.09		10.55 (K 05)				06.59		03.50	
	16.22	29	14.05 (WTG 01)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		892			43					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,67			0,67					
Total reduction		0,11			0,19					
Total, real		95			8					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** X - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November			December		
1	03.32	04.47	06.15	07.37	08.05			09.33		10.40 (K 05)
	23.37	22.27	20.47	19.05	16.24			15.08	21	13.45 (WTG 01)
2	03.34	04.50	06.18	07.40	08.08			09.35		13.29 (WTG 01)
	23.36	22.24	20.43	19.02	16.21			15.06	16	13.45 (WTG 01)
3	03.35	04.53	06.21	07.42	08.11			09.38		13.30 (WTG 01)
	23.35	22.21	20.40	18.58	16.18			15.04	14	13.44 (WTG 01)
4	03.37	04.56	06.24	07.45	08.14			09.40		13.31 (WTG 01)
	23.34	22.18	20.37	18.55	16.15			15.03	12	13.43 (WTG 01)
5	03.39	04.59	06.26	07.48	08.17			09.42		13.33 (WTG 01)
	23.32	22.15	20.33	18.52	16.12			15.01	10	13.43 (WTG 01)
6	03.40	05.01	06.29	07.51	08.20			09.45		13.35 (WTG 01)
	23.31	22.12	20.30	18.48	16.09			15.00	6	13.41 (WTG 01)
7	03.42	05.04	06.32	07.53	08.23			09.47		
	23.29	22.09	20.26	18.45	16.07			14.59		
8	03.44	05.07	06.35	07.56	08.26		10.30 (K 05)	09.49		
	23.27	22.06	20.23	18.42	16.04	10	10.40 (K 05)	14.57		
9	03.46	05.10	06.37	07.59	08.29		10.28 (K 05)	09.51		
	23.26	22.02	20.20	18.38	16.01	14	10.42 (K 05)	14.56		
10	03.49	05.13	06.40	08.02	08.32		10.27 (K 05)	09.53		
	23.24	21.59	20.16	18.35	15.58	22	13.34 (WTG 01)	14.55		
11	03.51	05.16	06.43	08.04	08.35		10.26 (K 05)	09.55		
	23.22	21.56	20.13	18.32	15.55	30	13.37 (WTG 01)	14.54		
12	03.53	05.19	06.45	08.07	08.38		10.26 (K 05)	09.56		
	23.20	21.53	20.09	18.28	15.52	36	13.40 (WTG 01)	14.54		
13	03.55	05.22	06.48	08.10	08.41		10.25 (K 05)	09.58		
	23.17	21.50	20.06	18.25	15.50	39	13.40 (WTG 01)	14.53		
14	03.58	05.25	06.51	08.13	08.44		10.25 (K 05)	09.59		
	23.15	21.46	20.03	18.22	15.47	43	13.42 (WTG 01)	14.52		
15	04.00	05.27	06.53	08.16	08.47		10.25 (K 05)	10.01		
	23.13	21.43	19.59	18.18	15.44	44	13.43 (WTG 01)	14.52		
16	04.03	05.30	06.56	08.19	08.50		10.24 (K 05)	10.02		
	23.11	21.40	19.56	18.15	15.41	46	13.43 (WTG 01)	14.52		
17	04.05	05.33	06.59	08.21	08.53		10.25 (K 05)	10.03		
	23.08	21.37	19.52	18.12	15.39	45	13.43 (WTG 01)	14.51		
18	04.08	05.36	07.02	08.24	08.56		10.25 (K 05)	10.05		
	23.06	21.33	19.49	18.09	15.36	47	13.44 (WTG 01)	14.51		
19	04.11	05.39	07.04	08.27	08.59		10.25 (K 05)	10.05		
	23.03	21.30	19.46	18.05	15.34	48	13.45 (WTG 01)	14.51		
20	04.13	05.42	07.07	08.30	09.02		10.26 (K 05)	10.06		
	23.01	21.27	19.42	18.02	15.31	46	13.45 (WTG 01)	14.51		
21	04.16	05.45	07.10	08.33	09.05		10.27 (K 05)	10.07		
	22.58	21.23	19.39	17.59	15.29	47	13.46 (WTG 01)	14.52		
22	04.19	05.47	07.12	08.36	09.08		10.26 (K 05)	10.08		
	22.56	21.20	19.36	17.56	15.27	46	13.45 (WTG 01)	14.52		
23	04.21	05.50	07.15	08.39	09.11		10.27 (K 05)	10.08		
	22.53	21.17	19.32	17.53	15.24	45	13.45 (WTG 01)	14.53		
24	04.24	05.53	07.18	08.42	09.14		10.28 (K 05)	10.08		
	22.50	21.14	19.29	17.49	15.22	44	13.46 (WTG 01)	14.53		
25	04.27	05.56	07.20	07.44	09.17		10.29 (K 05)	10.09		
	22.47	21.10	19.25	16.46	15.20	43	13.46 (WTG 01)	14.54		
26	04.30	05.59	07.23	07.47	09.19		10.30 (K 05)	10.09		
	22.45	21.07	19.22	16.43	15.18	40	13.46 (WTG 01)	14.55		
27	04.33	06.01	07.26	07.50	09.22		10.31 (K 05)	10.09		
	22.42	21.04	19.19	16.40	15.15	38	13.46 (WTG 01)	14.56		
28	04.35	06.04	07.29	07.53	09.25		10.33 (K 05)	10.09		
	22.39	21.00	19.15	16.37	15.13	35	13.46 (WTG 01)	14.57		
29	04.38	06.07	07.31	07.56	09.27		10.33 (K 05)	10.08		
	22.36	20.57	19.12	16.34	15.11	32	13.45 (WTG 01)	14.58		
30	04.41	06.10	07.34	07.59	09.30		10.36 (K 05)	10.08		
	22.33	20.53	19.08	16.31	15.10	28	13.45 (WTG 01)	15.00		
31	04.44	06.13		08.02				10.08		
	22.30	20.50		16.27				15.01		
Potential sun hours	591	501	391	308	208			154		
Total, worst case						868			79	
Sun reduction						0,15			0,11	
Oper. time red.						0,97			0,97	
Wind dir. red.						0,67			0,67	
Total reduction						0,10			0,07	
Total, real						84			6	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** Y - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January		February	March	April	May	June	July	August	September	October	November		December	
1	10.07	11.48 (K 05)	09.06	07.40	06.55	05.16	03.48	03.32	04.47	06.15	07.37	08.05		09.33	11.30 (K 05)
	15.03 16	12.04 (K 05)	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24		15.08 25	11.55 (K 05)
2	10.06	11.48 (K 05)	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08		09.35	11.31 (K 05)
	15.05 17	12.05 (K 05)	16.28	17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21		15.06 24	11.55 (K 05)
3	10.05	11.47 (K 05)	09.00	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11		09.38	11.31 (K 05)
	15.07 19	12.06 (K 05)	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18		15.04 23	11.54 (K 05)
4	10.04	11.48 (K 05)	08.57	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14		09.40	11.32 (K 05)
	15.09 19	12.07 (K 05)	16.35	17.59	20.26	21.53	23.19	23.34	22.18	20.37	18.55	16.15		15.03 23	11.55 (K 05)
5	10.03	11.47 (K 05)	08.55	07.26	06.42	05.03	03.40	03.39	04.59	06.26	07.48	08.17		09.42	11.33 (K 05)
	15.11 21	12.08 (K 05)	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12		15.01 22	11.55 (K 05)
6	10.02	11.48 (K 05)	08.52	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20		09.45	11.33 (K 05)
	15.13 21	12.09 (K 05)	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.09		15.00 21	11.54 (K 05)
7	10.01	11.48 (K 05)	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23		09.47	11.35 (K 05)
	15.15 22	12.10 (K 05)	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.26	18.45	16.06		14.59 20	11.55 (K 05)
8	09.59	11.48 (K 05)	08.46	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26		09.49	11.35 (K 05)
	15.17 22	12.10 (K 05)	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04		14.57 19	11.54 (K 05)
9	09.58	11.48 (K 05)	08.43	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29		09.51	11.36 (K 05)
	15.20 23	12.11 (K 05)	16.50	18.13	20.41	22.08	23.29	23.26	22.02	20.20	18.38	16.01		14.56 19	11.55 (K 05)
10	09.56	11.48 (K 05)	08.40	07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.02	08.32		09.53	11.37 (K 05)
	15.22 24	12.12 (K 05)	16.53	18.16	20.43	22.11	23.31	23.24	21.59	20.16	18.35	15.58		14.55 18	11.55 (K 05)
11	09.55	11.48 (K 05)	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35		09.55	11.38 (K 05)
	15.25 24	12.12 (K 05)	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55		14.54 17	11.55 (K 05)
12	09.53	11.48 (K 05)	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	11.32 (K 05)	09.56	11.39 (K 05)
	15.27 25	12.13 (K 05)	16.59	18.22	20.49	22.17	23.34	23.20	21.53	20.09	18.28	15.52 10	11.42 (K 05)	14.54 16	11.55 (K 05)
13	09.51	11.48 (K 05)	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41	11.30 (K 05)	09.58	11.40 (K 05)
	15.30 26	12.14 (K 05)	17.02	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.50 15	11.45 (K 05)	14.53 15	11.55 (K 05)
14	09.49	11.49 (K 05)	08.28	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	11.29 (K 05)	09.59	11.41 (K 05)
	15.32 26	12.15 (K 05)	17.05	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47 18	11.47 (K 05)	14.52 14	11.55 (K 05)
15	09.47	11.49 (K 05)	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.16	08.47	11.28 (K 05)	10.01	11.41 (K 05)
	15.35 26	12.15 (K 05)	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44 20	11.48 (K 05)	14.52 14	11.55 (K 05)
16	09.45	11.48 (K 05)	08.21	06.50	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50	11.27 (K 05)	10.02	11.42 (K 05)
	15.38 27	12.15 (K 05)	17.12	18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.41 21	11.48 (K 05)	14.51 12	11.54 (K 05)
17	09.43	11.49 (K 05)	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53	11.27 (K 05)	10.03	11.43 (K 05)
	15.41 26	12.15 (K 05)	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39 23	11.50 (K 05)	14.51 11	11.54 (K 05)
18	09.41	11.50 (K 05)	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	11.26 (K 05)	10.04	11.44 (K 05)
	15.43 26	12.16 (K 05)	17.18	18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36 25	11.51 (K 05)	14.51 11	11.55 (K 05)
19	09.39	11.50 (K 05)	08.12	06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59	11.26 (K 05)	10.05	11.45 (K 05)
	15.46 27	12.17 (K 05)	17.21	18.42	21.09	22.37	23.41	23.03	21.30	19.46	18.05	15.34 25	11.51 (K 05)	14.51 10	11.55 (K 05)
20	09.37	11.50 (K 05)	08.09	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	11.27 (K 05)	10.06	11.45 (K 05)
	15.49 26	12.16 (K 05)	17.24	18.44	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31 25	11.52 (K 05)	14.51 11	11.56 (K 05)
21	09.34	11.51 (K 05)	08.05	06.33	05.48	04.15	03.25	04.16	05.45	07.10	08.33	09.05	11.27 (K 05)	10.07	11.46 (K 05)
	15.52 26	12.17 (K 05)	17.27	18.47	21.15	22.43	23.42	22.58	21.23	19.39	17.59	15.29 26	11.53 (K 05)	14.52 10	11.56 (K 05)
22	09.32	11.52 (K 05)	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08	11.26 (K 05)	10.08	11.46 (K 05)
	15.55 25	12.17 (K 05)	17.30	18.50	21.18	22.46	23.42	22.55	21.20	19.35	17.56	15.26 26	11.52 (K 05)	14.52 10	11.56 (K 05)
23	09.30	11.51 (K 05)	07.59	06.26	05.42	04.10	03.25	04.21	05.50	07.15	08.39	09.11	11.26 (K 05)	10.08	11.46 (K 05)
	15.58 25	12.16 (K 05)	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.52	15.24 27	11.53 (K 05)	14.53 10	11.56 (K 05)
24	09.27	11.52 (K 05)	07.56	06.23	05.38	04.07	03.26	04.24	05.53	07.18	08.42	09.14	11.27 (K 05)	10.08	11.47 (K 05)
	16.01 25	12.17 (K 05)	17.36	18.56	21.24	22.52	23.42	22.50	21.14	19.29	17.49	15.22 26	11.53 (K 05)	14.53 10	11.57 (K 05)
25	09.25	11.54 (K 05)	07.53	06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.17	11.27 (K 05)	10.09	11.47 (K 05)
	16.04 23	12.17 (K 05)	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20 27	11.54 (K 05)	14.54 11	11.58 (K 05)
26	09.22	11.54 (K 05)	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	11.28 (K 05)	10.09	11.47 (K 05)
	16.07 22	12.16 (K 05)	17.41	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.18 26	11.54 (K 05)	14.55 12	11.59 (K 05)
27	09.19	11.55 (K 05)	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22	11.28 (K 05)	10.09	11.47 (K 05)
	16.10 20	12.15 (K 05)	17.44	19.04	21.33	23.00	23.41	22.42	21.04	19.19	16.40	15.15 26	11.54 (K 05)	14.56 13	12.00 (K 05)
28	09.17	11.57 (K 05)	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.29	07.53	09.25	11.28 (K 05)	10.09	11.48 (K 05)
	16.13 18	12.15 (K 05)	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.13 26	11.54 (K 05)	14.57 13	12.01 (K 05)
29	09.14	11.58 (K 05)		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	11.29 (K 05)	10.08	11.47 (K 05)
	16.16 15	12.13 (K 05)		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.11 25	11.54 (K 05)	14.58 14	12.01 (K 05)
30	09.11	12.01 (K 05)		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	11.29 (K 05)	10.08	11.48 (K 05)
	16.19 10	12.11 (K 05)		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10 25	11.54 (K 05)	15.00 15	12.03 (K 05)
31	09.09			06.59		03.50		04.44	06.13		08.02			10.08	11.48 (K 05)
	16.22			20.15		23.10		22.30	20.50		16.27			15.01 15	12.03 (K 05)
Potential sun hours	184		243	364	446	557	601	591	501	391	308	208		154	
Total, worst case		672											442		478
Sun reduction		0,16											0,15		0,11
Oper. time red.		0,97											0,97		0,97
Wind dir. red.		0,68											0,68		0,68
Total reduction		0,11											0,10		0,07
Total, real		72											43		35

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** Z - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February	March	April	May	June	July	August	September	October	November			December		
1	10.07		12.44 (K 05)	09.06	07.40	06.55	05.15	03.48	03.32	04.47	06.15	07.37	08.05			09.33		12.28 (K 05)
	15.03	19	13.03 (K 05)	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24			15.08	25	12.53 (K 05)
2	10.06		12.45 (K 05)	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08			09.35		12.28 (K 05)
	15.05	19	13.04 (K 05)	16.28	17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21			15.06	25	12.53 (K 05)
3	10.05		12.44 (K 05)	09.00	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11			09.38		12.28 (K 05)
	15.07	21	13.05 (K 05)	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18			15.04	25	12.53 (K 05)
4	10.04		12.45 (K 05)	08.57	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14			09.40		12.29 (K 05)
	15.09	21	13.06 (K 05)	16.35	17.59	20.26	21.53	23.19	23.34	22.18	20.37	18.55	16.15			15.03	24	12.53 (K 05)
5	10.03		12.44 (K 05)	08.55	07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.48	08.17			09.42		12.30 (K 05)
	15.11	22	13.06 (K 05)	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12			15.01	24	12.54 (K 05)
6	10.02		12.45 (K 05)	08.52	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20			09.45		12.30 (K 05)
	15.13	23	13.08 (K 05)	16.41	18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.09			15.00	23	12.53 (K 05)
7	10.01		12.45 (K 05)	08.49	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23			09.47		12.32 (K 05)
	15.15	23	13.08 (K 05)	16.44	18.08	20.35	22.02	23.25	23.29	22.09	20.26	18.45	16.06			14.59	22	12.54 (K 05)
8	09.59		12.45 (K 05)	08.46	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26			09.49		12.32 (K 05)
	15.17	24	13.09 (K 05)	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04			14.57	21	12.53 (K 05)
9	09.58		12.45 (K 05)	08.43	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29			09.51		12.33 (K 05)
	15.20	25	13.10 (K 05)	16.50	18.13	20.41	22.08	23.29	23.26	22.02	20.20	18.38	16.01			14.56	21	12.54 (K 05)
10	09.56		12.45 (K 05)	08.40	07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.02	08.32			09.53		12.34 (K 05)
	15.22	25	13.10 (K 05)	16.53	18.16	20.43	22.11	23.31	23.24	21.59	20.16	18.35	15.58			14.55	20	12.54 (K 05)
11	09.55		12.45 (K 05)	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35			09.55		12.35 (K 05)
	15.25	26	13.11 (K 05)	16.56	18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55			14.54	19	12.54 (K 05)
12	09.53		12.46 (K 05)	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38		12.34 (K 05)	09.56		12.35 (K 05)
	15.27	25	13.11 (K 05)	16.59	18.22	20.49	22.17	23.34	23.20	21.53	20.09	18.28	15.52	2	12.36 (K 05)	14.53	19	12.54 (K 05)
13	09.51		12.46 (K 05)	08.31	07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41		12.30 (K 05)	09.58		12.36 (K 05)
	15.30	26	13.12 (K 05)	17.02	18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.49	11	12.41 (K 05)	14.53	18	12.54 (K 05)
14	09.49		12.46 (K 05)	08.28	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44		12.28 (K 05)	09.59		12.37 (K 05)
	15.32	27	13.13 (K 05)	17.05	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	16	12.44 (K 05)	14.52	17	12.54 (K 05)
15	09.47		12.47 (K 05)	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.16	08.47		12.27 (K 05)	10.01		12.38 (K 05)
	15.35	26	13.13 (K 05)	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	18	12.45 (K 05)	14.52	16	12.54 (K 05)
16	09.45		12.46 (K 05)	08.21	06.50	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50		12.25 (K 05)	10.02		12.38 (K 05)
	15.38	27	13.13 (K 05)	17.12	18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.41	21	12.46 (K 05)	14.51	16	12.54 (K 05)
17	09.43		12.47 (K 05)	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53		12.25 (K 05)	10.03		12.39 (K 05)
	15.41	27	13.14 (K 05)	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	22	12.47 (K 05)	14.51	15	12.54 (K 05)
18	09.41		12.47 (K 05)	08.15	06.43	05.58	04.24	03.25	04.08	05.36	07.02	08.24	08.56		12.25 (K 05)	10.04		12.40 (K 05)
	15.43	27	13.14 (K 05)	17.18	18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36	23	12.48 (K 05)	14.51	15	12.55 (K 05)
19	09.39		12.48 (K 05)	08.12	06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59		12.25 (K 05)	10.05		12.41 (K 05)
	15.46	27	13.15 (K 05)	17.21	18.42	21.09	22.37	23.41	23.03	21.30	19.46	18.05	15.34	24	12.49 (K 05)	14.51	14	12.55 (K 05)
20	09.37		12.48 (K 05)	08.09	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02		12.25 (K 05)	10.06		12.41 (K 05)
	15.49	26	13.14 (K 05)	17.24	18.44	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31	25	12.50 (K 05)	14.51	15	12.56 (K 05)
21	09.34		12.49 (K 05)	08.05	06.33	05.48	04.15	03.25	04.16	05.45	07.10	08.33	09.05		12.24 (K 05)	10.07		12.42 (K 05)
	15.52	26	13.15 (K 05)	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	26	12.50 (K 05)	14.52	14	12.56 (K 05)
22	09.32		12.50 (K 05)	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08		12.24 (K 05)	10.08		12.42 (K 05)
	15.55	25	13.15 (K 05)	17.30	18.50	21.18	22.46	23.42	22.55	21.20	19.35	17.56	15.26	26	12.50 (K 05)	14.52	14	12.56 (K 05)
23	09.30		12.50 (K 05)	07.59	06.26	05.42	04.10	03.25	04.21	05.50	07.15	08.39	09.11		12.24 (K 05)	10.08		12.42 (K 05)
	15.58	24	13.14 (K 05)	17.33	18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.52	15.24	27	12.51 (K 05)	14.53	14	12.56 (K 05)
24	09.27		12.51 (K 05)	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.14		12.25 (K 05)	10.08		12.43 (K 05)
	16.01	23	13.14 (K 05)	17.36	18.56	21.24	22.52	23.42	22.50	21.13	19.29	17.49	15.22	26	12.51 (K 05)	14.53	14	12.57 (K 05)
25	09.25		12.52 (K 05)	07.53	06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.17		12.25 (K 05)	10.09		12.43 (K 05)
	16.04	22	13.14 (K 05)	17.38	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	27	12.52 (K 05)	14.54	15	12.58 (K 05)
26	09.22		12.53 (K 05)	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19		12.25 (K 05)	10.09		12.43 (K 05)
	16.07	20	13.13 (K 05)	17.41	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.17	27	12.52 (K 05)	14.55	16	12.59 (K 05)
27	09.19		12.54 (K 05)	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22		12.26 (K 05)	10.09		12.44 (K 05)
	16.10	18	13.12 (K 05)	17.44	19.04	21.33	23.00	23.41	22.42	21.03	19.19	16.40	15.15	27	12.53 (K 05)	14.56	15	12.59 (K 05)
28	09.17		12.56 (K 05)	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.29	07.53	09.25		12.26 (K 05)	10.09		12.44 (K 05)
	16.13	16	13.12 (K 05)	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.13	26	12.52 (K 05)	14.57	16	13.00 (K 05)
29	09.14		12.58 (K 05)		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27		12.26 (K 05)	10.08		12.44 (K 05)
	16.16	11	13.09 (K 05)		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.11	26	12.52 (K 05)	14.58	17	13.01 (K 05)
30	09.11				07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30		12.27 (K 05)	10.08		12.45 (K 05)
	16.19				20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.10	26	12.53 (K 05)	15.00	17	13.02 (K 05)
31	09.09				06.59		03.50		04.44	06.13		08.02				10.07		12.45 (K 05)
	16.22				20.15		23.10		22.30	20.50		16.27				15.01	18	13.03 (K 05)
Potential sun hours	184			243	364	446	557	601	591	501	391	308	208			154		
Total, worst case		671												426			564	
Sun reduction		0,16												0,15			0,11	
Oper. time red.		0,97												0,97			0,97	
Wind dir. red.		0,69												0,69			0,69	
Total reduction		0,11												0,10			0,07	
Total, real		73												43			42	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AA - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (67)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.25	15.08
2	10.05	09.03	07.36	06.52	05.13	03.47	03.34	04.50	06.18	07.39	08.08	09.35
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.24	20.43	19.02	16.21	15.06
3	10.04	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.13	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.35	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.26	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.42	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.57
10	09.56	08.39	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.23	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.22	04.45	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.42	03.31	03.54	05.19	06.45	08.07	08.38	09.56
	15.28	17.00	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.39	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.22	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.38	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.08	06.36	05.52	04.18	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.25	14.53
24	09.27	07.56	06.22	05.38	04.08	03.27	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.23	22.51	23.41	22.49	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.42	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.56
27	09.19	07.46	06.12	05.29	04.00	03.29	04.33	06.02	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.57
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.31	04.39	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.23		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AB - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January		February		March	April	May	June	July	August	September	October	November		December	
1	10.07		09.06	13.46 (K 05)	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.37	08.05		09.33	13.16 (K 05)
	15.03		16.25	10 13.56 (K 05)	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24		15.08	21 13.37 (K 05)
2	10.06	13.38 (K 05)	09.03		07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08		09.35	13.17 (K 05)
	15.05	5 13.43 (K 05)	16.28		17.53	20.21	21.47	23.15	23.36	22.24	20.43	19.02	16.21		15.06	20 13.37 (K 05)
3	10.05	13.36 (K 05)	09.00		07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11		09.38	13.17 (K 05)
	15.07	9 13.45 (K 05)	16.32		17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18		15.04	19 13.36 (K 05)
4	10.04	13.36 (K 05)	08.57		07.30	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14		09.40	13.19 (K 05)
	15.09	11 13.47 (K 05)	16.35		17.59	20.26	21.53	23.19	23.34	22.18	20.37	18.55	16.15		15.03	17 13.36 (K 05)
5	10.03	13.35 (K 05)	08.55		07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.48	08.17		09.42	13.20 (K 05)
	15.11	13 13.48 (K 05)	16.38		18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12		15.01	16 13.36 (K 05)
6	10.02	13.35 (K 05)	08.52		07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20		09.44	13.21 (K 05)
	15.13	15 13.50 (K 05)	16.41		18.05	20.32	21.59	23.23	23.31	22.12	20.30	18.48	16.09		15.00	14 13.35 (K 05)
7	10.01	13.35 (K 05)	08.49		07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23		09.47	13.22 (K 05)
	15.15	16 13.51 (K 05)	16.44		18.08	20.35	22.02	23.25	23.29	22.09	20.26	18.45	16.06		14.58	13 13.35 (K 05)
8	09.59	13.34 (K 05)	08.46		07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26		09.49	13.23 (K 05)
	15.17	18 13.52 (K 05)	16.47		18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04		14.57	11 13.34 (K 05)
9	09.58	13.34 (K 05)	08.43		07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29		09.51	13.25 (K 05)
	15.20	19 13.53 (K 05)	16.50		18.13	20.41	22.08	23.29	23.25	22.02	20.20	18.38	16.01		14.56	9 13.34 (K 05)
10	09.56	13.34 (K 05)	08.40		07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.02	08.32	13.16 (K 05)	09.53	13.27 (K 05)
	15.22	20 13.54 (K 05)	16.53		18.16	20.43	22.11	23.31	23.24	21.59	20.16	18.35	15.58	11 13.27 (K 05)	14.55	6 13.33 (K 05)
11	09.55	13.34 (K 05)	08.37		07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35	13.14 (K 05)	09.55	
	15.25	21 13.55 (K 05)	16.56		18.19	20.46	22.14	23.32	23.22	21.56	20.13	18.32	15.55	15 13.29 (K 05)	14.54	
12	09.53	13.34 (K 05)	08.34		07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	13.12 (K 05)	09.56	
	15.27	22 13.56 (K 05)	16.59		18.22	20.49	22.17	23.34	23.20	21.53	20.09	18.28	15.52	18 13.30 (K 05)	14.53	
13	09.51	13.34 (K 05)	08.31		07.00	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41	13.12 (K 05)	09.58	
	15.30	23 13.57 (K 05)	17.02		18.25	20.52	22.20	23.35	23.17	21.50	20.06	18.25	15.49	20 13.32 (K 05)	14.53	
14	09.49	13.34 (K 05)	08.27		06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44	13.11 (K 05)	09.59	
	15.32	24 13.58 (K 05)	17.05		18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	22 13.33 (K 05)	14.52	
15	09.47	13.34 (K 05)	08.24		06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.16	08.47	13.11 (K 05)	10.01	
	15.35	24 13.58 (K 05)	17.08		18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	23 13.34 (K 05)	14.52	
16	09.45	13.33 (K 05)	08.21		06.50	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50	13.10 (K 05)	10.02	
	15.38	25 13.58 (K 05)	17.12		18.33	21.01	22.29	23.38	23.11	21.40	19.56	18.15	15.41	24 13.34 (K 05)	14.51	
17	09.43	13.34 (K 05)	08.18		06.46	06.01	04.26	03.26	04.05	05.33	06.59	08.21	08.53	13.10 (K 05)	10.03	
	15.41	25 13.59 (K 05)	17.15		18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	25 13.35 (K 05)	14.51	
18	09.41	13.34 (K 05)	08.15		06.43	05.58	04.24	03.25	04.08	05.36	07.01	08.24	08.56	13.10 (K 05)	10.04	
	15.43	26 14.00 (K 05)	17.18		18.39	21.06	22.35	23.40	23.06	21.33	19.49	18.09	15.36	25 13.35 (K 05)	14.51	
19	09.39	13.35 (K 05)	08.12		06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59	13.10 (K 05)	10.05	
	15.46	26 14.01 (K 05)	17.21		18.42	21.09	22.37	23.41	23.03	21.30	19.46	18.05	15.34	26 13.36 (K 05)	14.51	
20	09.37	13.34 (K 05)	08.09		06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	13.10 (K 05)	10.06	
	15.49	26 14.00 (K 05)	17.24		18.44	21.12	22.40	23.41	23.01	21.27	19.42	18.02	15.31	26 13.36 (K 05)	14.51	
21	09.34	13.35 (K 05)	08.05		06.33	05.48	04.15	03.25	04.16	05.44	07.10	08.33	09.05	13.10 (K 05)	10.07	
	15.52	26 14.01 (K 05)	17.27		18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	26 13.36 (K 05)	14.52	
22	09.32	13.35 (K 05)	08.02		06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08	13.10 (K 05)	10.08	
	15.55	26 14.01 (K 05)	17.30		18.50	21.18	22.46	23.42	22.55	21.20	19.35	17.56	15.26	26 13.36 (K 05)	14.52	
23	09.30	13.35 (K 05)	07.59		06.26	05.42	04.10	03.25	04.21	05.50	07.15	08.39	09.11	13.11 (K 05)	10.08	
	15.58	26 14.01 (K 05)	17.33		18.53	21.21	22.49	23.42	22.53	21.17	19.32	17.52	15.24	26 13.37 (K 05)	14.53	
24	09.27	13.36 (K 05)	07.56		06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.14	13.11 (K 05)	10.08	
	16.01	25 14.01 (K 05)	17.36		18.56	21.24	22.52	23.42	22.50	21.13	19.29	17.49	15.22	26 13.37 (K 05)	14.53	
25	09.25	13.37 (K 05)	07.53		06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.17	13.12 (K 05)	10.09	
	16.04	25 14.02 (K 05)	17.38		18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	25 13.37 (K 05)	14.54	
26	09.22	13.37 (K 05)	07.49		06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	13.13 (K 05)	10.09	
	16.07	24 14.01 (K 05)	17.41		19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.17	24 13.37 (K 05)	14.55	
27	09.19	13.38 (K 05)	07.46		06.12	05.28	04.00	03.28	04.32	06.01	07.26	07.50	09.22	13.13 (K 05)	10.09	
	16.10	23 14.01 (K 05)	17.44		19.04	21.32	23.00	23.41	22.42	21.03	19.18	16.40	15.15	25 13.38 (K 05)	14.56	
28	09.17	13.38 (K 05)	07.43		06.09	05.25	03.57	03.29	04.35	06.04	07.29	07.53	09.25	13.13 (K 05)	10.09	
	16.13	22 14.00 (K 05)	17.47		19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.13	24 13.37 (K 05)	14.57	
29	09.14	13.40 (K 05)			07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	13.14 (K 05)	10.08	
	16.16	20 14.00 (K 05)			20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.11	23 13.37 (K 05)	14.58	
30	09.11	13.42 (K 05)			07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	13.15 (K 05)	10.08	
	16.19	17 13.59 (K 05)			20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.09	22 13.37 (K 05)	15.00	
31	09.09	13.43 (K 05)			06.59		03.50		04.44	06.12		08.02			10.07	
	16.22	14 13.57 (K 05)			20.15		23.10		22.30	20.50		16.27			15.01	
Potential sun hours	184		243		364	446	557	601	591	501	391	308	208		154	
Total, worst case		616		10										482		146
Sun reduction		0,16		0,29										0,15		0,11
Oper. time red.		0,97		0,97										0,97		0,97
Wind dir. red.		0,67		0,67										0,67		0,67
Total reduction		0,11		0,19										0,10		0,07
Total, real		66		2										47		11

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AC - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.07		12.13 (K 03)	09.06		14.32 (K 05)	07.39	06.55	05.15	03.48
	15.03	20	12.33 (K 03)	16.25	29	15.01 (K 05)	17.50	20.18	21.44	23.12
2	10.06		12.13 (K 03)	09.03		14.32 (K 05)	07.36	06.52	05.12	03.46
	15.05	21	12.34 (K 03)	16.28	29	15.01 (K 05)	17.53	20.21	21.47	23.15
3	10.05		12.13 (K 03)	09.00		14.32 (K 05)	07.33	06.49	05.09	03.44
	15.07	21	12.34 (K 03)	16.32	29	15.01 (K 05)	17.56	20.24	21.50	23.17
4	10.04		12.14 (K 03)	08.57		14.33 (K 05)	07.30	06.45	05.06	03.42
	15.09	21	12.35 (K 03)	16.35	29	15.02 (K 05)	17.59	20.26	21.53	23.19
5	10.03		12.13 (K 03)	08.54		14.33 (K 05)	07.26	06.42	05.03	03.40
	15.11	23	12.36 (K 03)	16.38	28	15.01 (K 05)	18.02	20.29	21.56	23.21
6	10.02		12.14 (K 03)	08.52		14.33 (K 05)	07.23	06.38	05.00	03.39
	15.13	23	12.37 (K 03)	16.41	28	15.01 (K 05)	18.05	20.32	21.59	23.23
7	10.01		12.14 (K 03)	08.49		14.34 (K 05)	07.20	06.35	04.57	03.37
	15.15	23	12.37 (K 03)	16.44	26	15.00 (K 05)	18.08	20.35	22.02	23.25
8	09.59		12.14 (K 03)	08.46		14.35 (K 05)	07.16	06.32	04.53	03.35
	15.17	24	12.38 (K 03)	16.47	25	15.00 (K 05)	18.10	20.38	22.05	23.27
9	09.58		12.15 (K 03)	08.43		14.35 (K 05)	07.13	06.28	04.50	03.34
	15.20	23	12.38 (K 03)	16.50	24	14.59 (K 05)	18.13	20.40	22.08	23.29
10	09.56		12.15 (K 03)	08.40		14.37 (K 05)	07.10	06.25	04.47	03.32
	15.22	24	12.39 (K 03)	16.53	22	14.59 (K 05)	18.16	20.43	22.11	23.31
11	09.55		12.15 (K 03)	08.37		14.38 (K 05)	07.06	06.22	04.44	03.31
	15.25	24	12.39 (K 03)	16.56	19	14.57 (K 05)	18.19	20.46	22.14	23.32
12	09.53		12.16 (K 03)	08.34		14.40 (K 05)	07.03	06.18	04.41	03.30
	15.27	24	12.40 (K 03)	16.59	15	14.55 (K 05)	18.22	20.49	22.17	23.34
13	09.51		12.16 (K 03)	08.31		14.44 (K 05)	07.00	06.15	04.38	03.29
	15.30	24	12.40 (K 03)	17.02	9	14.53 (K 05)	18.25	20.52	22.20	23.35
14	09.49		12.17 (K 03)	08.27			06.56	06.11	04.35	03.28
	15.32	24	12.41 (K 03)	17.05			18.27	20.55	22.23	23.36
15	09.47		12.16 (K 03)	08.24			06.53	06.08	04.32	03.27
	15.35	24	12.40 (K 03)	17.08			18.30	20.58	22.26	23.37
16	09.45		12.17 (K 03)	08.21			06.49	06.05	04.29	03.26
	15.38	24	12.41 (K 03)	17.12			18.33	21.00	22.29	23.38
17	09.43		12.17 (K 03)	08.18			06.46	06.01	04.26	03.26
	15.41	24	12.41 (K 03)	17.15			18.36	21.03	22.32	23.39
18	09.41		12.18 (K 03)	08.15			06.43	05.58	04.24	03.25
	15.43	24	12.42 (K 03)	17.18			18.39	21.06	22.35	23.40
19	09.39		12.19 (K 03)	08.12			06.39	05.55	04.21	03.25
	15.46	23	12.42 (K 03)	17.21			18.42	21.09	22.37	23.41
20	09.37		12.19 (K 03)	08.09			06.36	05.51	04.18	03.25
	15.49	22	12.41 (K 03)	17.24			18.44	21.12	22.40	23.41
21	09.34		12.20 (K 03)	08.05			06.33	05.48	04.15	03.25
	15.52	30	14.48 (K 05)	17.27			18.47	21.15	22.43	23.41
22	09.32		12.22 (K 03)	08.02			06.29	05.45	04.13	03.25
	15.55	33	14.51 (K 05)	17.30			18.50	21.18	22.46	23.42
23	09.29		12.22 (K 03)	07.59			06.26	05.42	04.10	03.25
	15.58	36	14.53 (K 05)	17.33			18.53	21.21	22.49	23.42
24	09.27		12.24 (K 03)	07.56			06.22	05.38	04.07	03.26
	16.01	35	14.55 (K 05)	17.35			18.56	21.24	22.51	23.42
25	09.25		12.26 (K 03)	07.53			06.19	05.35	04.05	03.26
	16.04	34	14.56 (K 05)	17.38			18.58	21.27	22.54	23.41
26	09.22		12.28 (K 03)	07.49			06.16	05.32	04.02	03.27
	16.07	32	14.57 (K 05)	17.41			19.01	21.30	22.57	23.41
27	09.19		14.33 (K 05)	07.46			06.12	05.28	04.00	03.28
	16.10	25	14.58 (K 05)	17.44			19.04	21.32	23.00	23.40
28	09.17		14.32 (K 05)	07.43			06.09	05.25	03.57	03.29
	16.13	26	14.58 (K 05)	17.47			19.07	21.35	23.02	23.40
29	09.14		14.32 (K 05)				07.05	05.22	03.55	03.30
	16.16	27	14.59 (K 05)				20.10	21.38	23.05	23.39
30	09.11		14.33 (K 05)				07.02	05.19	03.53	03.31
	16.19	27	15.00 (K 05)				20.12	21.41	23.07	23.38
31	09.09		14.32 (K 05)				06.59		03.50	
	16.22	28	15.00 (K 05)				20.15		23.10	
Potential sun hours	184			243			364	446	557	601
Total, worst case		793			312					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,68			0,67					
Total reduction		0,11			0,19					
Total, real		86			60					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AC - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		14.06 (K 05)	09.33		11.57 (K 03)
	23.37	22.27	20.47	19.05			16.24	22	14.28 (K 05)	15.08	25	12.22 (K 03)
2	03.34	04.50	06.18	07.39			08.08		14.04 (K 05)	09.35		11.58 (K 03)
	23.36	22.24	20.43	19.02			16.21	25	14.29 (K 05)	15.06	24	12.22 (K 03)
3	03.35	04.53	06.21	07.42			08.11		14.04 (K 05)	09.37		11.58 (K 03)
	23.35	22.21	20.40	18.58			16.18	26	14.30 (K 05)	15.04	24	12.22 (K 03)
4	03.37	04.56	06.23	07.45			08.14		14.03 (K 05)	09.40		11.59 (K 03)
	23.34	22.18	20.37	18.55			16.15	27	14.30 (K 05)	15.03	23	12.22 (K 03)
5	03.39	04.58	06.26	07.48			08.17		14.03 (K 05)	09.42		12.00 (K 03)
	23.32	22.15	20.33	18.52			16.12	28	14.31 (K 05)	15.01	23	12.23 (K 03)
6	03.40	05.01	06.29	07.50			08.20		14.03 (K 05)	09.44		12.00 (K 03)
	23.31	22.12	20.30	18.48			16.09	29	14.32 (K 05)	15.00	22	12.22 (K 03)
7	03.42	05.04	06.32	07.53			08.23		14.02 (K 05)	09.47		12.01 (K 03)
	23.29	22.09	20.26	18.45			16.06	29	14.31 (K 05)	14.59	22	12.23 (K 03)
8	03.44	05.07	06.34	07.56			08.26		14.03 (K 05)	09.49		12.01 (K 03)
	23.27	22.05	20.23	18.41			16.04	29	14.32 (K 05)	14.57	22	12.23 (K 03)
9	03.46	05.10	06.37	07.59			08.29		14.02 (K 05)	09.51		12.02 (K 03)
	23.25	22.02	20.20	18.38			16.01	29	14.31 (K 05)	14.56	22	12.24 (K 03)
10	03.48	05.13	06.40	08.02			08.32		14.03 (K 05)	09.53		12.02 (K 03)
	23.24	21.59	20.16	18.35			15.58	29	14.32 (K 05)	14.55	22	12.24 (K 03)
11	03.51	05.16	06.43	08.04			08.35		14.04 (K 05)	09.54		12.03 (K 03)
	23.22	21.56	20.13	18.32			15.55	28	14.32 (K 05)	14.54	21	12.24 (K 03)
12	03.53	05.19	06.45	08.07			08.38		14.03 (K 05)	09.56		12.04 (K 03)
	23.19	21.53	20.09	18.28			15.52	28	14.31 (K 05)	14.53	20	12.24 (K 03)
13	03.55	05.22	06.48	08.10			08.41		14.04 (K 05)	09.58		12.04 (K 03)
	23.17	21.49	20.06	18.25			15.49	27	14.31 (K 05)	14.53	20	12.24 (K 03)
14	03.58	05.25	06.51	08.13			08.44		14.05 (K 05)	09.59		12.05 (K 03)
	23.15	21.46	20.03	18.22			15.47	26	14.31 (K 05)	14.52	20	12.25 (K 03)
15	04.00	05.27	06.53	08.16			08.47		14.06 (K 05)	10.01		12.06 (K 03)
	23.13	21.43	19.59	18.18			15.44	25	14.31 (K 05)	14.52	18	12.24 (K 03)
16	04.03	05.30	06.56	08.18			08.50		12.01 (K 03)	10.02		12.06 (K 03)
	23.11	21.40	19.56	18.15			15.41	32	14.30 (K 05)	14.51	18	12.24 (K 03)
17	04.05	05.33	06.59	08.21			08.53		11.59 (K 03)	10.03		12.07 (K 03)
	23.08	21.37	19.52	18.12			15.39	34	14.29 (K 05)	14.51	18	12.25 (K 03)
18	04.08	05.36	07.01	08.24			08.56		11.58 (K 03)	10.04		12.07 (K 03)
	23.06	21.33	19.49	18.09			15.36	34	14.28 (K 05)	14.51	18	12.25 (K 03)
19	04.10	05.39	07.04	08.27			08.59		11.57 (K 03)	10.05		12.08 (K 03)
	23.03	21.30	19.46	18.05			15.34	36	14.28 (K 05)	14.51	18	12.26 (K 03)
20	04.13	05.42	07.07	08.30			09.02		11.57 (K 03)	10.06		12.09 (K 03)
	23.01	21.27	19.42	18.02			15.31	33	14.26 (K 05)	14.51	17	12.26 (K 03)
21	04.16	05.44	07.10	08.33			09.05		11.55 (K 03)	10.07		12.09 (K 03)
	22.58	21.23	19.39	17.59			15.29	30	14.23 (K 05)	14.52	18	12.27 (K 03)
22	04.19	05.47	07.12	08.36			09.08		11.55 (K 03)	10.08		12.09 (K 03)
	22.55	21.20	19.35	17.56			15.26	22	12.17 (K 03)	14.52	18	12.27 (K 03)
23	04.21	05.50	07.15	08.39			09.11		11.55 (K 03)	10.08		12.10 (K 03)
	22.53	21.17	19.32	17.52			15.24	23	12.18 (K 03)	14.53	17	12.27 (K 03)
24	04.24	05.53	07.18	08.41			09.14		11.55 (K 03)	10.08		12.10 (K 03)
	22.50	21.13	19.29	17.49			15.22	24	12.19 (K 03)	14.53	18	12.28 (K 03)
25	04.27	05.56	07.20	07.44			09.16		11.56 (K 03)	10.09		12.11 (K 03)
	22.47	21.10	19.25	16.46			15.20	23	12.19 (K 03)	14.54	18	12.29 (K 03)
26	04.30	05.59	07.23	07.47			09.19		11.56 (K 03)	10.09		12.11 (K 03)
	22.44	21.07	19.22	16.43			15.17	24	12.20 (K 03)	14.55	18	12.29 (K 03)
27	04.33	06.01	07.26	07.50			09.22		11.56 (K 03)	10.09		12.11 (K 03)
	22.42	21.03	19.18	16.40			15.15	25	12.21 (K 03)	14.56	19	12.30 (K 03)
28	04.35	06.04	07.29	07.53			09.25		11.56 (K 03)	10.09		12.12 (K 03)
	22.39	21.00	19.15	16.37			15.13	24	12.20 (K 03)	14.57	19	12.31 (K 03)
29	04.38	06.07	07.31	07.56		14.12 (K 05)	09.27		11.56 (K 03)	10.08		12.12 (K 03)
	22.36	20.57	19.12	16.34	11	14.23 (K 05)	15.11	25	12.21 (K 03)	14.58	19	12.31 (K 03)
30	04.41	06.10	07.34	07.59		14.09 (K 05)	09.30		11.57 (K 03)	10.08		12.13 (K 03)
	22.33	20.53	19.08	16.30	16	14.25 (K 05)	15.10	24	12.21 (K 03)	15.00	19	12.32 (K 03)
31	04.44	06.12		08.02		14.08 (K 05)				10.07		12.13 (K 03)
	22.30	20.50		16.27	19	14.27 (K 05)				15.01	20	12.33 (K 03)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					46			820			620	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,67			0,68			0,69	
Total reduction					0,17			0,10			0,07	
Total, real					8			81			46	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AD - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January		February		March	April	May	June
1	10.07	13.12 (K 03)	09.06		07.39	06.55	05.15	03.48
	15.03 17	13.29 (K 03)	16.25		17.50	20.18	21.44	23.12
2	10.06	13.12 (K 03)	09.03		07.36	06.52	05.12	03.46
	15.05 18	13.30 (K 03)	16.28		17.53	20.21	21.47	23.14
3	10.05	13.12 (K 03)	09.00	15.43 (K 05)	07.33	06.49	05.09	03.44
	15.07 19	13.31 (K 03)	16.32 2	15.45 (K 05)	17.56	20.24	21.50	23.17
4	10.04	13.12 (K 03)	08.57	15.38 (K 05)	07.30	06.45	05.06	03.42
	15.09 20	13.32 (K 03)	16.35 11	15.49 (K 05)	17.59	20.26	21.53	23.19
5	10.03	13.12 (K 03)	08.54	15.36 (K 05)	07.26	06.42	05.03	03.40
	15.11 20	13.32 (K 03)	16.38 16	15.52 (K 05)	18.02	20.29	21.56	23.21
6	10.02	13.12 (K 03)	08.52	15.36 (K 05)	07.23	06.38	05.00	03.39
	15.13 21	13.33 (K 03)	16.41 18	15.54 (K 05)	18.05	20.32	21.59	23.23
7	10.00	13.13 (K 03)	08.49	15.34 (K 05)	07.20	06.35	04.56	03.37
	15.15 21	13.34 (K 03)	16.44 21	15.55 (K 05)	18.08	20.35	22.02	23.25
8	09.59	13.13 (K 03)	08.46	15.34 (K 05)	07.16	06.32	04.53	03.35
	15.17 22	13.35 (K 03)	16.47 22	15.56 (K 05)	18.10	20.38	22.05	23.27
9	09.58	13.13 (K 03)	08.43	15.33 (K 05)	07.13	06.28	04.50	03.34
	15.20 23	13.36 (K 03)	16.50 23	15.56 (K 05)	18.13	20.40	22.08	23.29
10	09.56	13.13 (K 03)	08.40	15.33 (K 05)	07.10	06.25	04.47	03.32
	15.22 23	13.36 (K 03)	16.53 24	15.57 (K 05)	18.16	20.43	22.11	23.31
11	09.54	13.13 (K 03)	08.37	15.32 (K 05)	07.06	06.21	04.44	03.31
	15.25 24	13.37 (K 03)	16.56 25	15.57 (K 05)	18.19	20.46	22.14	23.32
12	09.53	13.13 (K 03)	08.34	15.32 (K 05)	07.03	06.18	04.41	03.30
	15.27 25	13.38 (K 03)	16.59 26	15.58 (K 05)	18.22	20.49	22.17	23.34
13	09.51	13.14 (K 03)	08.31	15.31 (K 05)	07.00	06.15	04.38	03.29
	15.30 24	13.38 (K 03)	17.02 26	15.57 (K 05)	18.25	20.52	22.20	23.35
14	09.49	13.14 (K 03)	08.27	15.32 (K 05)	06.56	06.11	04.35	03.28
	15.32 25	13.39 (K 03)	17.05 25	15.57 (K 05)	18.27	20.55	22.23	23.36
15	09.47	13.13 (K 03)	08.24	15.33 (K 05)	06.53	06.08	04.32	03.27
	15.35 25	13.38 (K 03)	17.08 25	15.58 (K 05)	18.30	20.58	22.26	23.37
16	09.45	13.14 (K 03)	08.21	15.33 (K 05)	06.49	06.05	04.29	03.26
	15.38 25	13.39 (K 03)	17.11 24	15.57 (K 05)	18.33	21.00	22.29	23.38
17	09.43	13.14 (K 03)	08.18	15.34 (K 05)	06.46	06.01	04.26	03.26
	15.41 26	13.40 (K 03)	17.15 22	15.56 (K 05)	18.36	21.03	22.32	23.39
18	09.41	13.15 (K 03)	08.15	15.34 (K 05)	06.43	05.58	04.24	03.25
	15.43 25	13.40 (K 03)	17.18 21	15.55 (K 05)	18.39	21.06	22.34	23.40
19	09.39	13.15 (K 03)	08.12	15.36 (K 05)	06.39	05.55	04.21	03.25
	15.46 25	13.40 (K 03)	17.21 18	15.54 (K 05)	18.42	21.09	22.37	23.41
20	09.37	13.15 (K 03)	08.09	15.37 (K 05)	06.36	05.51	04.18	03.25
	15.49 25	13.40 (K 03)	17.24 15	15.52 (K 05)	18.44	21.12	22.40	23.41
21	09.34	13.16 (K 03)	08.05	15.40 (K 05)	06.33	05.48	04.15	03.25
	15.52 24	13.40 (K 03)	17.27 10	15.50 (K 05)	18.47	21.15	22.43	23.41
22	09.32	13.17 (K 03)	08.02		06.29	05.45	04.13	03.25
	15.55 24	13.41 (K 03)	17.30		18.50	21.18	22.46	23.42
23	09.29	13.17 (K 03)	07.59		06.26	05.41	04.10	03.25
	15.58 23	13.40 (K 03)	17.32		18.53	21.21	22.49	23.42
24	09.27	13.19 (K 03)	07.56		06.22	05.38	04.07	03.26
	16.01 21	13.40 (K 03)	17.35		18.56	21.24	22.51	23.42
25	09.24	13.20 (K 03)	07.52		06.19	05.35	04.05	03.26
	16.04 20	13.40 (K 03)	17.38		18.58	21.27	22.54	23.41
26	09.22	13.20 (K 03)	07.49		06.16	05.32	04.02	03.27
	16.07 19	13.39 (K 03)	17.41		19.01	21.29	22.57	23.41
27	09.19	13.22 (K 03)	07.46		06.12	05.28	04.00	03.28
	16.10 16	13.38 (K 03)	17.44		19.04	21.32	23.00	23.40
28	09.17	13.24 (K 03)	07.43		06.09	05.25	03.57	03.29
	16.13 12	13.36 (K 03)	17.47		19.07	21.35	23.02	23.40
29	09.14	13.28 (K 03)			07.05	05.22	03.55	03.30
	16.16 5	13.33 (K 03)			20.09	21.38	23.05	23.39
30	09.11				07.02	05.19	03.53	03.31
	16.19				20.12	21.41	23.07	23.38
31	09.09				06.59		03.50	
	16.22				20.15		23.10	
Potential sun hours	184		243		364	446	557	601
Total, worst case	617		374					
Sun reduction	0,16		0,29					
Oper. time red.	0,97		0,97					
Wind dir. red.	0,68		0,64					
Total reduction	0,11		0,18					
Total, real	67		68					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AD - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July		August		September		October			November			December		
1	03.32		04.47		06.15		07.37			08.05		15.02 (K 05)	09.32		12.55 (K 03)
	23.37		22.27		20.47		19.05			16.24	24	15.26 (K 05)	15.08	24	13.19 (K 03)
2	03.34		04.50		06.18		07.39			08.08		15.02 (K 05)	09.35		12.56 (K 03)
	23.36		22.24		20.43		19.02			16.21	23	15.25 (K 05)	15.06	24	13.20 (K 03)
3	03.35		04.53		06.21		07.42			08.11		15.03 (K 05)	09.37		12.56 (K 03)
	23.35		22.21		20.40		18.58			16.18	22	15.25 (K 05)	15.04	23	13.19 (K 03)
4	03.37		04.56		06.23		07.45			08.14		15.04 (K 05)	09.40		12.57 (K 03)
	23.34		22.18		20.36		18.55			16.15	20	15.24 (K 05)	15.03	22	13.19 (K 03)
5	03.39		04.58		06.26		07.48			08.17		15.05 (K 05)	09.42		12.58 (K 03)
	23.32		22.15		20.33		18.51			16.12	18	15.23 (K 05)	15.01	22	13.20 (K 03)
6	03.40		05.01		06.29		07.50			08.20		15.06 (K 05)	09.44		12.58 (K 03)
	23.31		22.12		20.30		18.48			16.09	15	15.21 (K 05)	15.00	21	13.19 (K 03)
7	03.42		05.04		06.32		07.53			08.23		15.09 (K 05)	09.47		12.59 (K 03)
	23.29		22.08		20.26		18.45			16.06	10	15.19 (K 05)	14.58	21	13.20 (K 03)
8	03.44		05.07		06.34		07.56			08.26			09.49		13.00 (K 03)
	23.27		22.05		20.23		18.41			16.03			14.57	19	13.19 (K 03)
9	03.46		05.10		06.37		07.59			08.29			09.51		13.01 (K 03)
	23.25		22.02		20.20		18.38			16.01			14.56	19	13.20 (K 03)
10	03.48		05.13		06.40		08.01			08.32			09.53		13.02 (K 03)
	23.23		21.59		20.16		18.35			15.58			14.55	18	13.20 (K 03)
11	03.51		05.16		06.43		08.04			08.35			09.54		13.02 (K 03)
	23.21		21.56		20.13		18.32			15.55			14.54	18	13.20 (K 03)
12	03.53		05.19		06.45		08.07			08.38			09.56		13.03 (K 03)
	23.19		21.53		20.09		18.28			15.52			14.53	17	13.20 (K 03)
13	03.55		05.22		06.48		08.10			08.41		12.59 (K 03)	09.58		13.04 (K 03)
	23.17		21.49		20.06		18.25			15.49	6	13.05 (K 03)	14.53	16	13.20 (K 03)
14	03.58		05.24		06.51		08.13			08.44		12.56 (K 03)	09.59		13.04 (K 03)
	23.15		21.46		20.03		18.22			15.47	13	13.09 (K 03)	14.52	15	13.19 (K 03)
15	04.00		05.27		06.53		08.16			08.47		12.55 (K 03)	10.01		13.06 (K 03)
	23.13		21.43		19.59		18.18			15.44	16	13.11 (K 03)	14.52	14	13.20 (K 03)
16	04.03		05.30		06.56		08.18			08.50		12.53 (K 03)	10.02		13.06 (K 03)
	23.10		21.40		19.56		18.15			15.41	18	13.11 (K 03)	14.51	14	13.20 (K 03)
17	04.05		05.33		06.59		08.21			08.53		12.53 (K 03)	10.03		13.07 (K 03)
	23.08		21.36		19.52		18.12			15.39	20	13.13 (K 03)	14.51	13	13.20 (K 03)
18	04.08		05.36		07.01		08.24			08.56		12.52 (K 03)	10.04		13.08 (K 03)
	23.06		21.33		19.49		18.09			15.36	22	13.14 (K 03)	14.51	12	13.20 (K 03)
19	04.10		05.39		07.04		08.27			08.59		12.52 (K 03)	10.05		13.08 (K 03)
	23.03		21.30		19.46		18.05			15.34	23	13.15 (K 03)	14.51	12	13.20 (K 03)
20	04.13		05.42		07.07		08.30		16.14 (K 05)	09.02		12.52 (K 03)	10.06		13.09 (K 03)
	23.01		21.27		19.42		18.02	3	16.17 (K 05)	15.31	24	13.16 (K 03)	14.51	12	13.21 (K 03)
21	04.16		05.44		07.10		08.33		16.09 (K 05)	09.05		12.51 (K 03)	10.07		13.09 (K 03)
	22.58		21.23		19.39		17.59	12	16.21 (K 05)	15.29	24	13.15 (K 03)	14.52	11	13.20 (K 03)
22	04.19		05.47		07.12		08.36		16.07 (K 05)	09.08		12.52 (K 03)	10.07		13.10 (K 03)
	22.55		21.20		19.35		17.56	17	16.24 (K 05)	15.26	24	13.16 (K 03)	14.52	11	13.21 (K 03)
23	04.21		05.50		07.15		08.38		16.05 (K 05)	09.11		12.52 (K 03)	10.08		13.10 (K 03)
	22.53		21.17		19.32		17.52	20	16.25 (K 05)	15.24	25	13.17 (K 03)	14.53	11	13.21 (K 03)
24	04.24		05.53		07.18		08.41		16.04 (K 05)	09.14		12.52 (K 03)	10.08		13.11 (K 03)
	22.50		21.13		19.29		17.49	21	16.25 (K 05)	15.22	25	13.17 (K 03)	14.53	12	13.23 (K 03)
25	04.27		05.56		07.20		07.44		15.03 (K 05)	09.16		12.53 (K 03)	10.09		13.11 (K 03)
	22.47		21.10		19.25		16.46	23	15.26 (K 05)	15.20	25	13.18 (K 03)	14.54	13	13.24 (K 03)
26	04.30		05.59		07.23		07.47		15.03 (K 05)	09.19		12.53 (K 03)	10.09		13.11 (K 03)
	22.44		21.07		19.22		16.43	24	15.27 (K 05)	15.17	25	13.18 (K 03)	14.55	13	13.24 (K 03)
27	04.32		06.01		07.26		07.50		15.02 (K 05)	09.22		12.53 (K 03)	10.09		13.12 (K 03)
	22.41		21.03		19.18		16.40	25	15.27 (K 05)	15.15	25	13.18 (K 03)	14.56	13	13.25 (K 03)
28	04.35		06.04		07.28		07.53		15.01 (K 05)	09.25		12.53 (K 03)	10.08		13.12 (K 03)
	22.39		21.00		19.15		16.37	26	15.27 (K 05)	15.13	25	13.18 (K 03)	14.57	14	13.26 (K 03)
29	04.38		06.07		07.31		07.56		15.02 (K 05)	09.27		12.54 (K 03)	10.08		13.12 (K 03)
	22.36		20.57		19.12		16.34	25	15.27 (K 05)	15.11	24	13.18 (K 03)	14.58	14	13.26 (K 03)
30	04.41		06.10		07.34		07.59		15.01 (K 05)	09.30		12.54 (K 03)	10.08		13.11 (K 03)
	22.33		20.53		19.08		16.30	26	15.27 (K 05)	15.09	25	13.19 (K 03)	15.00	16	13.27 (K 03)
31	04.44		06.12				08.02		15.01 (K 05)				10.07		13.12 (K 03)
	22.30		20.50				16.27	25	15.26 (K 05)				15.01	17	13.29 (K 03)
Potential sun hours	591		501		391		308			208			154		
Total, worst case							247				521			501	
Sun reduction							0,26				0,15			0,11	
Oper. time red.							0,97				0,97			0,97	
Wind dir. red.							0,64				0,67			0,68	
Total reduction							0,16				0,10			0,07	
Total, real							40				51			37	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AE - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.11	23.36	22.26	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.34
	15.06	16.29	17.53	20.21	21.47	23.14	23.35	22.23	20.43	19.02	16.21	15.06
3	10.04	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.20	20.40	18.58	16.18	15.05
4	10.03	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.20	23.31	22.14	20.33	18.51	16.12	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.22	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.16	16.44	18.08	20.35	22.02	23.24	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.05	23.26	23.27	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.57
10	09.56	08.39	07.09	06.25	04.48	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.23	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.31	03.53	05.19	06.45	08.07	08.38	09.56
	15.28	16.59	18.22	20.49	22.16	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.30	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.19	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.29	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.54	22.22	23.35	23.14	21.46	20.02	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.38	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.37	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.52
20	09.36	08.08	06.36	05.52	04.18	03.26	04.14	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.09	08.32	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.57	21.23	19.39	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.53
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.33	18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.55	21.23	22.51	23.41	22.49	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.40	22.47	21.10	19.25	16.46	15.20	14.55
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.05	05.22	03.55	03.30	04.39	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.41	06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.07	23.37	22.32	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.29	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AF - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.06			09.06		13.41 (K 02)	07.39	06.55	05.15	03.48
	15.03			16.25	26	14.07 (K 02)	17.50	20.18	21.44	23.12
2	10.06			09.03		13.41 (K 02)	07.36	06.52	05.12	03.46
	15.05			16.28	25	14.06 (K 02)	17.53	20.21	21.47	23.14
3	10.05			09.00		13.43 (K 02)	07.33	06.48	05.09	03.44
	15.07			16.32	22	14.05 (K 02)	17.56	20.23	21.50	23.17
4	10.04			08.57		13.43 (K 02)	07.29	06.45	05.06	03.42
	15.09			16.35	21	14.04 (K 02)	17.59	20.26	21.53	23.19
5	10.03			08.54		13.46 (K 02)	07.26	06.42	05.03	03.40
	15.11			16.38	17	14.03 (K 02)	18.02	20.29	21.56	23.21
6	10.02			08.51		13.49 (K 02)	07.23	06.38	05.00	03.39
	15.13			16.41	22	15.50 (K 03)	18.05	20.32	21.59	23.23
7	10.00		13.43 (K 02)	08.49		15.37 (K 03)	07.20	06.35	04.56	03.37
	15.15	4	13.47 (K 02)	16.44	16	15.53 (K 03)	18.07	20.35	22.02	23.25
8	09.59		13.42 (K 02)	08.46		15.36 (K 03)	07.16	06.32	04.53	03.35
	15.17	9	13.51 (K 02)	16.47	19	15.55 (K 03)	18.10	20.38	22.05	23.27
9	09.58		13.40 (K 02)	08.43		15.34 (K 03)	07.13	06.28	04.50	03.34
	15.20	13	13.53 (K 02)	16.50	22	15.56 (K 03)	18.13	20.40	22.08	23.29
10	09.56		13.39 (K 02)	08.40		15.33 (K 03)	07.10	06.25	04.47	03.32
	15.22	16	13.55 (K 02)	16.53	25	15.58 (K 03)	18.16	20.43	22.11	23.30
11	09.54		13.39 (K 02)	08.37		15.32 (K 03)	07.06	06.21	04.44	03.31
	15.25	17	13.56 (K 02)	16.56	26	15.58 (K 03)	18.19	20.46	22.14	23.32
12	09.53		13.38 (K 02)	08.33		15.32 (K 03)	07.03	06.18	04.41	03.30
	15.27	20	13.58 (K 02)	16.59	28	16.00 (K 03)	18.22	20.49	22.17	23.33
13	09.51		13.38 (K 02)	08.30		15.31 (K 03)	06.59	06.15	04.38	03.29
	15.30	21	13.59 (K 02)	17.02	29	16.00 (K 03)	18.25	20.52	22.20	23.35
14	09.49		13.37 (K 02)	08.27		15.31 (K 03)	06.56	06.11	04.35	03.28
	15.32	22	13.59 (K 02)	17.05	29	16.00 (K 03)	18.27	20.55	22.23	23.36
15	09.47		13.37 (K 02)	08.24		15.30 (K 03)	06.53	06.08	04.32	03.27
	15.35	23	14.00 (K 02)	17.08	30	16.00 (K 03)	18.30	20.57	22.26	23.37
16	09.45		13.37 (K 02)	08.21		15.30 (K 03)	06.49	06.05	04.29	03.27
	15.38	25	14.02 (K 02)	17.11	31	16.01 (K 03)	18.33	21.00	22.29	23.38
17	09.43		13.37 (K 02)	08.18		15.30 (K 03)	06.46	06.01	04.26	03.26
	15.41	26	14.03 (K 02)	17.14	31	16.01 (K 03)	18.36	21.03	22.31	23.39
18	09.41		13.37 (K 02)	08.15		15.30 (K 03)	06.43	05.58	04.24	03.26
	15.43	27	14.04 (K 02)	17.18	30	16.00 (K 03)	18.39	21.06	22.34	23.40
19	09.39		13.36 (K 02)	08.12		15.31 (K 03)	06.39	05.55	04.21	03.25
	15.46	28	14.04 (K 02)	17.21	29	16.00 (K 03)	18.41	21.09	22.37	23.40
20	09.36		13.36 (K 02)	08.08		15.30 (K 03)	06.36	05.51	04.18	03.25
	15.49	29	14.05 (K 02)	17.24	29	15.59 (K 03)	18.44	21.12	22.40	23.41
21	09.34		13.37 (K 02)	08.05		15.31 (K 03)	06.33	05.48	04.15	03.25
	15.52	29	14.06 (K 02)	17.27	28	15.59 (K 03)	18.47	21.15	22.43	23.41
22	09.32		13.36 (K 02)	08.02		15.32 (K 03)	06.29	05.45	04.13	03.25
	15.55	29	14.05 (K 02)	17.29	26	15.58 (K 03)	18.50	21.18	22.46	23.41
23	09.29		13.36 (K 02)	07.59		15.33 (K 03)	06.26	05.41	04.10	03.25
	15.58	30	14.06 (K 02)	17.32	24	15.57 (K 03)	18.53	21.21	22.49	23.41
24	09.27		13.37 (K 02)	07.56		15.34 (K 03)	06.22	05.38	04.07	03.26
	16.01	30	14.07 (K 02)	17.35	21	15.55 (K 03)	18.55	21.24	22.51	23.41
25	09.24		13.36 (K 02)	07.52		15.36 (K 03)	06.19	05.35	04.05	03.26
	16.04	31	14.07 (K 02)	17.38	18	15.54 (K 03)	18.58	21.26	22.54	23.41
26	09.22		13.37 (K 02)	07.49		15.38 (K 03)	06.16	05.32	04.02	03.27
	16.07	30	14.07 (K 02)	17.41	13	15.51 (K 03)	19.01	21.29	22.57	23.41
27	09.19		13.38 (K 02)	07.46			06.12	05.28	04.00	03.28
	16.10	30	14.08 (K 02)	17.44			19.04	21.32	22.59	23.40
28	09.17		13.38 (K 02)	07.43			06.09	05.25	03.57	03.29
	16.13	29	14.07 (K 02)	17.47			19.07	21.35	23.02	23.40
29	09.14		13.38 (K 02)				07.05	05.22	03.55	03.30
	16.16	29	14.07 (K 02)				20.09	21.38	23.05	23.39
30	09.11		13.38 (K 02)				07.02	05.19	03.53	03.31
	16.19	29	14.07 (K 02)				20.12	21.41	23.07	23.38
31	09.09		13.39 (K 02)				06.59		03.50	
	16.22	28	14.07 (K 02)				20.15		23.10	
Potential sun hours	185			243			364	446	557	601
Total, worst case		604			637					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,67			0,64					
Total reduction		0,11			0,18					
Total, real		64			116					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AF - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05		15.03 (K 03)	09.32		13.21 (K 02)
	23.37	22.27	20.47	19.05			16.24	24	15.27 (K 03)	15.08	18	13.39 (K 02)
2	03.34	04.50	06.18	07.39			08.08		15.03 (K 03)	09.35		13.22 (K 02)
	23.36	22.24	20.43	19.02			16.21	22	15.25 (K 03)	15.06	15	13.37 (K 02)
3	03.35	04.53	06.21	07.42			08.11		15.05 (K 03)	09.37		13.23 (K 02)
	23.35	22.21	20.40	18.58			16.18	20	15.25 (K 03)	15.04	14	13.37 (K 02)
4	03.37	04.56	06.23	07.45			08.14		13.23 (K 02)	09.40		13.26 (K 02)
	23.33	22.18	20.36	18.55			16.15	17	15.22 (K 03)	15.03	10	13.36 (K 02)
5	03.39	04.58	06.26	07.48			08.17		13.18 (K 02)	09.42		13.28 (K 02)
	23.32	22.15	20.33	18.51			16.12	22	15.19 (K 03)	15.01	5	13.33 (K 02)
6	03.40	05.01	06.29	07.50			08.20		13.15 (K 02)	09.44		
	23.30	22.12	20.30	18.48			16.09	17	13.32 (K 02)	15.00		
7	03.42	05.04	06.32	07.53			08.23		13.14 (K 02)	09.46		
	23.29	22.08	20.26	18.45			16.06	20	13.34 (K 02)	14.59		
8	03.44	05.07	06.34	07.56			08.26		13.13 (K 02)	09.49		
	23.27	22.05	20.23	18.41			16.03	23	13.36 (K 02)	14.57		
9	03.46	05.10	06.37	07.59			08.29		13.12 (K 02)	09.51		
	23.25	22.02	20.19	18.38			16.01	24	13.36 (K 02)	14.56		
10	03.48	05.13	06.40	08.01			08.32		13.11 (K 02)	09.52		
	23.23	21.59	20.16	18.35			15.58	27	13.38 (K 02)	14.55		
11	03.51	05.16	06.42	08.04			08.35		13.11 (K 02)	09.54		
	23.21	21.56	20.13	18.31			15.55	28	13.39 (K 02)	14.54		
12	03.53	05.19	06.45	08.07			08.38		13.10 (K 02)	09.56		
	23.19	21.53	20.09	18.28			15.52	28	13.38 (K 02)	14.53		
13	03.55	05.22	06.48	08.10			08.41		13.10 (K 02)	09.58		
	23.17	21.49	20.06	18.25			15.49	29	13.39 (K 02)	14.53		
14	03.58	05.24	06.51	08.13			08.44		13.10 (K 02)	09.59		
	23.15	21.46	20.02	18.22			15.47	30	13.40 (K 02)	14.52		
15	04.00	05.27	06.53	08.15		16.14 (K 03)	08.47		13.10 (K 02)	10.01		
	23.13	21.43	19.59	18.18	7	16.21 (K 03)	15.44	30	13.40 (K 02)	14.52		
16	04.03	05.30	06.56	08.18		16.10 (K 03)	08.50		13.10 (K 02)	10.02		
	23.10	21.40	19.56	18.15	15	16.25 (K 03)	15.41	30	13.40 (K 02)	14.51		
17	04.05	05.33	06.59	08.21		16.07 (K 03)	08.53		13.10 (K 02)	10.03		
	23.08	21.36	19.52	18.12	19	16.26 (K 03)	15.39	31	13.41 (K 02)	14.51		
18	04.08	05.36	07.01	08.24		16.05 (K 03)	08.56		13.11 (K 02)	10.04		
	23.06	21.33	19.49	18.08	23	16.28 (K 03)	15.36	30	13.41 (K 02)	14.51		
19	04.10	05.39	07.04	08.27		16.04 (K 03)	08.59		13.11 (K 02)	10.05		
	23.03	21.30	19.46	18.05	24	16.28 (K 03)	15.34	30	13.41 (K 02)	14.51		
20	04.13	05.42	07.07	08.30		16.02 (K 03)	09.02		13.11 (K 02)	10.06		
	23.00	21.27	19.42	18.02	27	16.29 (K 03)	15.31	29	13.40 (K 02)	14.51		
21	04.16	05.44	07.09	08.33		16.01 (K 03)	09.05		13.12 (K 02)	10.07		
	22.58	21.23	19.39	17.59	28	16.29 (K 03)	15.29	29	13.41 (K 02)	14.52		
22	04.19	05.47	07.12	08.36		16.01 (K 03)	09.08		13.12 (K 02)	10.07		
	22.55	21.20	19.35	17.56	30	16.31 (K 03)	15.26	29	13.41 (K 02)	14.52		
23	04.21	05.50	07.15	08.38		16.01 (K 03)	09.11		13.13 (K 02)	10.08		
	22.53	21.17	19.32	17.52	30	16.31 (K 03)	15.24	28	13.41 (K 02)	14.53		
24	04.24	05.53	07.18	08.41		16.00 (K 03)	09.14		13.14 (K 02)	10.08		
	22.50	21.13	19.29	17.49	30	16.30 (K 03)	15.22	27	13.41 (K 02)	14.53		
25	04.27	05.56	07.20	07.44		15.00 (K 03)	09.16		13.15 (K 02)	10.08		
	22.47	21.10	19.25	16.46	30	15.30 (K 03)	15.20	26	13.41 (K 02)	14.54		
26	04.30	05.59	07.23	07.47		15.00 (K 03)	09.19		13.15 (K 02)	10.09		
	22.44	21.07	19.22	16.43	31	15.31 (K 03)	15.17	25	13.40 (K 02)	14.55		
27	04.32	06.01	07.26	07.50		15.00 (K 03)	09.22		13.16 (K 02)	10.08		
	22.41	21.03	19.18	16.40	30	15.30 (K 03)	15.15	24	13.40 (K 02)	14.56		
28	04.35	06.04	07.28	07.53		15.00 (K 03)	09.25		13.17 (K 02)	10.08		
	22.39	21.00	19.15	16.37	30	15.30 (K 03)	15.13	22	13.39 (K 02)	14.57		
29	04.38	06.07	07.31	07.56		15.01 (K 03)	09.27		13.18 (K 02)	10.08		
	22.36	20.57	19.12	16.34	29	15.30 (K 03)	15.11	21	13.39 (K 02)	14.58		
30	04.41	06.10	07.34	07.59		15.01 (K 03)	09.30		13.20 (K 02)	10.08		
	22.33	20.53	19.08	16.30	28	15.29 (K 03)	15.10	19	13.39 (K 02)	15.00		
31	04.44	06.12		08.02		15.01 (K 03)				10.07		
	22.30	20.50		16.27	26	15.27 (K 03)				15.01		
Potential sun hours	591	501	391	308			208			154		
Total, worst case					437			761			62	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,63			0,67			0,67	
Total reduction					0,16			0,10			0,07	
Total, real					70			74			4	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AG - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March			April	May	June
1	10.06		12.32 (K 01)	09.06		12.41 (K 01)	07.39		16.09 (K 03)	06.55	05.15	03.48
	15.03	19	12.51 (K 01)	16.25	21	13.02 (K 01)	17.50	27	16.36 (K 03)	20.18	21.44	23.12
2	10.06		12.31 (K 01)	09.03		12.43 (K 01)	07.36		16.10 (K 03)	06.52	05.12	03.46
	15.05	20	12.51 (K 01)	16.28	17	13.00 (K 01)	17.53	25	16.35 (K 03)	20.21	21.47	23.14
3	10.05		12.32 (K 01)	09.00		12.46 (K 01)	07.33		16.11 (K 03)	06.48	05.09	03.44
	15.07	21	12.53 (K 01)	16.32	13	12.59 (K 01)	17.56	23	16.34 (K 03)	20.23	21.50	23.17
4	10.04		12.32 (K 01)	08.57			07.29		16.13 (K 03)	06.45	05.06	03.42
	15.09	22	12.54 (K 01)	16.35			17.59	20	16.33 (K 03)	20.26	21.53	23.19
5	10.03		12.32 (K 01)	08.54			07.26		16.14 (K 03)	06.42	05.03	03.40
	15.11	23	12.55 (K 01)	16.38			18.02	16	16.30 (K 03)	20.29	21.56	23.21
6	10.02		12.31 (K 01)	08.51			07.23		16.18 (K 03)	06.38	05.00	03.39
	15.13	24	12.55 (K 01)	16.41			18.05	9	16.27 (K 03)	20.32	21.59	23.23
7	10.00		12.31 (K 01)	08.48			07.20			06.35	04.56	03.37
	15.15	25	12.56 (K 01)	16.44			18.07			20.35	22.02	23.25
8	09.59		12.32 (K 01)	08.46			07.16			06.32	04.53	03.35
	15.17	26	12.58 (K 01)	16.47			18.10			20.38	22.05	23.27
9	09.58		12.32 (K 01)	08.43			07.13			06.28	04.50	03.34
	15.20	26	12.58 (K 01)	16.50			18.13			20.40	22.08	23.29
10	09.56		12.32 (K 01)	08.40			07.10			06.25	04.47	03.32
	15.22	27	12.59 (K 01)	16.53			18.16			20.43	22.11	23.30
11	09.54		12.32 (K 01)	08.37			07.06			06.21	04.44	03.31
	15.25	28	13.00 (K 01)	16.56			18.19			20.46	22.14	23.32
12	09.53		12.32 (K 01)	08.33			07.03			06.18	04.41	03.30
	15.27	29	13.01 (K 01)	16.59			18.22			20.49	22.17	23.33
13	09.51		12.32 (K 01)	08.30			06.59			06.15	04.38	03.29
	15.30	30	13.02 (K 01)	17.02			18.25			20.52	22.20	23.35
14	09.49		12.31 (K 01)	08.27			06.56			06.11	04.35	03.28
	15.32	30	13.01 (K 01)	17.05			18.27			20.55	22.23	23.36
15	09.47		12.31 (K 01)	08.24			06.53			06.08	04.32	03.27
	15.35	31	13.02 (K 01)	17.08			18.30			20.57	22.26	23.37
16	09.45		12.32 (K 01)	08.21		16.18 (K 03)	06.49			06.05	04.29	03.27
	15.38	31	13.03 (K 01)	17.11	11	16.29 (K 03)	18.33			21.00	22.29	23.38
17	09.43		12.32 (K 01)	08.18		16.16 (K 03)	06.46			06.01	04.26	03.26
	15.41	32	13.04 (K 01)	17.14	16	16.32 (K 03)	18.36			21.03	22.31	23.39
18	09.41		12.33 (K 01)	08.15		16.14 (K 03)	06.43			05.58	04.24	03.26
	15.43	31	13.04 (K 01)	17.18	20	16.34 (K 03)	18.39			21.06	22.34	23.40
19	09.39		12.32 (K 01)	08.12		16.13 (K 03)	06.39			05.55	04.21	03.25
	15.46	32	13.04 (K 01)	17.21	22	16.35 (K 03)	18.41			21.09	22.37	23.40
20	09.36		12.33 (K 01)	08.08		16.11 (K 03)	06.36			05.51	04.18	03.25
	15.49	32	13.05 (K 01)	17.24	25	16.36 (K 03)	18.44			21.12	22.40	23.41
21	09.34		12.33 (K 01)	08.05		16.11 (K 03)	06.33			05.48	04.15	03.25
	15.52	32	13.05 (K 01)	17.27	26	16.37 (K 03)	18.47			21.15	22.43	23.41
22	09.32		12.33 (K 01)	08.02		16.10 (K 03)	06.29			05.45	04.13	03.25
	15.55	32	13.05 (K 01)	17.29	27	16.37 (K 03)	18.50			21.18	22.46	23.41
23	09.29		12.34 (K 01)	07.59		16.10 (K 03)	06.26			05.41	04.10	03.25
	15.58	31	13.05 (K 01)	17.32	28	16.38 (K 03)	18.53			21.21	22.49	23.41
24	09.27		12.34 (K 01)	07.56		16.09 (K 03)	06.22			05.38	04.07	03.26
	16.01	32	13.06 (K 01)	17.35	28	16.37 (K 03)	18.55			21.24	22.51	23.41
25	09.24		12.34 (K 01)	07.52		16.09 (K 03)	06.19			05.35	04.05	03.26
	16.04	31	13.05 (K 01)	17.38	29	16.38 (K 03)	18.58			21.26	22.54	23.41
26	09.22		12.35 (K 01)	07.49		16.08 (K 03)	06.16			05.32	04.02	03.27
	16.07	30	13.05 (K 01)	17.41	29	16.37 (K 03)	19.01			21.29	22.57	23.41
27	09.19		12.36 (K 01)	07.46		16.09 (K 03)	06.12			05.28	04.00	03.28
	16.10	30	13.06 (K 01)	17.44	28	16.37 (K 03)	19.04			21.32	22.59	23.40
28	09.17		12.36 (K 01)	07.43		16.08 (K 03)	06.09			05.25	03.57	03.29
	16.13	29	13.05 (K 01)	17.47	28	16.36 (K 03)	19.07			21.35	23.02	23.40
29	09.14		12.38 (K 01)				07.05			05.22	03.55	03.30
	16.16	27	13.05 (K 01)				20.09			21.38	23.05	23.39
30	09.11		12.38 (K 01)				07.02			05.19	03.53	03.31
	16.19	26	13.04 (K 01)				20.12			21.41	23.07	23.38
31	09.08		12.40 (K 01)				06.59				03.50	
	16.22	23	13.03 (K 01)				20.15				23.10	
Potential sun hours	185			243			364			446	557	601
Total, worst case		862			368			120				
Sun reduction		0,16			0,29			0,40				
Oper. time red.		0,97			0,97			0,97				
Wind dir. red.		0,69			0,64			0,63				
Total reduction		0,11			0,18			0,24				
Total, real		94			67			29				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AG - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.37			08.05			09.32		12.14 (K 01)
	23.37	22.27	20.47	19.05			16.24			15.08	28	12.42 (K 01)
2	03.34	04.50	06.18	07.39			08.08			09.35		12.14 (K 01)
	23.36	22.24	20.43	19.02			16.21			15.06	27	12.41 (K 01)
3	03.35	04.53	06.21	07.42			08.11			09.37		12.15 (K 01)
	23.35	22.21	20.40	18.58			16.18			15.04	27	12.42 (K 01)
4	03.37	04.56	06.23	07.45			08.14			09.40		12.16 (K 01)
	23.33	22.18	20.36	18.55			16.15			15.03	26	12.42 (K 01)
5	03.39	04.58	06.26	07.48			08.17			09.42		12.16 (K 01)
	23.32	22.15	20.33	18.51			16.12			15.01	25	12.41 (K 01)
6	03.40	05.01	06.29	07.50			08.20			09.44		12.17 (K 01)
	23.30	22.11	20.30	18.48			16.09			15.00	25	12.42 (K 01)
7	03.42	05.04	06.32	07.53		16.57 (K 03)	08.23		12.20 (K 01)	09.46		12.18 (K 01)
	23.29	22.08	20.26	18.45	2	16.59 (K 03)	16.06	5	12.25 (K 01)	14.59	23	12.41 (K 01)
8	03.44	05.07	06.34	07.56		16.51 (K 03)	08.26		12.16 (K 01)	09.49		12.19 (K 01)
	23.27	22.05	20.23	18.41	13	17.04 (K 03)	16.03	14	12.30 (K 01)	14.57	23	12.42 (K 01)
9	03.46	05.10	06.37	07.59		16.48 (K 03)	08.29		12.13 (K 01)	09.51		12.20 (K 01)
	23.25	22.02	20.19	18.38	18	17.06 (K 03)	16.01	18	12.31 (K 01)	14.56	21	12.41 (K 01)
10	03.48	05.13	06.40	08.01		16.46 (K 03)	08.32		12.12 (K 01)	09.52		12.20 (K 01)
	23.23	21.59	20.16	18.35	22	17.08 (K 03)	15.58	21	12.33 (K 01)	14.55	21	12.41 (K 01)
11	03.51	05.16	06.42	08.04		16.45 (K 03)	08.35		12.11 (K 01)	09.54		12.22 (K 01)
	23.21	21.56	20.13	18.31	24	17.09 (K 03)	15.55	24	12.35 (K 01)	14.54	20	12.42 (K 01)
12	03.53	05.19	06.45	08.07		16.44 (K 03)	08.38		12.10 (K 01)	09.56		12.23 (K 01)
	23.19	21.53	20.09	18.28	25	17.09 (K 03)	15.52	25	12.35 (K 01)	14.53	19	12.42 (K 01)
13	03.55	05.22	06.48	08.10		16.43 (K 03)	08.41		12.09 (K 01)	09.58		12.23 (K 01)
	23.17	21.49	20.06	18.25	27	17.10 (K 03)	15.49	28	12.37 (K 01)	14.53	18	12.41 (K 01)
14	03.58	05.24	06.51	08.13		16.42 (K 03)	08.44		12.09 (K 01)	09.59		12.24 (K 01)
	23.15	21.46	20.02	18.22	28	17.10 (K 03)	15.47	29	12.38 (K 01)	14.52	17	12.41 (K 01)
15	04.00	05.27	06.53	08.15		16.41 (K 03)	08.47		12.08 (K 01)	10.01		12.26 (K 01)
	23.13	21.43	19.59	18.18	29	17.10 (K 03)	15.44	30	12.38 (K 01)	14.52	16	12.42 (K 01)
16	04.03	05.30	06.56	08.18		16.41 (K 03)	08.50		12.08 (K 01)	10.02		12.26 (K 01)
	23.10	21.40	19.56	18.15	29	17.10 (K 03)	15.41	30	12.38 (K 01)	14.51	15	12.41 (K 01)
17	04.05	05.33	06.59	08.21		16.41 (K 03)	08.53		12.08 (K 01)	10.03		12.27 (K 01)
	23.08	21.36	19.52	18.12	29	17.10 (K 03)	15.39	31	12.39 (K 01)	14.51	14	12.41 (K 01)
18	04.08	05.36	07.01	08.24		16.41 (K 03)	08.56		12.08 (K 01)	10.04		12.28 (K 01)
	23.05	21.33	19.49	18.08	28	17.09 (K 03)	15.36	32	12.40 (K 01)	14.51	14	12.42 (K 01)
19	04.10	05.39	07.04	08.27		16.41 (K 03)	08.59		12.09 (K 01)	10.05		12.29 (K 01)
	23.03	21.30	19.45	18.05	28	17.09 (K 03)	15.34	31	12.40 (K 01)	14.51	13	12.42 (K 01)
20	04.13	05.42	07.07	08.30		16.41 (K 03)	09.02		12.08 (K 01)	10.06		12.29 (K 01)
	23.00	21.27	19.42	18.02	27	17.08 (K 03)	15.31	32	12.40 (K 01)	14.51	13	12.42 (K 01)
21	04.16	05.44	07.09	08.33		16.41 (K 03)	09.05		12.08 (K 01)	10.07		12.30 (K 01)
	22.58	21.23	19.39	17.59	26	17.07 (K 03)	15.29	32	12.40 (K 01)	14.52	12	12.42 (K 01)
22	04.19	05.47	07.12	08.35		16.42 (K 03)	09.08		12.09 (K 01)	10.07		12.31 (K 01)
	22.55	21.20	19.35	17.56	24	17.06 (K 03)	15.26	32	12.41 (K 01)	14.52	12	12.43 (K 01)
23	04.21	05.50	07.15	08.38		16.43 (K 03)	09.11		12.09 (K 01)	10.08		12.31 (K 01)
	22.52	21.17	19.32	17.52	22	17.05 (K 03)	15.24	32	12.41 (K 01)	14.53	12	12.43 (K 01)
24	04.24	05.53	07.18	08.41		16.44 (K 03)	09.13		12.10 (K 01)	10.08		12.31 (K 01)
	22.50	21.13	19.29	17.49	19	17.03 (K 03)	15.22	31	12.41 (K 01)	14.53	13	12.44 (K 01)
25	04.27	05.56	07.20	07.44		15.46 (K 03)	09.16		12.10 (K 01)	10.08		12.31 (K 01)
	22.47	21.10	19.25	16.46	15	16.01 (K 03)	15.20	32	12.42 (K 01)	14.54	13	12.44 (K 01)
26	04.30	05.59	07.23	07.47		15.50 (K 03)	09.19		12.10 (K 01)	10.08		12.32 (K 01)
	22.44	21.07	19.22	16.43	8	15.58 (K 03)	15.17	31	12.41 (K 01)	14.55	14	12.46 (K 01)
27	04.32	06.01	07.26	07.50			09.22		12.11 (K 01)	10.08		12.32 (K 01)
	22.41	21.03	19.18	16.40			15.15	30	12.41 (K 01)	14.56	15	12.47 (K 01)
28	04.35	06.04	07.28	07.53			09.25		12.11 (K 01)	10.08		12.31 (K 01)
	22.38	21.00	19.15	16.37			15.13	31	12.42 (K 01)	14.57	16	12.47 (K 01)
29	04.38	06.07	07.31	07.56			09.27		12.12 (K 01)	10.08		12.32 (K 01)
	22.36	20.57	19.12	16.33			15.11	30	12.42 (K 01)	14.58	16	12.48 (K 01)
30	04.41	06.10	07.34	07.59			09.30		12.13 (K 01)	10.08		12.32 (K 01)
	22.33	20.53	19.08	16.30			15.09	29	12.42 (K 01)	15.00	17	12.49 (K 01)
31	04.44	06.12		08.02						10.07		12.31 (K 01)
	22.30	20.50		16.27						15.01	18	12.49 (K 01)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					443			660			563	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,63			0,69			0,69	
Total reduction					0,16			0,10			0,07	
Total, real					71			66			42	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AH - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June	July	August	September	October	November			December		
1	10.06		13.11 (K 01)	09.06		13.11 (K 01)	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.37	08.05			09.32		12.48 (K 01)
	15.03	11	13.22 (K 01)	16.25	31	13.42 (K 01)	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24			15.08	27	13.15 (K 01)
2	10.06		13.09 (K 01)	09.03		13.11 (K 01)	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08			09.35		12.50 (K 01)
	15.05	14	13.23 (K 01)	16.28	30	13.41 (K 01)	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.01	16.21			15.06	25	13.15 (K 01)
3	10.05		13.09 (K 01)	09.00		13.13 (K 01)	07.33	06.48	05.09	03.44	03.35	04.53	06.21	07.42	08.11		12.53 (K 01)	09.37		12.51 (K 01)
	15.07	16	13.25 (K 01)	16.31	28	13.41 (K 01)	17.56	20.23	21.50	23.17	23.35	22.21	20.40	18.58	16.18	8	13.01 (K 01)	15.04	24	13.15 (K 01)
4	10.04		13.08 (K 01)	08.57		13.13 (K 01)	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14		12.49 (K 01)	09.40		12.52 (K 01)
	15.09	17	13.25 (K 01)	16.35	26	13.39 (K 01)	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	16	13.05 (K 01)	15.03	23	13.15 (K 01)
5	10.03		13.09 (K 01)	08.54		13.15 (K 01)	07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.48	08.17		12.47 (K 01)	09.42		12.53 (K 01)
	15.11	18	13.27 (K 01)	16.38	24	13.39 (K 01)	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.51	16.12	20	13.07 (K 01)	15.01	21	13.14 (K 01)
6	10.02		13.08 (K 01)	08.51		13.17 (K 01)	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20		12.45 (K 01)	09.44		12.54 (K 01)
	15.13	20	13.28 (K 01)	16.41	20	13.37 (K 01)	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	23	13.08 (K 01)	15.00	21	13.15 (K 01)
7	10.00		13.07 (K 01)	08.48		13.20 (K 01)	07.20	06.35	04.56	03.37	03.42	05.04	06.32	07.53	08.23		12.44 (K 01)	09.46		12.55 (K 01)
	15.15	22	13.29 (K 01)	16.44	15	13.35 (K 01)	18.07	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.06	26	13.10 (K 01)	14.59	19	13.14 (K 01)
8	09.59		13.08 (K 01)	08.46		13.25 (K 01)	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26		12.43 (K 01)	09.48		12.57 (K 01)
	15.17	23	13.31 (K 01)	16.47	6	13.31 (K 01)	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.41	16.03	29	13.12 (K 01)	14.57	17	13.14 (K 01)
9	09.57		13.08 (K 01)	08.43			07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.59	08.29		12.42 (K 01)	09.50		12.58 (K 01)
	15.20	24	13.32 (K 01)	16.50			18.13	20.40	22.08	23.29	23.25	22.02	20.19	18.38	16.01	30	13.12 (K 01)	14.56	15	13.13 (K 01)
10	09.56		13.07 (K 01)	08.40			07.10	06.25	04.47	03.32	03.48	05.13	06.40	08.01	08.32		12.42 (K 01)	09.52		12.59 (K 01)
	15.22	26	13.33 (K 01)	16.53			18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	31	13.13 (K 01)	14.55	13	13.12 (K 01)
11	09.54		13.07 (K 01)	08.36			07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35		12.41 (K 01)	09.54		13.01 (K 01)
	15.25	27	13.34 (K 01)	16.56			18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55	32	13.13 (K 01)	14.54	11	13.12 (K 01)
12	09.53		13.07 (K 01)	08.33			07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38		12.41 (K 01)	09.56		13.03 (K 01)
	15.27	28	13.35 (K 01)	16.59			18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	33	13.14 (K 01)	14.53	8	13.11 (K 01)
13	09.51		13.07 (K 01)	08.30			06.59	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41		12.41 (K 01)	09.58		13.04 (K 01)
	15.30	29	13.36 (K 01)	17.02			18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.49	34	13.15 (K 01)	14.53	5	13.09 (K 01)
14	09.49		13.06 (K 01)	08.27			06.56	06.11	04.35	03.28	03.58	05.24	06.51	08.13	08.44		12.41 (K 01)	09.59		
	15.32	30	13.36 (K 01)	17.05			18.27	20.55	22.23	23.36	23.15	21.46	20.02	18.22	15.47	34	13.15 (K 01)	14.52		
15	09.47		13.06 (K 01)	08.24			06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47		12.40 (K 01)	10.01		
	15.35	31	13.37 (K 01)	17.08			18.30	20.57	22.26	23.37	23.13	21.43	19.59	18.18	15.44	35	13.15 (K 01)	14.52		
16	09.45		13.06 (K 01)	08.21			06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50		12.40 (K 01)	10.02		
	15.38	32	13.38 (K 01)	17.11			18.33	21.00	22.29	23.38	23.10	21.40	19.56	18.15	15.41	36	13.16 (K 01)	14.51		
17	09.43		13.06 (K 01)	08.18			06.46	06.01	04.26	03.26	04.05	05.33	06.59	08.21	08.53		12.41 (K 01)	10.03		
	15.41	33	13.39 (K 01)	17.14			18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	35	13.16 (K 01)	14.51		
18	09.41		13.07 (K 01)	08.15			06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56		12.41 (K 01)	10.04		
	15.43	33	13.40 (K 01)	17.17			18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.08	15.36	35	13.16 (K 01)	14.51		
19	09.39		13.06 (K 01)	08.12			06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59		12.42 (K 01)	10.05		
	15.46	34	13.40 (K 01)	17.21			18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	35	13.17 (K 01)	14.51		
20	09.36		13.06 (K 01)	08.08			06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02		12.41 (K 01)	10.06		
	15.49	35	13.41 (K 01)	17.24			18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	35	13.16 (K 01)	14.51		
21	09.34		13.07 (K 01)	08.05			06.33	05.48	04.15	03.25	04.16	05.44	07.09	08.33	09.05		12.42 (K 01)	10.07		
	15.52	34	13.41 (K 01)	17.26			18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	34	13.16 (K 01)	14.52		
22	09.32		13.06 (K 01)	08.02			06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.35	09.08		12.42 (K 01)	10.07		
	15.55	35	13.41 (K 01)	17.29			18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.26	35	13.17 (K 01)	14.52		
23	09.29		13.07 (K 01)	07.59			06.26	05.41	04.10	03.25	04.21	05.50	07.15	08.38	09.11		12.43 (K 01)	10.08		
	15.58	35	13.42 (K 01)	17.32			18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.52	15.24	34	13.17 (K 01)	14.53		
24	09.27		13.07 (K 01)	07.56			06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.13		12.44 (K 01)	10.08		
	16.01	36	13.43 (K 01)	17.35			18.55	21.23	22.51	23.41	22.50	21.13	19.29	17.49	15.22	33	13.17 (K 01)	14.53		
25	09.24		13.07 (K 01)	07.52			06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.16		12.45 (K 01)	10.08		
	16.04	35	13.42 (K 01)	17.38			18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	32	13.17 (K 01)	14.54		
26	09.22		13.08 (K 01)	07.49			06.16	05.32	04.02	03.27	04.30	05.58	07.23	07.47	09.19		12.44 (K 01)	10.08		
	16.07	35	13.43 (K 01)	17.41			19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.17	32	13.16 (K 01)	14.55		
27	09.19		13.08 (K 01)	07.46			06.12	05.28	04.00	03.28	04.32	06.01	07.26	07.50	09.22		12.45 (K 01)	10.08		
	16.10	35	13.43 (K 01)	17.44			19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15	31	13.16 (K 01)	14.56		
28	09.17		13.08 (K 01)	07.43			06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24		12.46 (K 01)	10.08		
	16.13	35	13.43 (K 01)	17.47			19.07	21.35	23.02	23.40	22.38	21.00	19.15	16.37	15.13	30	13.16 (K 01)	14.57		
29	09.14		13.09 (K 01)				07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27		12.47 (K 01)	10.08		
	16.16	34	13.43 (K 01)				20.09	21.38	23.05	23.39	22.36	20.57	19.12	16.33	15.11	29	13.16 (K 01)	14.58		
30	09.11		13.09 (K 01)				07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30		12.48 (K 01)	10.08		13.13 (K 01)
	16.19	33	13.42 (K 01)				20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.09	28	13.16 (K 01)	15.00	3	13.16 (K 01)
31	09.08		13.10 (K 01)				06.59		03.50		04.44	06.12		08.02				10.07		13.11 (K 01)
	16.22	32	13.42 (K 01)				20.15		23.10		22.30	20.50		16.27				15.01	8	13.19 (K 01)
Potential sun hours	185			243			364	446	557	601	591	501	391	308	208			154		
Total, worst case		882			180											845			240	
Sun reduction		0,16			0,29											0,15			0,11	
Oper. time red.		0,97			0,97											0,97			0,97	
Wind dir. red.		0,68			0,68											0,68			0,68	
Total reduction		0,11			0,19											0,10			0,07	
Total, real		96			35											84			18	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AI - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.36	08.05	09.32
	15.03	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.28	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.01	16.21	15.06
3	10.05	09.00	07.33	06.48	05.09	03.44	03.35	04.53	06.21	07.42	08.11	09.37
	15.07	16.31	17.56	20.23	21.50	23.16	23.35	22.21	20.40	18.58	16.18	15.04
4	10.04	08.57	07.29	06.45	05.06	03.42	03.37	04.55	06.23	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.17	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.47	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.56	03.37	03.42	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.06	14.58
8	09.59	08.45	07.16	06.31	04.53	03.35	03.44	05.07	06.34	07.56	08.26	09.48
	15.17	16.47	18.10	20.37	22.05	23.27	23.27	22.05	20.23	18.41	16.03	14.57
9	09.57	08.42	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.09	06.25	04.47	03.32	03.48	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.53
13	09.51	08.30	06.59	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.24	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.49	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.24	06.50	08.12	08.44	09.59
	15.32	17.05	18.27	20.54	22.23	23.36	23.15	21.46	20.02	18.21	15.47	14.52
15	09.47	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.11	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.41	14.51
17	09.43	08.18	06.46	06.01	04.26	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.40	17.14	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.43	17.17	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.12	06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59	10.05
	15.46	17.20	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.23	18.44	21.12	22.40	23.41	23.00	21.26	19.42	18.02	15.31	14.51
21	09.34	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32	09.05	10.07
	15.52	17.26	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.25	04.18	05.47	07.12	08.35	09.08	10.07
	15.55	17.29	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.55	15.26	14.52
23	09.29	07.59	06.26	05.41	04.10	03.25	04.21	05.50	07.15	08.38	09.10	10.08
	15.58	17.32	18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.27	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.50	21.13	19.28	17.49	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.15	05.32	04.02	03.27	04.30	05.58	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.17	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.32	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15	14.56
28	09.16	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.13	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.56	19.12	16.33	15.11	14.58
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.09	15.00
31	09.08		06.59		03.50		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.01
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

Licensed user:
PROKON Regenerative Energien eG
Kirchhoffstraße 3
DE-25524 Itzehoe
+49 4821 6855 100
Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AJ - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June	July	August	September	October	November			December		
1	10.06		12.17 (K 11)	09.06		12.23 (K 11)	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.36	08.05			09.32		11.58 (K 11)
	15.03	19	12.36 (K 11)	16.25	27	12.50 (K 11)	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24			15.08	30	12.28 (K 11)
2	10.05		12.17 (K 11)	09.03		12.25 (K 11)	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08			09.35		11.59 (K 11)
	15.05	21	12.38 (K 11)	16.28	25	12.50 (K 11)	17.53	20.20	21.47	23.14	23.36	22.24	20.43	19.01	16.21			15.06	29	12.28 (K 11)
3	10.05		12.18 (K 11)	09.00		12.27 (K 11)	07.33	06.48	05.09	03.44	03.35	04.53	06.21	07.42	08.11			09.37		12.00 (K 11)
	15.07	21	12.39 (K 11)	16.31	22	12.49 (K 11)	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18			15.04	28	12.28 (K 11)
4	10.04		12.17 (K 11)	08.57		12.28 (K 11)	07.29	06.45	05.06	03.42	03.37	04.55	06.23	07.45	08.14			09.39		12.01 (K 11)
	15.09	22	12.39 (K 11)	16.35	19	12.47 (K 11)	17.59	20.26	21.53	23.19	23.33	22.17	20.36	18.55	16.15			15.03	26	12.27 (K 11)
5	10.03		12.17 (K 11)	08.54		12.31 (K 11)	07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.47	08.17		12.05 (K 11)	09.42		12.02 (K 11)
	15.11	24	12.41 (K 11)	16.38	14	12.45 (K 11)	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	6	12.11 (K 11)	15.01	26	12.28 (K 11)
6	10.01		12.17 (K 11)	08.51		12.36 (K 11)	07.23	06.38	05.00	03.39	03.40	05.01	06.29	07.50	08.20		12.00 (K 11)	09.44		12.03 (K 11)
	15.13	25	12.42 (K 11)	16.41	3	12.39 (K 11)	18.04	20.32	21.59	23.23	23.30	22.11	20.29	18.48	16.09	15	12.15 (K 11)	15.00	25	12.28 (K 11)
7	10.00		12.17 (K 11)	08.48			07.19	06.35	04.56	03.37	03.42	05.04	06.32	07.53	08.23		11.58 (K 11)	09.46		12.04 (K 11)
	15.15	25	12.42 (K 11)	16.44			18.07	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.06	20	12.18 (K 11)	14.58	23	12.27 (K 11)
8	09.59		12.16 (K 11)	08.45			07.16	06.31	04.53	03.35	03.44	05.07	06.34	07.56	08.26		11.56 (K 11)	09.48		12.05 (K 11)
	15.17	27	12.43 (K 11)	16.47			18.10	20.37	22.05	23.27	23.27	22.05	20.23	18.41	16.03	23	12.19 (K 11)	14.57	23	12.28 (K 11)
9	09.57		12.16 (K 11)	08.42			07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.58	08.29		11.55 (K 11)	09.50		12.06 (K 11)
	15.20	28	12.44 (K 11)	16.50			18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	26	12.21 (K 11)	14.56	21	12.27 (K 11)
10	09.56		12.16 (K 11)	08.39			07.09	06.25	04.47	03.32	03.48	05.13	06.40	08.01	08.32		11.55 (K 11)	09.52		12.06 (K 11)
	15.22	29	12.45 (K 11)	16.53			18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	27	12.22 (K 11)	14.55	21	12.27 (K 11)
11	09.54		12.16 (K 11)	08.36			07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35		11.53 (K 11)	09.54		12.07 (K 11)
	15.25	29	12.45 (K 11)	16.56			18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55	30	12.23 (K 11)	14.54	20	12.27 (K 11)
12	09.52		12.16 (K 11)	08.33			07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38		11.53 (K 11)	09.56		12.08 (K 11)
	15.27	30	12.46 (K 11)	16.59			18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	31	12.24 (K 11)	14.53	19	12.27 (K 11)
13	09.51		12.16 (K 11)	08.30			06.59	06.15	04.38	03.29	03.55	05.21	06.48	08.10	08.41		11.53 (K 11)	09.57		12.09 (K 11)
	15.30	31	12.47 (K 11)	17.02			18.24	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.49	32	12.25 (K 11)	14.53	18	12.27 (K 11)
14	09.49		12.16 (K 11)	08.27			06.56	06.11	04.35	03.28	03.58	05.24	06.50	08.12	08.44		11.52 (K 11)	09.59		12.11 (K 11)
	15.32	32	12.48 (K 11)	17.05			18.27	20.54	22.22	23.36	23.15	21.46	20.02	18.21	15.47	33	12.25 (K 11)	14.52	16	12.27 (K 11)
15	09.47		12.17 (K 11)	08.24			06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47		11.52 (K 11)	10.00		12.11 (K 11)
	15.35	32	12.49 (K 11)	17.08			18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	33	12.25 (K 11)	14.52	15	12.26 (K 11)
16	09.45		12.17 (K 11)	08.21			06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50		11.52 (K 11)	10.02		12.13 (K 11)
	15.38	33	12.50 (K 11)	17.11			18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.41	34	12.26 (K 11)	14.51	14	12.27 (K 11)
17	09.43		12.17 (K 11)	08.18			06.46	06.01	04.26	03.26	04.05	05.33	06.59	08.21	08.53		11.53 (K 11)	10.03		12.14 (K 11)
	15.40	34	12.51 (K 11)	17.14			18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	34	12.27 (K 11)	14.51	13	12.27 (K 11)
18	09.41		12.17 (K 11)	08.15			06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56		11.53 (K 11)	10.04		12.14 (K 11)
	15.43	33	12.50 (K 11)	17.17			18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	34	12.27 (K 11)	14.51	13	12.27 (K 11)
19	09.38		12.17 (K 11)	08.11			06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59		11.52 (K 11)	10.05		12.15 (K 11)
	15.46	34	12.51 (K 11)	17.20			18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	35	12.27 (K 11)	14.51	12	12.27 (K 11)
20	09.36		12.17 (K 11)	08.08			06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02		11.53 (K 11)	10.06		12.16 (K 11)
	15.49	35	12.52 (K 11)	17.23			18.44	21.12	22.40	23.41	23.00	21.26	19.42	18.02	15.31	34	12.27 (K 11)	14.51	11	12.27 (K 11)
21	09.34		12.17 (K 11)	08.05			06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32	09.05		11.53 (K 11)	10.06		12.16 (K 11)
	15.52	34	12.51 (K 11)	17.26			18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	34	12.27 (K 11)	14.52	12	12.28 (K 11)
22	09.32		12.18 (K 11)	08.02			06.29	05.45	04.13	03.25	04.18	05.47	07.12	08.35	09.08		11.54 (K 11)	10.07		12.16 (K 11)
	15.55	34	12.52 (K 11)	17.29			18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.55	15.26	34	12.28 (K 11)	14.52	12	12.28 (K 11)
23	09.29		12.18 (K 11)	07.59			06.26	05.41	04.10	03.25	04.21	05.50	07.15	08.38	09.10		11.54 (K 11)	10.08		12.17 (K 11)
	15.58	35	12.53 (K 11)	17.32			18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	34	12.28 (K 11)	14.53	11	12.28 (K 11)
24	09.27		12.19 (K 11)	07.55			06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41	09.13		11.54 (K 11)	10.08		12.17 (K 11)
	16.01	34	12.53 (K 11)	17.35			18.55	21.23	22.51	23.41	22.50	21.13	19.28	17.49	15.22	33	12.27 (K 11)	14.53	12	12.29 (K 11)
25	09.24		12.19 (K 11)	07.52			06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44	09.16		11.54 (K 11)	10.08		12.18 (K 11)
	16.04	34	12.53 (K 11)	17.38			18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	34	12.28 (K 11)	14.54	12	12.30 (K 11)
26	09.22		12.19 (K 11)	07.49			06.15	05.32	04.02	03.27	04.30	05.58	07.23	07.47	09.19		11.55 (K 11)	10.08		12.17 (K 11)
	16.07	34	12.53 (K 11)	17.41			19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.17	33	12.28 (K 11)	14.55	14	12.31 (K 11)
27	09.19		12.19 (K 11)	07.46			06.12	05.28	04.00	03.28	04.32	06.01	07.26	07.50	09.22		11.56 (K 11)	10.08		12.17 (K 11)
	16.10	33	12.52 (K 11)	17.44			19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15	32	12.28 (K 11)	14.56	14	12.31 (K 11)
28	09.16		12.20 (K 11)	07.42			06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24		11.57 (K 11)	10.08		12.18 (K 11)
	16.13	33	12.53 (K 11)	17.47			19.06	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.13	31	12.28 (K 11)	14.57	15	12.33 (K 11)
29	09.14		12.21 (K 11)				07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27		11.57 (K 11)	10.08		12.17 (K 11)
	16.16	32	12.53 (K 11)				20.09	21.38	23.04	23.39	22.35	20.56	19.11	16.33	15.11	31	12.28 (K 11)	14.58	16	12.33 (K 11)
30	09.11		12.21 (K 11)				07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30		11.57 (K 11)	10.07		12.18 (K 11)
	16.19	31	12.52 (K 11)				20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.30	15.09	31	12.28 (K 11)	15.00	17	12.35 (K 11)
31	09.08		12.23 (K 11)				06.59		03.50		04.44	06.12		08.02				10.07		12.18 (K 11)
	16.22	29	12.52 (K 11)				20.15		23.09		22.30	20.50		16.27				15.01	17	12.35 (K 11)
Potential sun hours	185			243			364	446	557	601	591	501	391	308	208			154		
Total, worst case		927			110											774			555	
Sun reduction		0,16			0,29											0,15			0,11	
Oper. time red.		0,97			0,97											0,97			0,97	
Wind dir. red.		0,69			0,69											0,69			0,69	
Total reduction		0,11			0,20											0,10			0,07	
Total, real		101			22											77			41	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AK - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January			February			March	April	May	June
1	10.06		13.34 (K 11)	09.06		13.40 (K 11)	07.39	06.55	05.15	03.48
	15.03	7	13.41 (K 11)	16.25	18	13.58 (K 11)	17.50	20.18	21.44	23.12
2	10.05		13.34 (K 11)	09.03		13.42 (K 11)	07.36	06.52	05.12	03.46
	15.05	11	13.45 (K 11)	16.28	15	13.57 (K 11)	17.53	20.20	21.47	23.14
3	10.05		13.34 (K 11)	09.00		13.46 (K 11)	07.33	06.48	05.09	03.44
	15.07	13	13.47 (K 11)	16.31	9	13.55 (K 11)	17.56	20.23	21.50	23.16
4	10.04		13.33 (K 11)	08.57		15.38 (K 10)	07.29	06.45	05.06	03.42
	15.09	14	13.47 (K 11)	16.34	8	15.46 (K 10)	17.59	20.26	21.53	23.19
5	10.03		13.33 (K 11)	08.54		15.36 (K 10)	07.26	06.42	05.03	03.40
	15.11	16	13.49 (K 11)	16.38	14	15.50 (K 10)	18.02	20.29	21.56	23.21
6	10.01		13.32 (K 11)	08.51		15.33 (K 10)	07.23	06.38	04.59	03.38
	15.13	18	13.50 (K 11)	16.41	18	15.51 (K 10)	18.04	20.32	21.59	23.23
7	10.00		13.32 (K 11)	08.48		15.32 (K 10)	07.19	06.35	04.56	03.37
	15.15	19	13.51 (K 11)	16.44	21	15.53 (K 10)	18.07	20.35	22.02	23.25
8	09.59		13.32 (K 11)	08.45		15.31 (K 10)	07.16	06.31	04.53	03.35
	15.17	20	13.52 (K 11)	16.47	23	15.54 (K 10)	18.10	20.37	22.05	23.27
9	09.57		13.31 (K 11)	08.42		15.31 (K 10)	07.13	06.28	04.50	03.34
	15.20	22	13.53 (K 11)	16.50	25	15.56 (K 10)	18.13	20.40	22.08	23.28
10	09.56		13.31 (K 11)	08.39		15.30 (K 10)	07.09	06.25	04.47	03.32
	15.22	23	13.54 (K 11)	16.53	27	15.57 (K 10)	18.16	20.43	22.11	23.30
11	09.54		13.31 (K 11)	08.36		15.29 (K 10)	07.06	06.21	04.44	03.31
	15.24	24	13.55 (K 11)	16.56	28	15.57 (K 10)	18.19	20.46	22.14	23.32
12	09.52		13.31 (K 11)	08.33		15.29 (K 10)	07.03	06.18	04.41	03.30
	15.27	24	13.55 (K 11)	16.59	29	15.58 (K 10)	18.22	20.49	22.17	23.33
13	09.51		13.31 (K 11)	08.30		15.29 (K 10)	06.59	06.15	04.38	03.29
	15.30	25	13.56 (K 11)	17.02	29	15.58 (K 10)	18.24	20.52	22.20	23.35
14	09.49		13.31 (K 11)	08.27		15.29 (K 10)	06.56	06.11	04.35	03.28
	15.32	26	13.57 (K 11)	17.05	29	15.58 (K 10)	18.27	20.54	22.22	23.36
15	09.47		13.31 (K 11)	08.24		15.28 (K 10)	06.53	06.08	04.32	03.27
	15.35	27	13.58 (K 11)	17.08	30	15.58 (K 10)	18.30	20.57	22.25	23.37
16	09.45		13.32 (K 11)	08.21		15.29 (K 10)	06.49	06.05	04.29	03.26
	15.38	27	13.59 (K 11)	17.11	29	15.58 (K 10)	18.33	21.00	22.28	23.38
17	09.43		13.32 (K 11)	08.18		15.28 (K 10)	06.46	06.01	04.26	03.26
	15.40	28	14.00 (K 11)	17.14	29	15.57 (K 10)	18.36	21.03	22.31	23.39
18	09.41		13.31 (K 11)	08.15		15.29 (K 10)	06.42	05.58	04.24	03.25
	15.43	29	14.00 (K 11)	17.17	28	15.57 (K 10)	18.38	21.06	22.34	23.39
19	09.38		13.32 (K 11)	08.11		15.29 (K 10)	06.39	05.55	04.21	03.25
	15.46	28	14.00 (K 11)	17.20	27	15.56 (K 10)	18.41	21.09	22.37	23.40
20	09.36		13.32 (K 11)	08.08		15.30 (K 10)	06.36	05.51	04.18	03.25
	15.49	29	14.01 (K 11)	17.23	25	15.55 (K 10)	18.44	21.12	22.40	23.41
21	09.34		13.32 (K 11)	08.05		15.31 (K 10)	06.32	05.48	04.15	03.25
	15.52	29	14.01 (K 11)	17.26	23	15.54 (K 10)	18.47	21.15	22.43	23.41
22	09.32		13.32 (K 11)	08.02		15.33 (K 10)	06.29	05.45	04.12	03.25
	15.55	29	14.01 (K 11)	17.29	20	15.53 (K 10)	18.50	21.17	22.46	23.41
23	09.29		13.33 (K 11)	07.59		15.35 (K 10)	06.26	05.41	04.10	03.25
	15.58	29	14.02 (K 11)	17.32	16	15.51 (K 10)	18.52	21.20	22.48	23.41
24	09.27		13.34 (K 11)	07.55		15.38 (K 10)	06.22	05.38	04.07	03.26
	16.01	28	14.02 (K 11)	17.35	10	15.48 (K 10)	18.55	21.23	22.51	23.41
25	09.24		13.33 (K 11)	07.52			06.19	05.35	04.05	03.26
	16.04	29	14.02 (K 11)	17.38			18.58	21.26	22.54	23.41
26	09.22		13.34 (K 11)	07.49			06.15	05.31	04.02	03.27
	16.07	28	14.02 (K 11)	17.41			19.01	21.29	22.56	23.40
27	09.19		13.34 (K 11)	07.46			06.12	05.28	04.00	03.28
	16.10	27	14.01 (K 11)	17.44			19.04	21.32	22.59	23.40
28	09.16		13.35 (K 11)	07.42			06.09	05.25	03.57	03.29
	16.13	26	14.01 (K 11)	17.47			19.06	21.35	23.02	23.39
29	09.14		13.37 (K 11)				07.05	05.22	03.55	03.30
	16.16	24	14.01 (K 11)				20.09	21.38	23.04	23.39
30	09.11		13.37 (K 11)				07.02	05.19	03.53	03.31
	16.19	23	14.00 (K 11)				20.12	21.41	23.07	23.38
31	09.08		13.39 (K 11)				06.58		03.50	
	16.22	21	14.00 (K 11)				20.15		23.09	
Potential sun hours	185			243			364	446	557	601
Total, worst case		723			530					
Sun reduction		0,16			0,29					
Oper. time red.		0,97			0,97					
Wind dir. red.		0,67			0,64					
Total reduction		0,11			0,18					
Total, real		77			96					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AK - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October			November			December		
1	03.32	04.47	06.15	07.36			08.05		15.00 (K 10)	09.32		13.13 (K 11)
	23.37	22.27	20.46	19.05			16.24	26	15.26 (K 10)	15.08	24	13.37 (K 11)
2	03.34	04.50	06.18	07.39			08.08		15.00 (K 10)	09.35		13.14 (K 11)
	23.36	22.24	20.43	19.01			16.21	25	15.25 (K 10)	15.06	23	13.37 (K 11)
3	03.35	04.53	06.21	07.42			08.11		15.01 (K 10)	09.37		13.16 (K 11)
	23.34	22.20	20.40	18.58			16.18	23	15.24 (K 10)	15.04	21	13.37 (K 11)
4	03.37	04.55	06.23	07.45			08.14		15.02 (K 10)	09.39		13.16 (K 11)
	23.33	22.17	20.36	18.55			16.15	21	15.23 (K 10)	15.03	20	13.36 (K 11)
5	03.38	04.58	06.26	07.47			08.17		15.04 (K 10)	09.42		13.17 (K 11)
	23.32	22.14	20.33	18.51			16.12	18	15.22 (K 10)	15.01	19	13.36 (K 11)
6	03.40	05.01	06.29	07.50			08.20		15.06 (K 10)	09.44		13.19 (K 11)
	23.30	22.11	20.29	18.48			16.09	13	15.19 (K 10)	15.00	17	13.36 (K 11)
7	03.42	05.04	06.31	07.53			08.23		15.09 (K 10)	09.46		13.19 (K 11)
	23.29	22.08	20.26	18.45			16.06	7	15.16 (K 10)	14.58	17	13.36 (K 11)
8	03.44	05.07	06.34	07.56			08.26		13.15 (K 11)	09.48		13.21 (K 11)
	23.27	22.05	20.23	18.41			16.03	10	13.25 (K 11)	14.57	15	13.36 (K 11)
9	03.46	05.10	06.37	07.58			08.29		13.13 (K 11)	09.50		13.22 (K 11)
	23.25	22.02	20.19	18.38			16.00	15	13.28 (K 11)	14.56	13	13.35 (K 11)
10	03.48	05.13	06.40	08.01			08.32		13.11 (K 11)	09.52		13.23 (K 11)
	23.23	21.59	20.16	18.35			15.58	19	13.30 (K 11)	14.55	11	13.34 (K 11)
11	03.51	05.16	06.42	08.04			08.35		13.09 (K 11)	09.54		13.24 (K 11)
	23.21	21.56	20.12	18.31			15.55	22	13.31 (K 11)	14.54	8	13.32 (K 11)
12	03.53	05.19	06.45	08.07			08.38		13.09 (K 11)	09.56		13.26 (K 11)
	23.19	21.52	20.09	18.28			15.52	23	13.32 (K 11)	14.53	4	13.30 (K 11)
13	03.55	05.21	06.48	08.10			08.41		13.08 (K 11)	09.57		
	23.17	21.49	20.06	18.25			15.49	25	13.33 (K 11)	14.53		
14	03.58	05.24	06.50	08.12			08.44		13.07 (K 11)	09.59		
	23.15	21.46	20.02	18.21			15.47	26	13.33 (K 11)	14.52		
15	04.00	05.27	06.53	08.15			08.47		13.07 (K 11)	10.00		
	23.12	21.43	19.59	18.18			15.44	27	13.34 (K 11)	14.52		
16	04.03	05.30	06.56	08.18			08.50		13.07 (K 11)	10.02		
	23.10	21.39	19.56	18.15			15.41	28	13.35 (K 11)	14.51		
17	04.05	05.33	06.59	08.21			08.53		13.07 (K 11)	10.03		
	23.08	21.36	19.52	18.12			15.39	29	13.36 (K 11)	14.51		
18	04.08	05.36	07.01	08.24		16.08 (K 10)	08.56		13.07 (K 11)	10.04		
	23.05	21.33	19.49	18.08	13	16.21 (K 10)	15.36	28	13.35 (K 11)	14.51		
19	04.10	05.39	07.04	08.27		16.05 (K 10)	08.59		13.07 (K 11)	10.05		
	23.03	21.30	19.45	18.05	18	16.23 (K 10)	15.34	29	13.36 (K 11)	14.51		
20	04.13	05.41	07.07	08.30		16.03 (K 10)	09.02		13.07 (K 11)	10.06		
	23.00	21.26	19.42	18.02	21	16.24 (K 10)	15.31	29	13.36 (K 11)	14.51		
21	04.16	05.44	07.09	08.32		16.02 (K 10)	09.05		13.08 (K 11)	10.06		
	22.58	21.23	19.39	17.59	23	16.25 (K 10)	15.29	29	13.37 (K 11)	14.52		
22	04.18	05.47	07.12	08.35		16.00 (K 10)	09.08		13.08 (K 11)	10.07		
	22.55	21.20	19.35	17.55	26	16.26 (K 10)	15.26	29	13.37 (K 11)	14.52		
23	04.21	05.50	07.15	08.38		16.00 (K 10)	09.10		13.09 (K 11)	10.08		
	22.52	21.16	19.32	17.52	27	16.27 (K 10)	15.24	28	13.37 (K 11)	14.53		
24	04.24	05.53	07.17	08.41		15.59 (K 10)	09.13		13.08 (K 11)	10.08		
	22.50	21.13	19.28	17.49	28	16.27 (K 10)	15.22	29	13.37 (K 11)	14.53		
25	04.27	05.56	07.20	07.44		14.58 (K 10)	09.16		13.09 (K 11)	10.08		
	22.47	21.10	19.25	16.46	29	15.27 (K 10)	15.20	28	13.37 (K 11)	14.54		
26	04.30	05.58	07.23	07.47		14.58 (K 10)	09.19		13.10 (K 11)	10.08		
	22.44	21.06	19.22	16.43	29	15.27 (K 10)	15.17	27	13.37 (K 11)	14.55		
27	04.32	06.01	07.26	07.50		14.58 (K 10)	09.22		13.10 (K 11)	10.08		
	22.41	21.03	19.18	16.40	30	15.28 (K 10)	15.15	27	13.37 (K 11)	14.56		
28	04.35	06.04	07.28	07.53		14.58 (K 10)	09.24		13.11 (K 11)	10.08		
	22.38	21.00	19.15	16.36	29	15.27 (K 10)	15.13	26	13.37 (K 11)	14.57		
29	04.38	06.07	07.31	07.56		14.58 (K 10)	09.27		13.12 (K 11)	10.08		
	22.35	20.56	19.11	16.33	29	15.27 (K 10)	15.11	26	13.38 (K 11)	14.58		
30	04.41	06.09	07.34	07.59		14.59 (K 10)	09.30		13.12 (K 11)	10.07		
	22.32	20.53	19.08	16.30	28	15.27 (K 10)	15.09	25	13.37 (K 11)	15.00		
31	04.44	06.12		08.02		14.59 (K 10)				10.07		13.36 (K 11)
	22.30	20.50		16.27	27	15.26 (K 10)				15.01	2	13.38 (K 11)
Potential sun hours	591	501	391	308			208			154		
Total, worst case					357			717			194	
Sun reduction					0,26			0,15			0,11	
Oper. time red.					0,97			0,97			0,97	
Wind dir. red.					0,64			0,67			0,67	
Total reduction					0,16			0,10			0,07	
Total, real					57			69			14	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AL - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (56)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.49	03.33	04.47	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.11	23.36	22.26	20.46	19.05	16.24	15.08
2	10.05	09.02	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.34
	15.05	16.28	17.53	20.20	21.47	23.13	23.35	22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.32	06.48	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.20	20.39	18.58	16.18	15.05
4	10.03	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.32	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.47	08.17	09.41
	15.11	16.38	18.02	20.29	21.55	23.20	23.31	22.14	20.33	18.51	16.12	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.58	23.22	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.34	22.01	23.24	23.28	22.08	20.26	18.45	16.06	14.59
8	09.58	08.45	07.16	06.31	04.53	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.04	23.26	23.26	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.07	23.28	23.24	22.02	20.19	18.38	16.01	14.57
10	09.55	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.10	23.29	23.22	21.58	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.21	04.44	03.32	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.13	23.31	23.21	21.55	20.12	18.31	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.55
	15.27	16.59	18.22	20.49	22.16	23.32	23.18	21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.09	08.41	09.57
	15.30	17.02	18.24	20.51	22.19	23.34	23.16	21.49	20.06	18.25	15.50	14.53
14	09.48	08.27	06.56	06.11	04.35	03.29	03.58	05.25	06.50	08.12	08.44	09.58
	15.33	17.05	18.27	20.54	22.22	23.35	23.14	21.46	20.02	18.21	15.47	14.53
15	09.46	08.24	06.53	06.08	04.32	03.28	04.01	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.36	23.12	21.42	19.59	18.18	15.44	14.52
16	09.44	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.37	23.10	21.39	19.55	18.15	15.42	14.52
17	09.42	08.18	06.46	06.01	04.27	03.27	04.06	05.33	06.59	08.21	08.53	10.02
	15.41	17.14	18.36	21.03	22.31	23.38	23.07	21.36	19.52	18.12	15.39	14.52
18	09.40	08.14	06.42	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.03
	15.44	17.17	18.38	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.52
19	09.38	08.11	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.26	08.58	10.04
	15.46	17.20	18.41	21.09	22.37	23.39	23.02	21.29	19.45	18.05	15.34	14.52
20	09.36	08.08	06.36	05.51	04.18	03.26	04.13	05.42	07.07	08.29	09.01	10.05
	15.49	17.23	18.44	21.11	22.39	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.33	08.05	06.32	05.48	04.16	03.26	04.16	05.44	07.09	08.32	09.04	10.06
	15.52	17.26	18.47	21.14	22.42	23.40	22.57	21.23	19.38	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.40	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.41	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	23.40	22.52	21.16	19.32	17.52	15.24	14.53
24	09.26	07.55	06.22	05.38	04.08	03.26	04.24	05.53	07.17	08.41	09.13	10.07
	16.01	17.35	18.55	21.23	22.51	23.40	22.49	21.13	19.28	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.53	23.40	22.46	21.10	19.25	16.46	15.20	14.54
26	09.21	07.49	06.15	05.32	04.03	03.28	04.30	05.58	07.23	07.47	09.18	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.25	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.39	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.42	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.06	21.35	23.01	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.13		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.07
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.11	16.33	15.12	14.59
30	09.11		07.02	05.19	03.53	03.32	04.41	06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.06	23.37	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.58		03.51		04.44	06.12		08.02		10.06
	16.22		20.15		23.09		22.29	20.50		16.27		15.02
Potential sun hours	185	244	364	446	556	600	590	500	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AM - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.36	08.05 15.00 (K 11)	09.32
	15.03	16.25	17.50	20.18	21.44	23.12	23.37	22.26	20.46	19.05	16.24 26 15.26 (K 11)	15.08
2	10.05	09.03 15.38 (K 11)	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08 15.00 (K 11)	09.35
	15.05	16.28 4 15.42 (K 11)	17.53	20.20	21.47	23.14	23.36	22.23	20.43	19.01	16.21 25 15.25 (K 11)	15.06
3	10.05	09.00 15.36 (K 11)	07.33	06.48	05.09	03.44	03.35	04.52	06.20	07.42	08.11 15.00 (K 11)	09.37
	15.07	16.31 10 15.46 (K 11)	17.56	20.23	21.50	23.16	23.34	22.20	20.40	18.58	16.18 24 15.24 (K 11)	15.04
4	10.04	08.57 15.34 (K 11)	07.29	06.45	05.06	03.42	03.37	04.55	06.23	07.45	08.14 15.01 (K 11)	09.39
	15.09	16.34 15 15.49 (K 11)	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15 23 15.24 (K 11)	15.03
5	10.02	08.54 15.33 (K 11)	07.26	06.42	05.03	03.40	03.38	04.58	06.26	07.47	08.17 15.02 (K 11)	09.42
	15.11	16.38 20 15.53 (K 11)	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12 22 15.24 (K 11)	15.01
6	10.01	08.51 15.32 (K 11)	07.23	06.38	04.59	03.38	03.40	05.01	06.29	07.50	08.20 15.03 (K 11)	09.44
	15.13	16.41 21 15.53 (K 11)	18.04	20.32	21.59	23.23	23.30	22.11	20.29	18.48	16.09 19 15.22 (K 11)	15.00
7	10.00	08.48 15.31 (K 11)	07.19	06.35	04.56	03.37	03.42	05.04	06.31	07.53	08.23 15.05 (K 11)	09.46
	15.15	16.44 24 15.55 (K 11)	18.07	20.34	22.02	23.25	23.28	22.08	20.26	18.45	16.06 14 15.19 (K 11)	14.58
8	09.59	08.45 15.30 (K 11)	07.16	06.31	04.53	03.35	03.44	05.07	06.34	07.56	08.26 15.06 (K 11)	09.48
	15.17	16.47 25 15.55 (K 11)	18.10	20.37	22.05	23.27	23.27	22.05	20.23	18.41	16.03 9 15.15 (K 11)	14.57
9	09.57	08.42 15.30 (K 11)	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.58	08.29 15.09 (K 11)	09.50
	15.20	16.50 26 15.56 (K 11)	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.00 3 15.12 (K 11)	14.56
10	09.56	08.39 15.29 (K 11)	07.09	06.25	04.47	03.32	03.48	05.13	06.40	08.01	08.32	09.52
	15.22	16.53 27 15.56 (K 11)	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36 15.30 (K 11)	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.24	16.56 26 15.56 (K 11)	18.19	20.46	22.14	23.32	23.21	21.55	20.12	18.31	15.55	14.54
12	09.52	08.33 15.30 (K 11)	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59 27 15.57 (K 11)	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.53
13	09.51	08.30 15.30 (K 11)	06.59	06.15	04.38	03.29	03.55	05.21	06.48	08.10	08.41	09.57
	15.30	17.02 26 15.56 (K 11)	18.24	20.52	22.19	23.34	23.17	21.49	20.06	18.25	15.49	14.53
14	09.49	08.27 15.30 (K 11)	06.56	06.11	04.35	03.28	03.58	05.24	06.50	08.12	08.44	09.59
	15.32	17.05 27 15.57 (K 11)	18.27	20.54	22.22	23.36	23.15	21.46	20.02	18.21	15.47	14.52
15	09.47	08.24 15.30 (K 11)	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08 26 15.56 (K 11)	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21 15.31 (K 11)	06.49	06.05	04.29	03.26	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.11 25 15.56 (K 11)	18.33	21.00	22.28	23.38	23.10	21.39	19.55	18.15	15.41	14.51
17	09.43	08.18 15.31 (K 11)	06.46	06.01	04.26	03.26	04.05	05.33	06.58	08.21	08.53	10.03
	15.40	17.14 23 15.54 (K 11)	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.51
18	09.41	08.15 15.33 (K 11)	06.42	05.58	04.23	03.25	04.08	05.36	07.01	08.24	08.56	10.04
	15.43	17.17 21 15.54 (K 11)	18.38	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.11 15.34 (K 11)	06.39	05.55	04.21	03.25	04.10	05.39	07.04	08.27	08.59	10.05
	15.46	17.20 18 15.52 (K 11)	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36	08.08 15.36 (K 11)	06.36	05.51	04.18	03.25	04.13	05.41	07.07	08.29	09.02	10.06
	15.49	17.23 14 15.50 (K 11)	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.51
21	09.34	08.05 15.39 (K 11)	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32 16.09 (K 11)	09.05	10.06
	15.52	17.26 7 15.46 (K 11)	18.47	21.15	22.43	23.41	22.58	21.23	19.38	17.59 10 16.19 (K 11)	15.29	14.52
22	09.31	08.02	06.29	05.45	04.12	03.25	04.18	05.47	07.12	08.35 16.05 (K 11)	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.41	22.55	21.20	19.35	17.55 16 16.21 (K 11)	15.26	14.52
23	09.29	07.59	06.26	05.41	04.10	03.25	04.21	05.50	07.15	08.38 16.03 (K 11)	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	23.41	22.52	21.16	19.32	17.52 19 16.22 (K 11)	15.24	14.53
24	09.27	07.55	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41 16.03 (K 11)	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.49	21.13	19.28	17.49 21 16.24 (K 11)	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	03.26	04.27	05.56	07.20	07.44 15.01 (K 11)	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46 24 15.25 (K 11)	15.19	14.54
26	09.22	07.49	06.15	05.31	04.02	03.27	04.30	05.58	07.23	07.47 15.00 (K 11)	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43 25 15.25 (K 11)	15.17	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.32	06.01	07.25	07.50 15.00 (K 11)	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40 26 15.26 (K 11)	15.15	14.56
28	09.16	07.42	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53 14.59 (K 11)	09.24	10.08
	16.13	17.47	19.06	21.35	23.02	23.39	22.38	21.00	19.15	16.36 27 15.26 (K 11)	15.13	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56 14.59 (K 11)	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.56	19.11	16.33 27 15.26 (K 11)	15.11	14.58
30	09.11		07.02	05.18	03.53	03.31	04.41	06.09	07.34	07.59 14.59 (K 11)	09.29	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.30 27 15.26 (K 11)	15.09	15.00
31	09.08		06.58		03.50		04.44	06.12		08.02 14.59 (K 11)		10.07
	16.22		20.15		23.09		22.29	20.50		16.27 27 15.26 (K 11)		15.01
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case		412								249	165	
Sun reduction		0,29								0,26	0,15	
Oper. time red.		0,97								0,97	0,97	
Wind dir. red.		0,64								0,64	0,64	
Total reduction		0,18								0,16	0,09	
Total, real		75								40	15	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AN - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.48	03.33	04.47	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.11	23.36	22.26	20.46	19.05	16.24	15.08
2	10.05	09.02	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.34
	15.05	16.28	17.53	20.20	21.47	23.14	23.35	22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.32	06.48	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.31	17.56	20.23	21.50	23.16	23.34	22.20	20.39	18.58	16.18	15.04
4	10.03	08.57	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.58	06.26	07.47	08.17	09.41
	15.11	16.38	18.02	20.29	21.56	23.20	23.31	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.58	23.22	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.56	03.37	03.43	05.04	06.31	07.53	08.23	09.46
	15.15	16.44	18.07	20.34	22.01	23.24	23.28	22.08	20.26	18.45	16.06	14.59
8	09.58	08.45	07.16	06.31	04.53	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.04	23.26	23.26	22.05	20.23	18.41	16.03	14.57
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.07	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.55	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.10	23.30	23.23	21.58	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.13	23.31	23.21	21.55	20.12	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.55
	15.27	16.59	18.22	20.49	22.16	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.09	08.41	09.57
	15.30	17.02	18.24	20.51	22.19	23.34	23.16	21.49	20.06	18.25	15.49	14.53
14	09.48	08.27	06.56	06.11	04.35	03.28	03.58	05.24	06.50	08.12	08.44	09.58
	15.32	17.05	18.27	20.54	22.22	23.35	23.14	21.46	20.02	18.21	15.47	14.52
15	09.46	08.24	06.53	06.08	04.32	03.28	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.36	23.12	21.42	19.59	18.18	15.44	14.52
16	09.44	08.21	06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.37	23.10	21.39	19.55	18.15	15.41	14.52
17	09.42	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.58	08.21	08.53	10.02
	15.41	17.14	18.36	21.03	22.31	23.38	23.07	21.36	19.52	18.12	15.39	14.51
18	09.40	08.14	06.42	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.03
	15.43	17.17	18.38	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.11	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.04
	15.46	17.20	18.41	21.09	22.37	23.40	23.02	21.29	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.29	09.01	10.05
	15.49	17.23	18.44	21.11	22.39	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32	09.04	10.06
	15.52	17.26	18.47	21.14	22.42	23.40	22.57	21.23	19.38	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.41	22.55	21.20	19.35	17.55	15.26	14.52
23	09.29	07.59	06.26	05.41	04.10	03.26	04.21	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.26	07.55	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41	09.13	10.07
	16.01	17.35	18.55	21.23	22.51	23.40	22.49	21.13	19.28	17.49	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.53	23.40	22.46	21.10	19.25	16.46	15.20	14.54
26	09.21	07.49	06.15	05.32	04.02	03.27	04.30	05.58	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.25	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.39	22.41	21.03	19.18	16.40	15.15	14.56
28	09.16	07.42	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.06	21.35	23.01	23.39	22.38	21.00	19.15	16.37	15.13	14.57
29	09.13		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.07
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.11	16.33	15.11	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.06	23.37	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.58		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.29	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AO - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (53)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March		April	May	June	July	August	September		October		November	December
1	10.06	09.05	07.39		06.55	05.15	03.48	03.32	04.47	06.15		07.36	17.45 (K 11)	08.05	09.32
	15.03	16.25	17.50		20.18	21.44	23.12	23.37	22.26	20.46		19.05	23 18.08 (K 11)	16.24	15.08
2	10.05	09.03	07.36		06.52	05.12	03.46	03.34	04.50	06.18		07.39	17.45 (K 11)	08.08	09.34
	15.05	16.28	17.53		20.20	21.47	23.14	23.35	22.23	20.43		19.01	23 18.08 (K 11)	16.21	15.06
3	10.04	09.00	07.33	17.14 (K 11)	06.48	05.09	03.44	03.35	04.52	06.20		07.42	17.44 (K 11)	08.11	09.37
	15.07	16.31	17.56	7 17.21 (K 11)	20.23	21.50	23.16	23.34	22.20	20.39		18.58	25 18.09 (K 11)	16.18	15.04
4	10.03	08.57	07.29	17.11 (K 11)	06.45	05.06	03.42	03.37	04.55	06.23		07.45	17.44 (K 11)	08.14	09.39
	15.09	16.34	17.59	12 17.23 (K 11)	20.26	21.53	23.18	23.33	22.17	20.36		18.55	25 18.09 (K 11)	16.15	15.03
5	10.02	08.54	07.26	17.10 (K 11)	06.41	05.03	03.40	03.39	04.58	06.26		07.47	17.44 (K 11)	08.17	09.42
	15.11	16.38	18.01	17 17.27 (K 11)	20.29	21.56	23.20	23.31	22.14	20.33		18.51	24 18.08 (K 11)	16.12	15.01
6	10.01	08.51	07.23	17.09 (K 11)	06.38	04.59	03.39	03.40	05.01	06.29		07.50	17.44 (K 11)	08.20	09.44
	15.13	16.41	18.04	20 17.29 (K 11)	20.32	21.59	23.23	23.30	22.11	20.29		18.48	24 18.08 (K 11)	16.09	15.00
7	10.00	08.48	07.19	17.08 (K 11)	06.35	04.56	03.37	03.42	05.04	06.31		07.53	17.45 (K 11)	08.23	09.46
	15.15	16.44	18.07	23 17.31 (K 11)	20.34	22.02	23.25	23.28	22.08	20.26		18.45	22 18.07 (K 11)	16.06	14.58
8	09.59	08.45	07.16	17.07 (K 11)	06.31	04.53	03.35	03.44	05.07	06.34		07.56	17.44 (K 11)	08.26	09.48
	15.17	16.47	18.10	24 17.31 (K 11)	20.37	22.05	23.26	23.27	22.05	20.23		18.41	19 18.03 (K 11)	16.03	14.57
9	09.57	08.42	07.13	17.07 (K 11)	06.28	04.50	03.34	03.46	05.10	06.37		07.58	17.45 (K 11)	08.29	09.50
	15.20	16.50	18.13	24 17.31 (K 11)	20.40	22.08	23.28	23.25	22.02	20.19		18.38	15 18.00 (K 11)	16.00	14.56
10	09.56	08.39	07.09	17.07 (K 11)	06.25	04.47	03.32	03.48	05.13	06.40		08.01	17.47 (K 11)	08.32	09.52
	15.22	16.53	18.16	24 17.31 (K 11)	20.43	22.11	23.30	23.23	21.59	20.16		18.35	9 17.56 (K 11)	15.58	14.55
11	09.54	08.36	07.06	17.06 (K 11)	06.21	04.44	03.31	03.51	05.16	06.42		08.04	17.49 (K 11)	08.35	09.54
	15.24	16.56	18.19	24 17.30 (K 11)	20.46	22.13	23.31	23.21	21.55	20.12		18.31	4 17.53 (K 11)	15.55	14.54
12	09.52	08.33	07.03	17.07 (K 11)	06.18	04.41	03.30	03.53	05.19	06.45		08.07		08.38	09.56
	15.27	16.59	18.21	23 17.30 (K 11)	20.49	22.16	23.33	23.19	21.52	20.09		18.28		15.52	14.53
13	09.50	08.30	06.59	17.07 (K 11)	06.15	04.38	03.29	03.55	05.21	06.48		08.10		08.41	09.57
	15.30	17.02	18.24	22 17.29 (K 11)	20.51	22.19	23.34	23.17	21.49	20.06		18.25		15.49	14.53
14	09.49	08.27	06.56	17.08 (K 11)	06.11	04.35	03.28	03.58	05.24	06.50		08.12		08.44	09.59
	15.32	17.05	18.27	20 17.28 (K 11)	20.54	22.22	23.36	23.15	21.46	20.02		18.21		15.47	14.52
15	09.47	08.24	06.53	17.08 (K 11)	06.08	04.32	03.27	04.00	05.27	06.53		08.15		08.47	10.00
	15.35	17.08	18.30	18 17.26 (K 11)	20.57	22.25	23.37	23.12	21.43	19.59		18.18		15.44	14.52
16	09.45	08.21	06.49	17.10 (K 11)	06.04	04.29	03.26	04.03	05.30	06.56		08.18		08.50	10.01
	15.38	17.11	18.33	14 17.24 (K 11)	21.00	22.28	23.38	23.10	21.39	19.55		18.15		15.41	14.51
17	09.43	08.18	06.46	17.12 (K 11)	06.01	04.26	03.26	04.05	05.33	06.58		08.21		08.53	10.03
	15.40	17.14	18.36	9 17.21 (K 11)	21.03	22.31	23.39	23.08	21.36	19.52		18.12		15.39	14.51
18	09.40	08.15	06.42		05.58	04.24	03.26	04.08	05.36	07.01		08.24		08.56	10.04
	15.43	17.17	18.38		21.06	22.34	23.39	23.05	21.33	19.49		18.08		15.36	14.51
19	09.38	08.11	06.39		05.54	04.21	03.25	04.10	05.39	07.04		08.27		08.59	10.05
	15.46	17.20	18.41		21.09	22.37	23.40	23.03	21.30	19.45		18.05		15.34	14.51
20	09.36	08.08	06.36		05.51	04.18	03.25	04.13	05.41	07.07		08.29		09.02	10.06
	15.49	17.23	18.44		21.12	22.40	23.40	23.00	21.26	19.42		18.02		15.31	14.51
21	09.34	08.05	06.32		05.48	04.15	03.25	04.16	05.44	07.09		08.32		09.05	10.06
	15.52	17.26	18.47		21.14	22.43	23.41	22.57	21.23	19.38		17.59		15.29	14.52
22	09.31	08.02	06.29		05.45	04.12	03.25	04.18	05.47	07.12		08.35		09.07	10.07
	15.55	17.29	18.50		21.17	22.45	23.41	22.55	21.20	19.35		17.55		15.26	14.52
23	09.29	07.59	06.26		05.41	04.10	03.25	04.21	05.50	07.15		08.38		09.10	10.07
	15.58	17.32	18.52		21.20	22.48	23.41	22.52	21.16	19.32		17.52		15.24	14.53
24	09.26	07.55	06.22		05.38	04.07	03.26	04.24	05.53	07.17		08.41		09.13	10.08
	16.01	17.35	18.55		21.23	22.51	23.41	22.49	21.13	19.28		17.49		15.22	14.53
25	09.24	07.52	06.19		05.35	04.05	03.26	04.27	05.56	07.20		07.44		09.16	10.08
	16.04	17.38	18.58		21.26	22.54	23.41	22.47	21.10	19.25		16.46		15.19	14.54
26	09.21	07.49	06.15		05.31	04.02	03.27	04.30	05.58	07.23	17.57 (K 11)	07.47		09.19	10.08
	16.07	17.41	19.01		21.29	22.56	23.40	22.44	21.06	19.22	5 18.02 (K 11)	16.43		15.17	14.55
27	09.19	07.46	06.12		05.28	04.00	03.28	04.32	06.01	07.25	17.52 (K 11)	07.50		09.21	10.08
	16.10	17.44	19.04		21.32	22.59	23.40	22.41	21.03	19.18	13 18.05 (K 11)	16.40		15.15	14.56
28	09.16	07.42	06.09		05.25	03.57	03.29	04.35	06.04	07.28	17.50 (K 11)	07.53		09.24	10.08
	16.13	17.47	19.06		21.35	23.02	23.39	22.38	21.00	19.15	17 18.07 (K 11)	16.36		15.13	14.57
29	09.14		07.05		05.22	03.55	03.30	04.38	06.07	07.31	17.48 (K 11)	07.56		09.27	10.08
	16.16		20.09		21.38	23.04	23.38	22.35	20.56	19.11	20 18.08 (K 11)	16.33		15.11	14.58
30	09.11		07.02		05.18	03.53	03.31	04.41	06.09	07.34	17.47 (K 11)	07.59		09.29	10.07
	16.19		20.12		21.41	23.07	23.38	22.32	20.53	19.08	22 18.09 (K 11)	16.30		15.09	15.00
31	09.08		06.58			03.50		04.44	06.12			08.02			10.07
	16.22		20.15			23.09		22.29	20.50			16.27			15.01
Potential sun hours	185	243	364		446	557	601	591	501	391		308		208	154
Total, worst case				281							77		213		
Sun reduction				0,40							0,36		0,26		
Oper. time red.				0,97							0,97		0,97		
Wind dir. red.				0,60							0,60		0,60		
Total reduction				0,23							0,21		0,15		
Total, real				66							16		33		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** AP - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (52)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.48	03.33	04.47	06.15	07.36	08.05	09.32
	15.03	16.25	17.50	20.18	21.44	23.11	23.36	22.26	20.46	19.05	16.24	15.08
2	10.05	09.02	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.34
	15.05	16.28	17.53	20.20	21.47	23.14	23.35	22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.32	06.48	05.09	03.44	03.35	04.53	06.20	07.42	08.11	09.37
	15.07	16.31	17.56	20.23	21.50	23.16	23.34	22.20	20.39	18.58	16.18	15.04
4	10.03	08.57	07.29	06.45	05.06	03.42	03.37	04.55	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.58	06.26	07.47	08.17	09.41
	15.11	16.38	18.02	20.29	21.56	23.20	23.31	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.59	23.22	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.56	03.37	03.42	05.04	06.31	07.53	08.23	09.46
	15.15	16.44	18.07	20.34	22.01	23.24	23.28	22.08	20.26	18.45	16.06	14.59
8	09.58	08.45	07.16	06.31	04.53	03.35	03.44	05.07	06.34	07.56	08.26	09.48
	15.17	16.47	18.10	20.37	22.04	23.26	23.26	22.05	20.23	18.41	16.03	14.57
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.07	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.55	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.10	23.30	23.23	21.58	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.13	23.31	23.21	21.55	20.12	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.55
	15.27	16.59	18.21	20.49	22.16	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.29	03.55	05.22	06.48	08.09	08.41	09.57
	15.30	17.02	18.24	20.51	22.19	23.34	23.16	21.49	20.06	18.25	15.49	14.53
14	09.48	08.27	06.56	06.11	04.35	03.28	03.58	05.24	06.50	08.12	08.44	09.59
	15.32	17.05	18.27	20.54	22.22	23.35	23.14	21.46	20.02	18.21	15.47	14.52
15	09.46	08.24	06.52	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.36	23.12	21.42	19.59	18.18	15.44	14.52
16	09.44	08.21	06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.37	23.10	21.39	19.55	18.15	15.41	14.52
17	09.42	08.18	06.46	06.01	04.26	03.26	04.05	05.33	06.58	08.21	08.53	10.02
	15.41	17.14	18.36	21.03	22.31	23.38	23.07	21.36	19.52	18.12	15.39	14.51
18	09.40	08.14	06.42	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.43	17.17	18.38	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.11	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.26	08.59	10.04
	15.46	17.20	18.41	21.09	22.37	23.40	23.02	21.29	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.41	07.07	08.29	09.01	10.05
	15.49	17.23	18.44	21.11	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32	09.04	10.06
	15.52	17.26	18.47	21.14	22.42	23.40	22.57	21.23	19.38	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.41	22.55	21.20	19.35	17.55	15.26	14.52
23	09.29	07.59	06.25	05.41	04.10	03.26	04.21	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.26	07.55	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.49	21.13	19.28	17.49	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.53	23.40	22.46	21.10	19.25	16.46	15.20	14.54
26	09.21	07.49	06.15	05.32	04.02	03.27	04.30	05.58	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.21	16.43	15.17	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.25	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15	14.56
28	09.16	07.42	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.06	21.35	23.01	23.39	22.38	21.00	19.15	16.36	15.13	14.57
29	09.13		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.07
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.11	16.33	15.11	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.09	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.06	23.37	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.58		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.29	20.50		16.27		15.01
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm) Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker Last time (hh:mm) with flicker	(WTG causing flicker first time) (WTG causing flicker last time)

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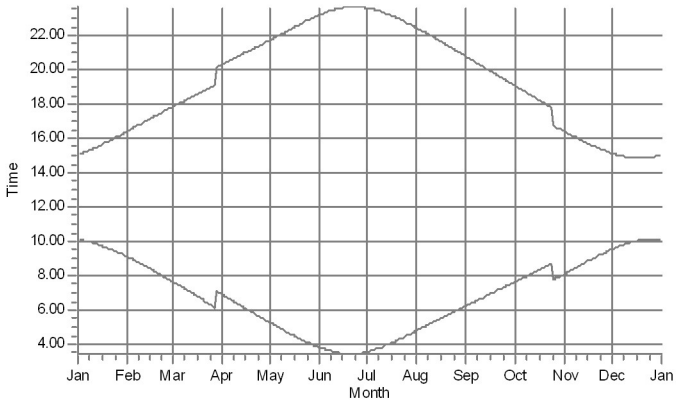
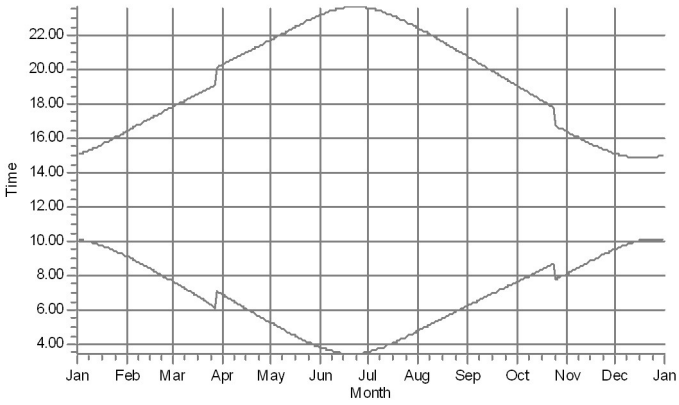
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

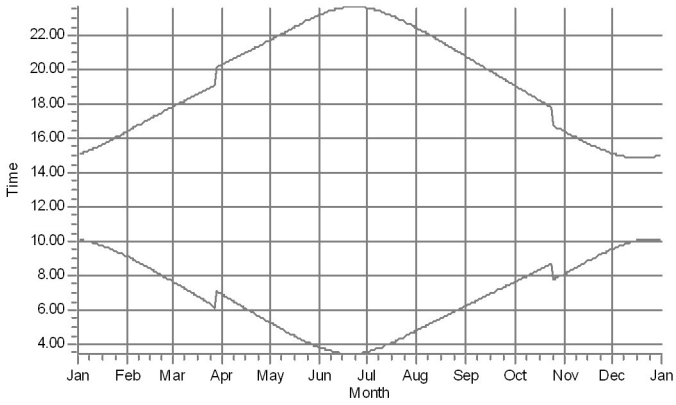
A: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (93)



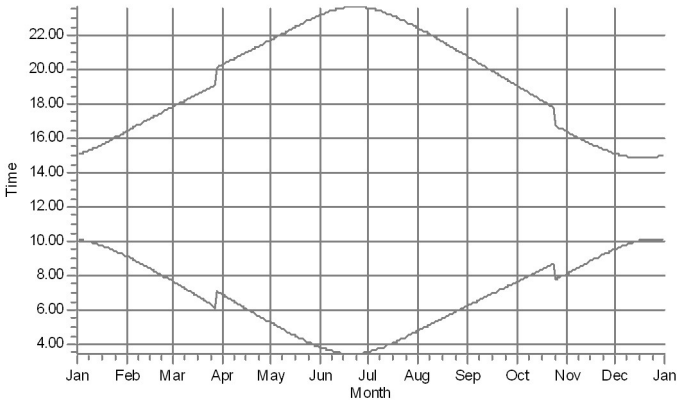
B: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (92)



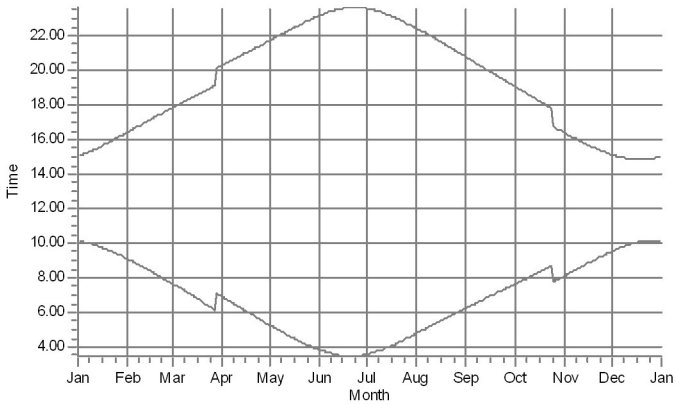
C: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (91)



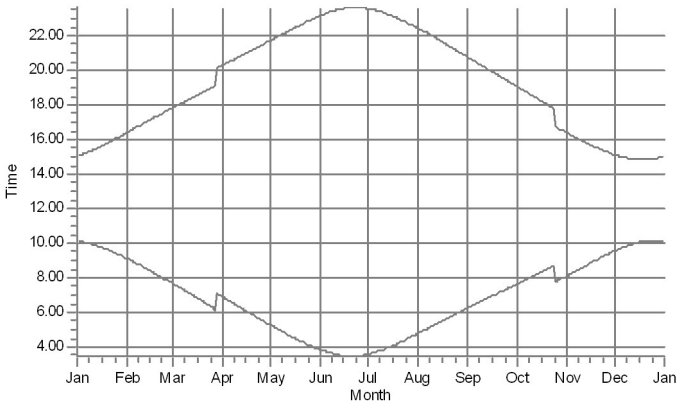
D: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (90)



E: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (89)



F: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (88)



WTGs

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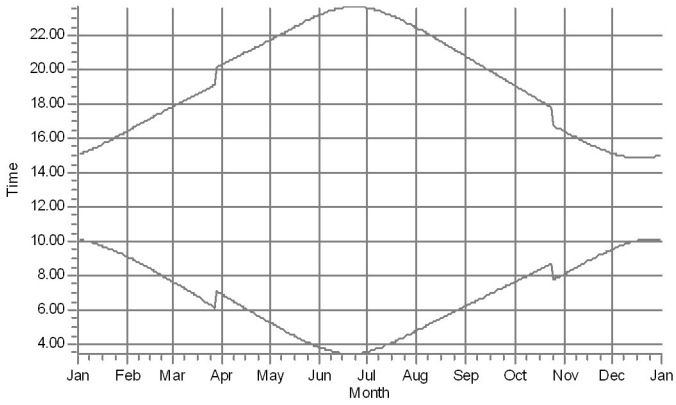
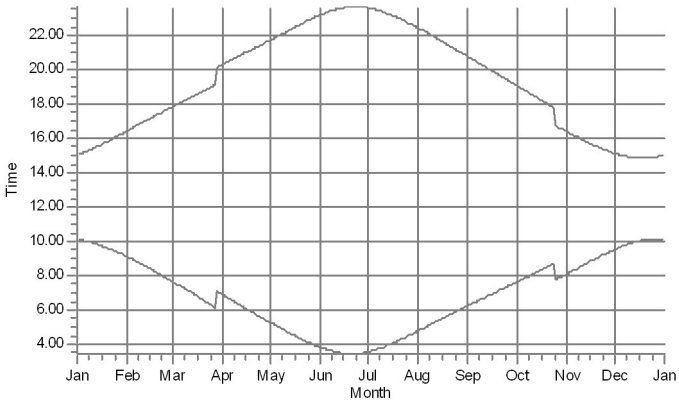
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

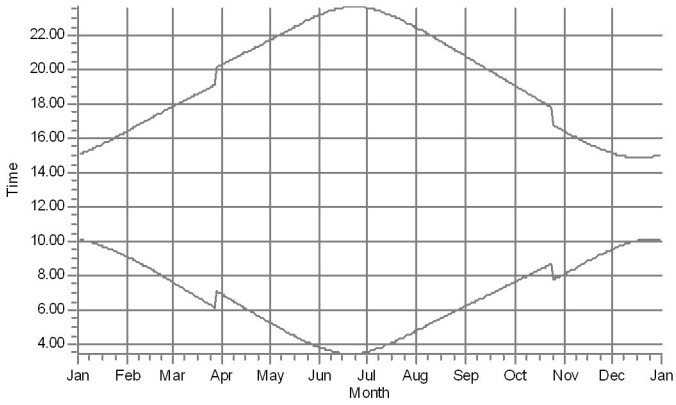
G: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (87)



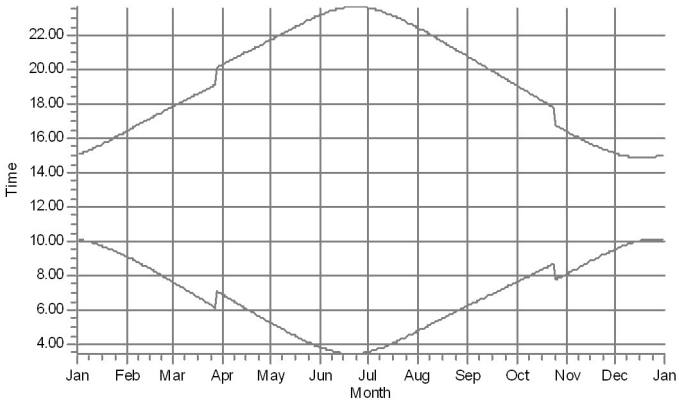
H: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (86)



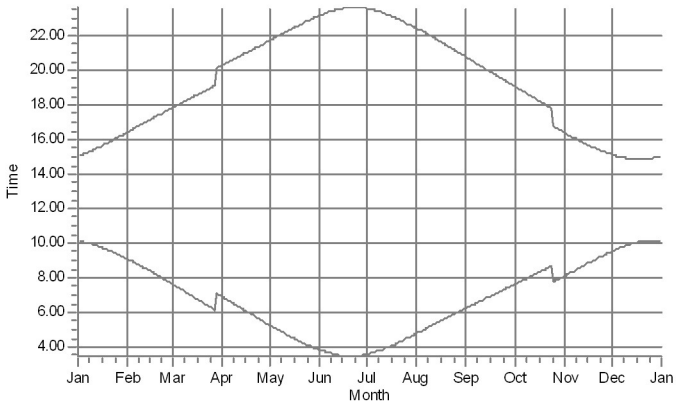
I: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (85)



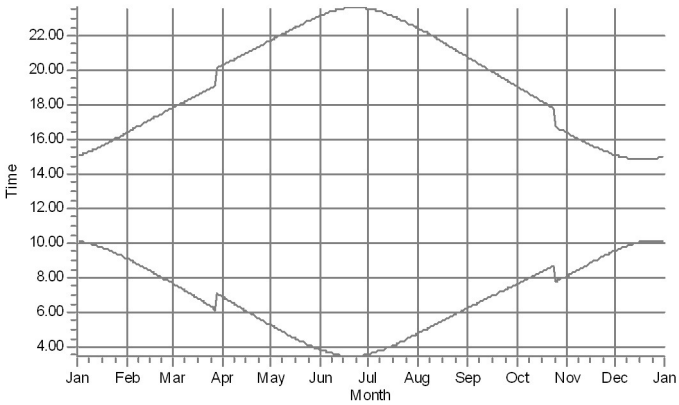
J: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (84)



K: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (83)



L: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (82)



WTGs

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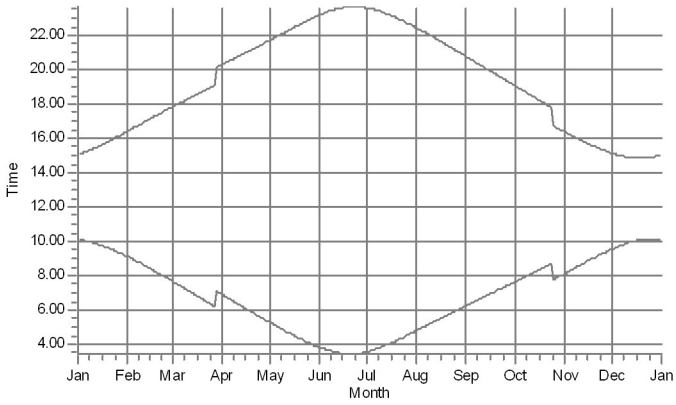
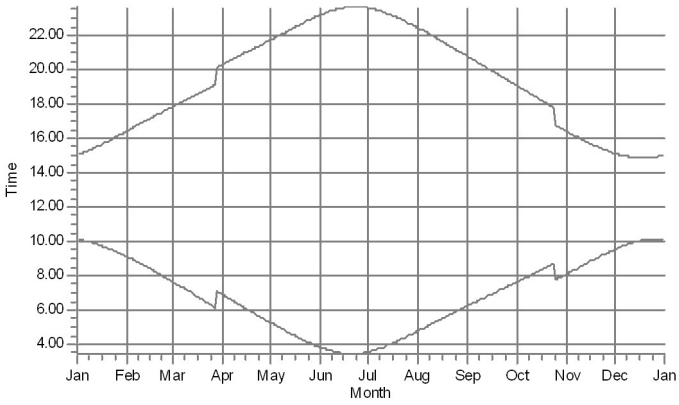
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

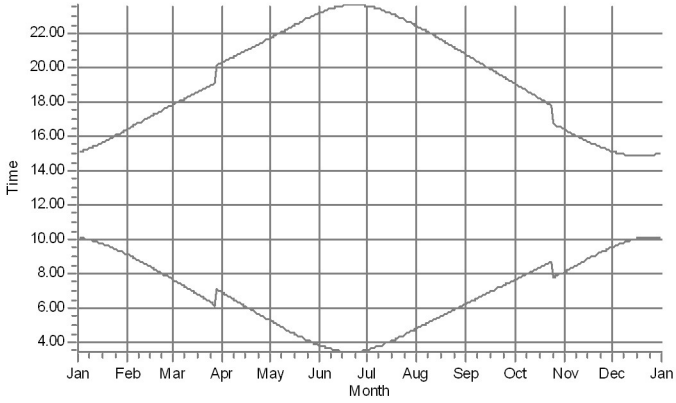
M: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (81)



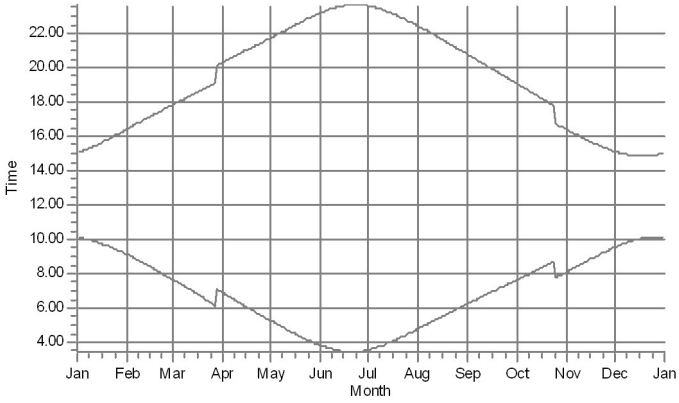
N: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80)



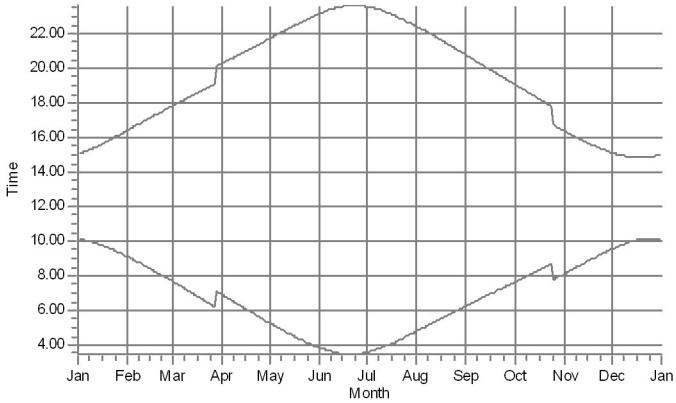
O: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)



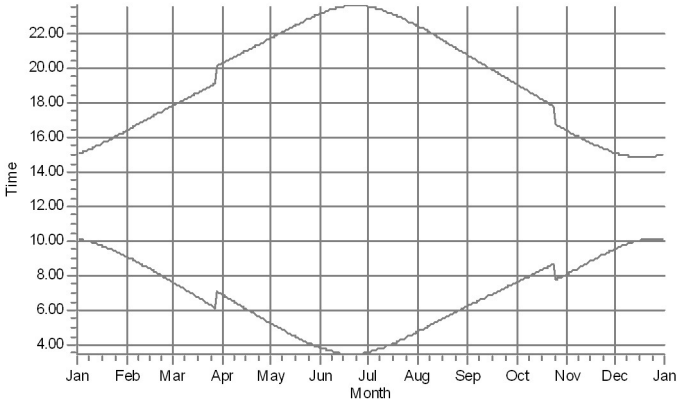
P: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (78)



Q: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (77)



R: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (76)



WTGs

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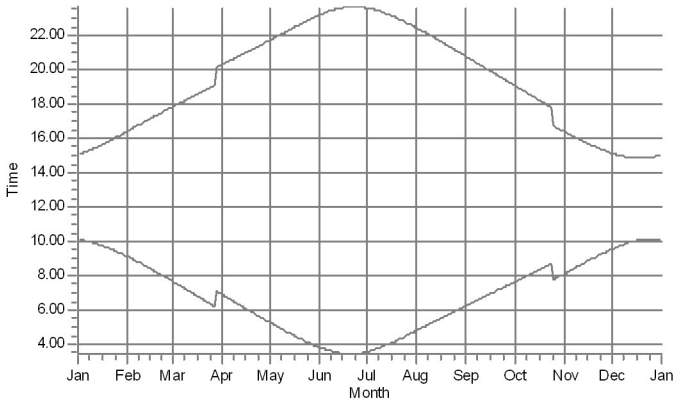
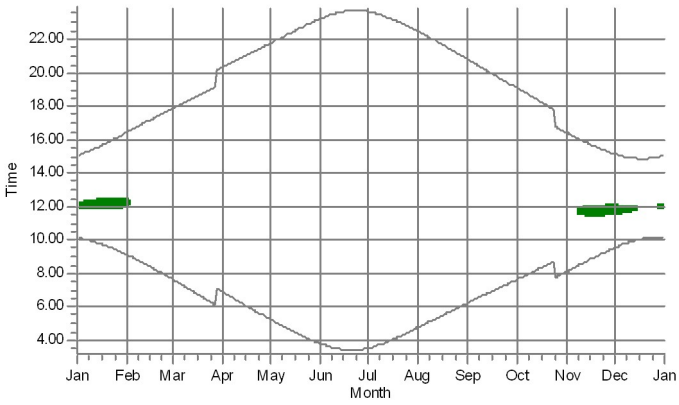
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

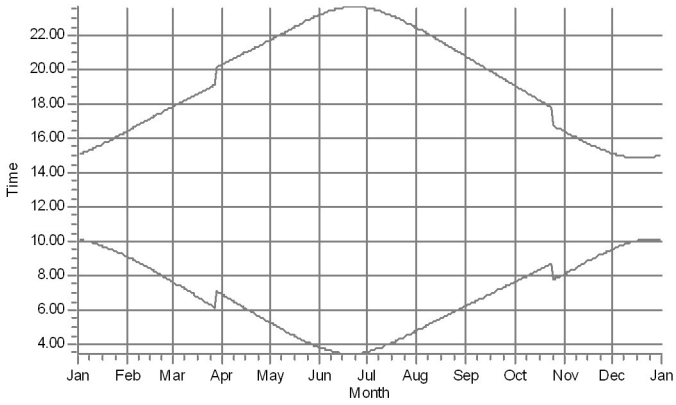
S: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)



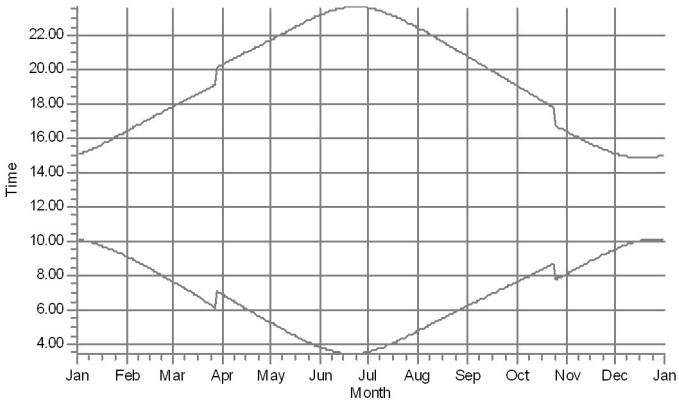
T: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)



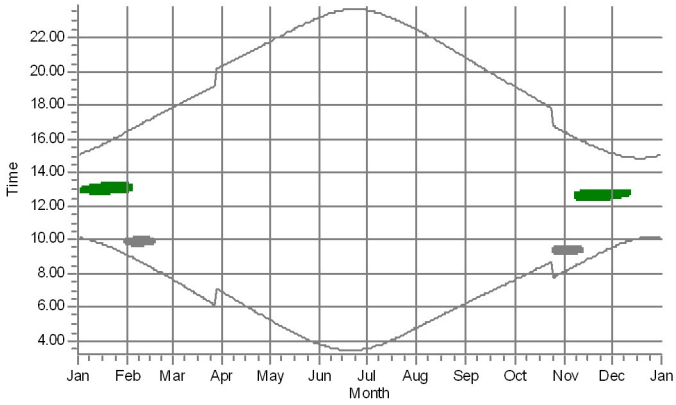
U: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (73)



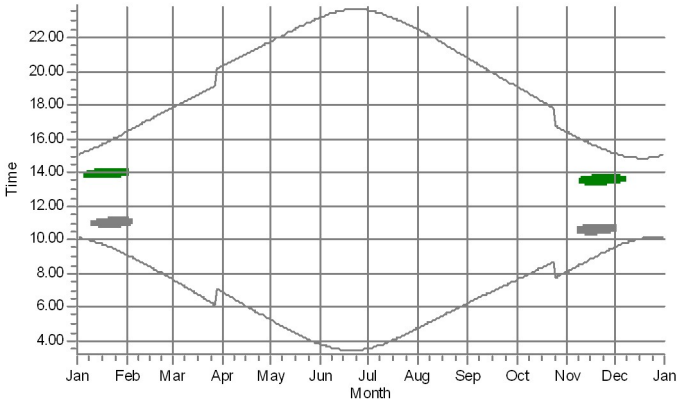
V: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (72)



W: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)



X: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)



WTGs

WTG 01: NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

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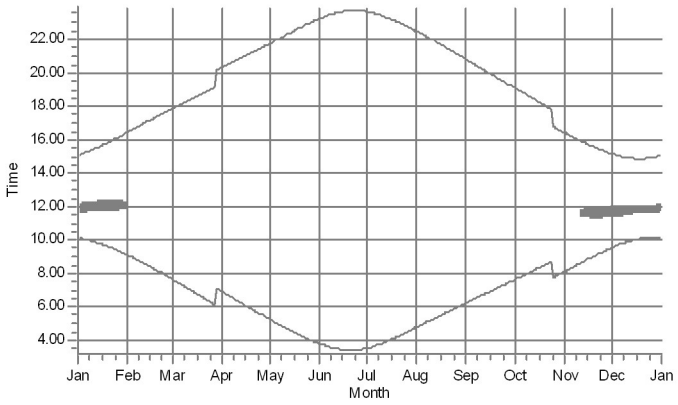
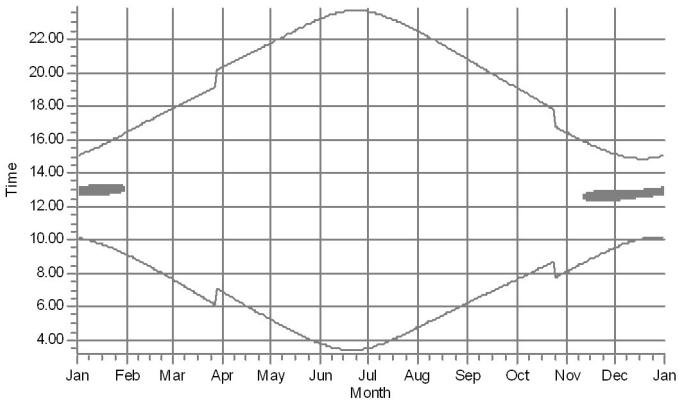
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

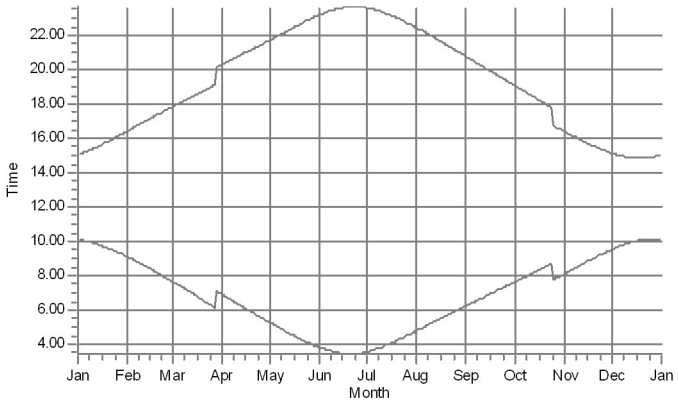
Y: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)



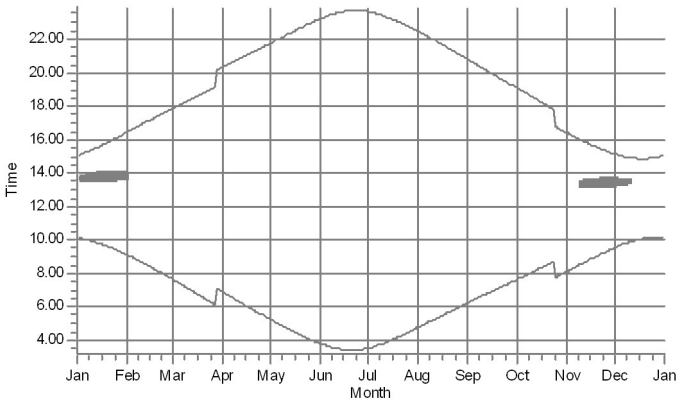
Z: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)



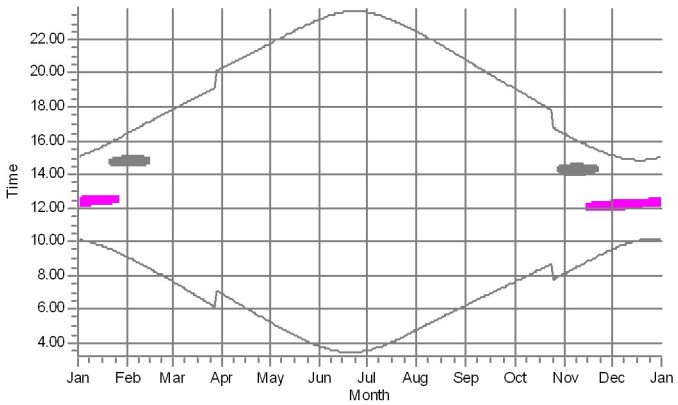
AA: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (67)



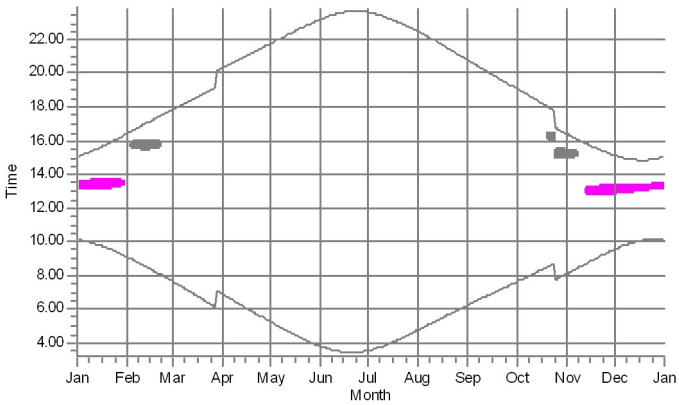
AB: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)



AC: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)



AD: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)



WTGs

K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

K 03: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)

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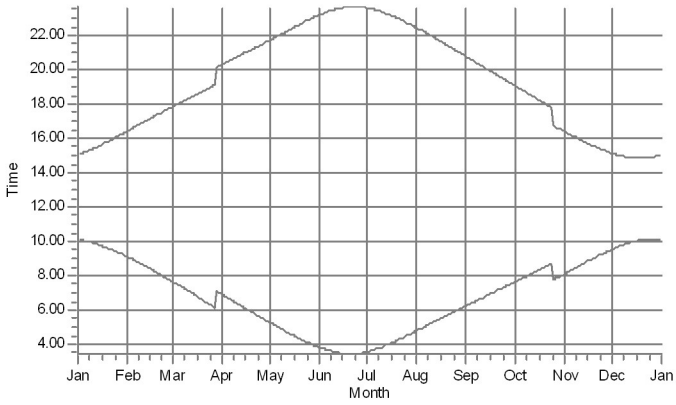
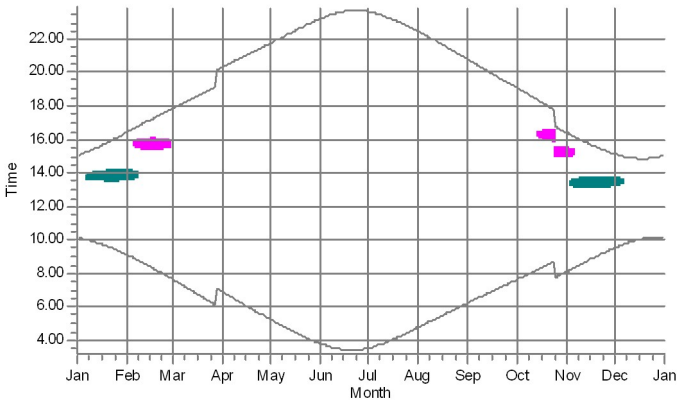
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

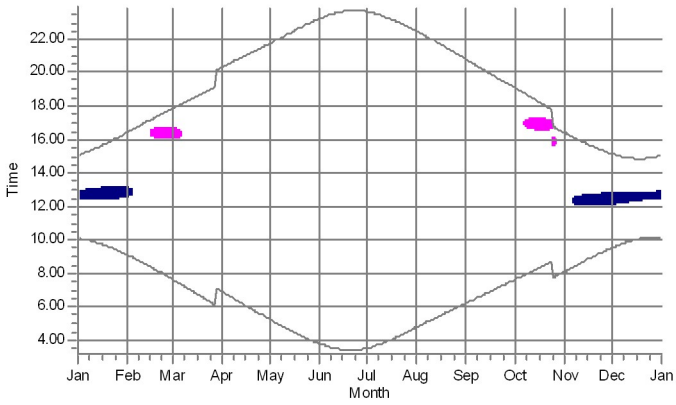
AE: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)



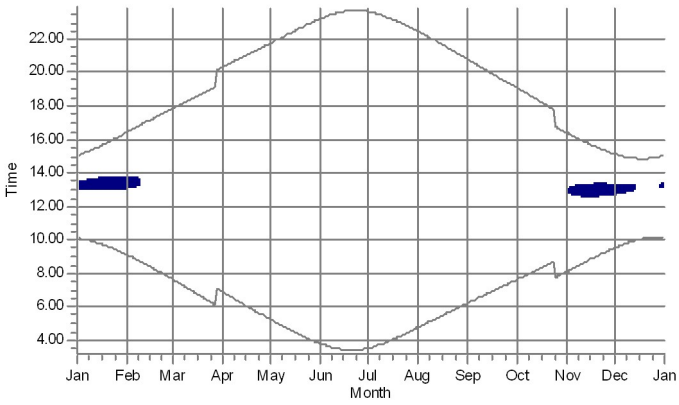
AF: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)



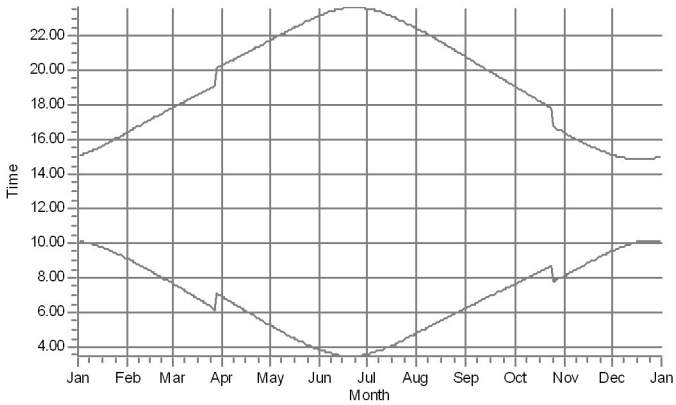
AG: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)



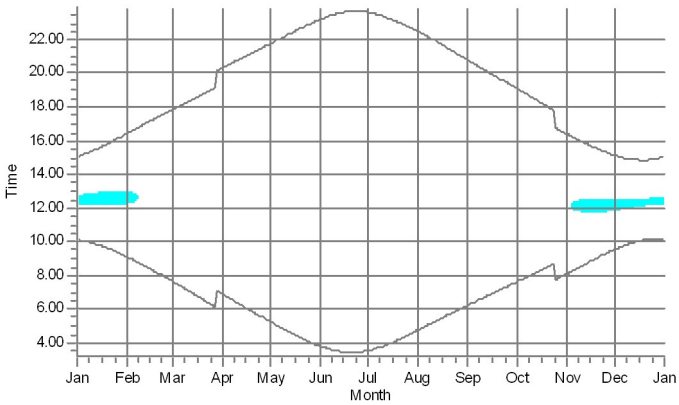
AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)



AI: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (59)



AJ: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)



WTGs

K 03: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)
K 02: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)
K 01: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)
K 11: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)

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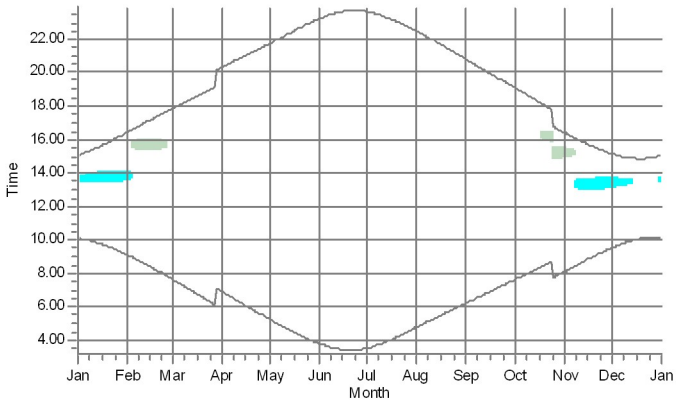
Calculated:
29/11/2024 10.37/4.0.552

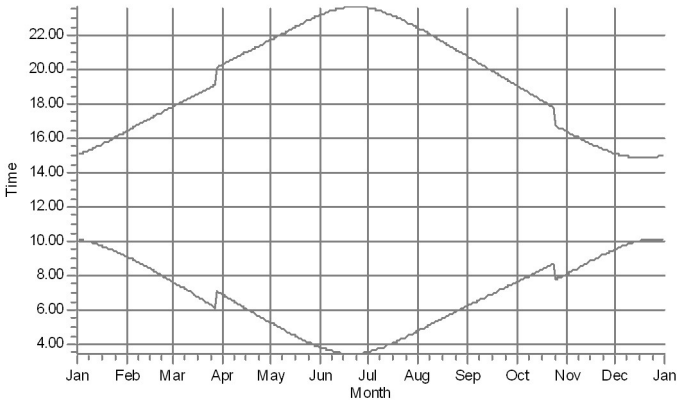
SHADOW - Calendar, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

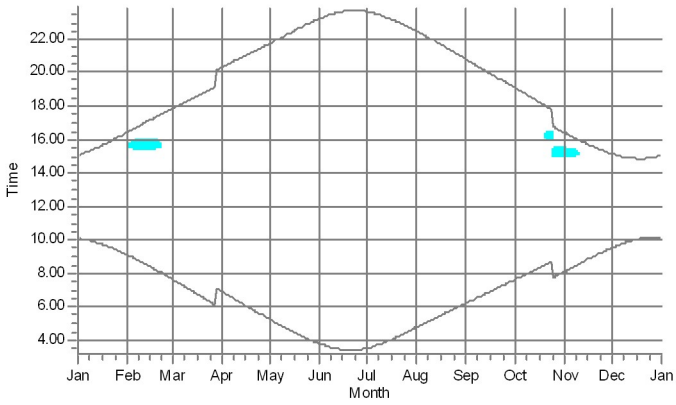
AK: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)



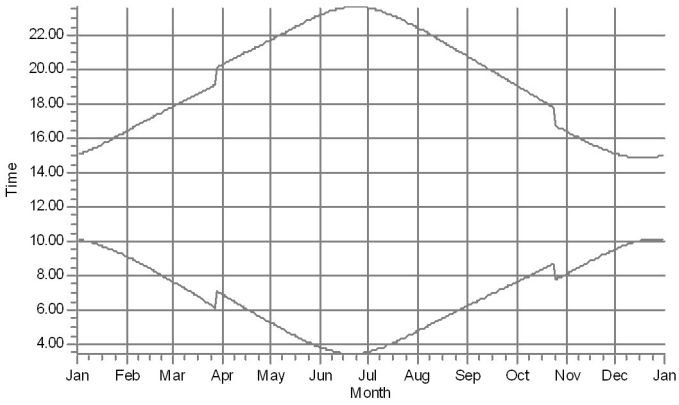
AL: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (56)



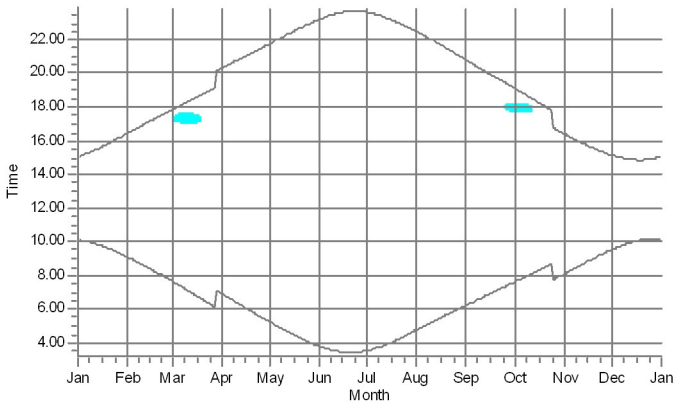
AM: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)



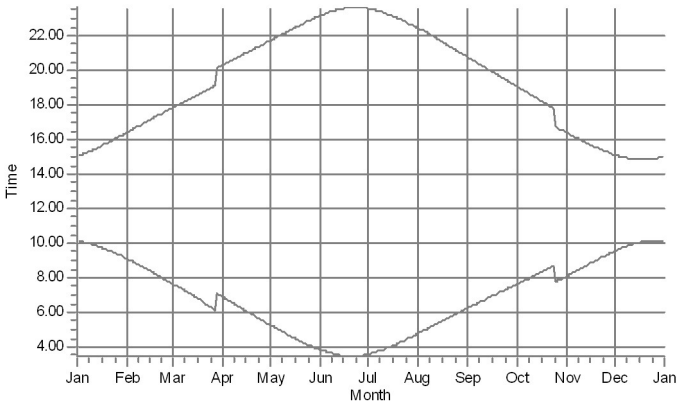
AN: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)



AO: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (53)



AP: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (52)



WTGs

K 11: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)

K 10: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)

Project:

20220502 Kattiharju extension

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 01 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (149)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06 12.32-12.51/19	09.06 12.41-13.02/21	07.39	06.55	05.16	03.48	03.33	04.47	06.15	07.37	08.05	09.32 12.14-12.42/28
	15.04 13.11-13.22/11	16.25 13.11-13.42/31	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08 12.48-13.15/27
2	10.06 12.31-12.51/20	09.03 12.43-13.00/17	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35 12.14-12.41/27
	15.05 13.09-13.23/14	16.28 13.11-13.41/30	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06 12.50-13.15/25
3	10.05 12.32-12.53/21	09.00 12.46-12.59/13	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11 12.53-13.01/8	09.37 12.15-12.42/27
	15.07 13.09-13.25/16	16.32 13.13-13.41/28	17.56	20.23	21.50	23.16	23.35	22.21	20.40	18.58	16.18	15.04 12.51-13.15/24
4	10.04 12.32-12.54/22	08.57 13.13-13.39/26	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14 12.49-13.05/16	09.40 12.16-12.42/26
	15.09 13.08-13.25/17	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03 12.52-13.15/23
5	10.03 12.32-12.55/23	08.54 13.15-13.39/24	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17 12.47-13.07/20	09.42 12.16-12.41/25
	15.11 13.09-13.27/18	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	15.01 12.53-13.14/21
6	10.01 12.31-12.55/24	08.51 13.17-13.37/20	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20 12.45-13.08/23	09.44 12.17-12.42/25
	15.13 13.08-13.28/20	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00 12.54-13.15/21
7	10.00 12.31-12.56/25	08.48 13.20-13.35/15	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23 12.20-12.25/5	09.46 12.18-12.41/23
	15.15 13.07-13.29/22	16.44	18.07	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.06 12.44-13.10/26	14.59 12.55-13.14/19
8	09.59 12.32-12.58/26	08.45 13.25-13.31/6	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26 12.16-12.30/14	09.48 12.19-12.42/23
	15.18 13.08-13.31/23	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.41	16.04 12.43-13.12/29	14.57 12.57-13.14/17
9	09.57 12.32-12.58/26	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.59	08.29 12.13-12.31/18	09.50 12.20-12.41/21
	15.20 13.08-13.32/24	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01 12.42-13.12/30	14.56 12.58-13.13/15
10	09.56 12.32-12.59/27	08.39	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32 12.12-12.33/21	09.52 12.20-12.41/21
	15.22 13.07-13.33/26	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58 12.42-13.13/31	14.55 12.59-13.12/13
11	09.54 12.32-13.00/28	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.43	08.04	08.35 12.11-12.35/24	09.54 12.22-12.42/20
	15.25 13.07-13.34/27	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55 12.41-13.13/32	14.54 13.01-13.12/11
12	09.53 12.32-13.01/29	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38 12.10-12.35/25	09.56 12.23-12.42/19
	15.27 13.07-13.35/28	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52 12.41-13.14/33	14.54 13.03-13.11/8
13	09.51 12.32-13.02/30	08.30	06.59	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41 12.09-12.37/28	09.57 12.23-12.41/18
	15.30 13.07-13.36/29	17.02	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50 12.41-13.15/34	14.53 13.04-13.09/5
14	09.49 12.31-13.01/30	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44 12.09-12.38/29	09.59 12.24-12.41/17
	15.32 13.06-13.36/30	17.05	18.27	20.55	22.23	23.36	23.15	21.46	20.02	18.22	15.47 12.41-13.15/34	14.52
15	09.47 12.31-13.02/31	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47 12.08-12.38/30	10.00 12.26-12.42/16
	15.35 13.06-13.37/31	17.08	18.30	20.57	22.26	23.37	23.13	21.43	19.59	18.18	15.44 12.40-13.15/35	14.52
16	09.45 12.32-13.03/31	08.21	06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50 12.08-12.38/30	10.02 12.26-12.41/15
	15.38 13.06-13.38/32	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.41 12.40-13.16/36	14.52
17	09.43 12.32-13.04/32	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53 12.08-12.39/31	10.03 12.27-12.41/14
	15.41 13.06-13.39/33	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39 12.41-13.16/35	14.51
18	09.41 12.33-13.04/31	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56 12.08-12.40/32	10.04 12.28-12.42/14
	15.43 13.07-13.40/33	17.18	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.09	15.36 12.41-13.16/35	14.51
19	09.39 12.32-13.04/32	08.12	06.39	05.55	04.21	03.25	04.11	05.39	07.04	08.27	08.59 12.09-12.40/31	10.05 12.29-12.42/13
	15.46 13.06-13.40/34	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34 12.42-13.17/35	14.51
20	09.36 12.33-13.05/32	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02 12.08-12.40/32	10.06 12.29-12.42/13
	15.49 13.06-13.41/35	17.24	18.44	21.12	22.40	23.41	23.00	21.26	19.42	18.02	15.31 12.41-13.16/35	14.52
21	09.34 12.33-13.05/32	08.05	06.33	05.48	04.15	03.25	04.16	05.44	07.09	08.33	09.05 12.08-12.40/32	10.07 12.30-12.42/12
	15.52 13.07-13.41/34	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29 12.42-13.16/34	14.52
22	09.32 12.33-13.05/32	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.35	09.08 12.09-12.41/32	10.07 12.31-12.43/12
	15.55 13.06-13.41/35	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27 12.42-13.17/35	14.52
23	09.29 12.34-13.05/31	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.38	09.11 12.09-12.41/32	10.08 12.31-12.43/12
	15.58 13.07-13.42/35	17.32	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.52	15.24 12.43-13.17/34	14.53
24	09.27 12.34-13.06/32	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.13 12.10-12.41/31	10.08 12.31-12.44/13
	16.01 13.07-13.43/36	17.35	18.55	21.23	22.51	23.41	22.50	21.13	19.29	17.49	15.22 12.44-13.17/33	14.53
25	09.24 12.34-13.05/31	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16 12.10-12.42/32	10.08 12.31-12.44/13
	16.04 13.07-13.42/35	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20 12.45-13.17/32	14.54
26	09.22 12.35-13.05/30	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19 12.10-12.41/31	10.08 12.32-12.46/14
	16.07 13.08-13.43/35	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18 12.44-13.16/32	14.55
27	09.19 12.36-13.06/30	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22 12.11-12.41/30	10.08 12.32-12.47/15
	16.10 13.08-13.43/35	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15 12.45-13.16/31	14.56
28	09.16 12.36-13.05/29	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24 12.11-12.42/31	10.08 12.31-12.47/16
	16.13 13.08-13.43/35	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.13 12.46-13.16/30	14.57
29	09.14 12.38-13.05/27		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27 12.12-12.42/30	10.08 12.32-12.48/16
	16.16 13.09-13.43/34		20.09	21.38	23.04	23.39	22.35	20.57	19.12	16.34	15.12 12.47-13.16/29	14.59
30	09.11 12.38-13.04/26		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30 12.13-12.42/29	10.08 12.32-12.49/17
	16.19 13.09-13.42/33		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.10 12.48-13.16/28	15.00 13.13-13.16/3
31	09.08 12.40-13.03/23		06.59		03.51		04.44	06.12		08.02		10.07 12.31-12.49/18
	16.22 13.10-13.42/32		20.15		23.09		22.30	20.50		16.27		15.01 13.11-13.19/8
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Sum of minutes with flicker	1744	231	0	0	0	0	0	0	0	0	1505	803

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 02 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06 13.41-14.07/26	07.39	06.55	05.16	03.48	03.33	04.47	06.15	07.37	08.05	09.32 13.21-13.39/18
	15.04	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03 13.41-14.06/25	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35 13.22-13.37/15
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00 13.43-14.05/22	07.33	06.49	05.09	03.44	03.35	04.53	06.21	07.42	08.11	09.37 13.23-13.37/14
	15.07	16.32	17.56	20.23	21.50	23.16	23.35	22.21	20.40	18.58	16.18	15.04
4	10.04	08.57 13.43-14.04/21	07.30	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14 13.23-13.25/2	09.40 13.26-13.36/10
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54 13.46-14.03/17	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17 13.18-13.31/13	09.42 13.28-13.33/5
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.51 13.49-14.01/12	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20 13.15-13.32/17	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00 13.43-13.47/4	08.48	07.20	06.35	04.57	03.37	03.42	05.04	06.32	07.53	08.23 13.14-13.34/20	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.06	14.59
8	09.59 13.42-13.51/9	08.46	07.16	06.32	04.54	03.36	03.44	05.07	06.34	07.56	08.26 13.13-13.36/23	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.41	16.04	14.57
9	09.57 13.40-13.53/13	08.43	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.59	08.29 13.12-13.36/24	09.50
	15.20	16.50	18.13	20.40	22.08	23.29	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56 13.39-13.55/16	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32 13.11-13.38/27	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54 13.39-13.56/17	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35 13.11-13.39/28	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.54
12	09.53 13.38-13.58/20	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38 13.10-13.38/28	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51 13.38-13.59/21	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41 13.10-13.39/29	09.58
	15.30	17.02	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49 13.37-13.59/22	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44 13.10-13.40/30	09.59
	15.33	17.05	18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.52
15	09.47 13.37-14.00/23	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47 13.10-13.40/30	10.00
	15.35	17.09	18.30	20.57	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45 13.37-14.02/25	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50 13.10-13.40/30	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43 13.37-14.03/26	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53 13.10-13.41/31	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.51
18	09.41 13.37-14.04/27	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56 13.11-13.41/30	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.09	15.36	14.51
19	09.39 13.36-14.04/28	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59 13.11-13.41/30	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.51
20	09.36 13.36-14.05/29	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02 13.11-13.40/29	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34 13.37-14.06/29	08.05	06.33	05.48	04.15	03.25	04.16	05.45	07.10	08.33	09.05 13.12-13.41/29	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32 13.36-14.05/29	08.02	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.36	09.08 13.12-13.41/29	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29 13.36-14.06/30	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.38	09.11 13.13-13.41/28	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.52	15.24	14.53
24	09.27 13.37-14.07/30	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.13 13.14-13.41/27	10.08
	16.01	17.36	18.55	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.53
25	09.24 13.36-14.07/31	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16 13.15-13.41/26	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22 13.37-14.07/30	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19 13.15-13.40/25	10.08
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19 13.38-14.08/30	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22 13.16-13.40/24	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.17 13.38-14.07/29	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24 13.17-13.39/22	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14 13.38-14.07/29		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27 13.18-13.39/21	10.08
	16.16		20.09	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11 13.38-14.07/29		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30 13.20-13.39/19	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.30	15.10	15.00
31	09.08 13.39-14.07/28		06.59		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Sum of minutes with flicker	604	123	0	0	0	0	0	0	0	0	671	62

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 03 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06 12.13-12.33/20	09.06	07.39 16.09-16.36/27	06.55	05.16	03.48
	15.04 13.12-13.29/17	16.25	17.50	20.18	21.44	23.12
2	10.06 12.13-12.34/21	09.03	07.36 16.10-16.35/25	06.52	05.12	03.46
	15.05 13.12-13.30/18	16.29	17.53	20.21	21.47	23.14
3	10.05 12.13-12.34/21	09.00	07.33 16.11-16.34/23	06.49	05.09	03.44
	15.07 13.12-13.31/19	16.32	17.56	20.24	21.50	23.17
4	10.04 12.14-12.35/21	08.57	07.30 16.13-16.33/20	06.45	05.06	03.42
	15.09 13.12-13.32/20	16.35	17.59	20.26	21.53	23.19
5	10.03 12.13-12.36/23	08.54	07.26 16.14-16.30/16	06.42	05.03	03.41
	15.11 13.12-13.32/20	16.38	18.02	20.29	21.56	23.21
6	10.02 12.14-12.37/23	08.51 15.40-15.50/10	07.23 16.18-16.27/9	06.38	05.00	03.39
	15.13 13.12-13.33/21	16.41	18.05	20.32	21.59	23.23
7	10.00 12.14-12.37/23	08.49 15.37-15.53/16	07.20	06.35	04.57	03.37
	15.15 13.13-13.34/21	16.44	18.08	20.35	22.02	23.25
8	09.59 12.14-12.38/24	08.46 15.36-15.55/19	07.16	06.32	04.54	03.36
	15.18 13.13-13.35/22	16.47	18.10	20.38	22.05	23.27
9	09.58 12.15-12.38/23	08.43 15.34-15.56/22	07.13	06.28	04.50	03.34
	15.20 13.13-13.36/23	16.50	18.13	20.40	22.08	23.29
10	09.56 12.15-12.39/24	08.40 15.33-15.58/25	07.10	06.25	04.47	03.33
	15.22 13.13-13.36/23	16.53	18.16	20.43	22.11	23.30
11	09.54 12.15-12.39/24	08.37 15.32-15.58/26	07.06	06.22	04.44	03.31
	15.25 13.13-13.37/24	16.56	18.19	20.46	22.14	23.32
12	09.53 12.16-12.40/24	08.34 15.32-16.00/28	07.03	06.18	04.41	03.30
	15.27 13.13-13.38/25	16.59	18.22	20.49	22.17	23.33
13	09.51 12.16-12.40/24	08.30 15.31-16.00/29	07.00	06.15	04.38	03.29
	15.30 13.14-13.38/24	17.02	18.25	20.52	22.20	23.35
14	09.49 12.17-12.41/24	08.27 15.31-16.00/29	06.56	06.11	04.35	03.28
	15.33 13.14-13.39/25	17.05	18.27	20.55	22.23	23.36
15	09.47 12.16-12.40/24	08.24 15.30-16.00/30	06.53	06.08	04.32	03.27
	15.35 13.13-13.38/25	17.09	18.30	20.58	22.26	23.37
16	09.45 12.17-12.41/24	08.21 16.18-16.29/11	06.49	06.05	04.30	03.27
	15.38 13.14-13.39/25	17.12 15.30-16.01/31	18.33	21.00	22.29	23.38
17	09.43 12.17-12.41/24	08.18 16.16-16.32/16	06.46	06.01	04.27	03.26
	15.41 13.14-13.40/26	17.15 15.30-16.01/31	18.36	21.03	22.31	23.39
18	09.41 12.18-12.42/24	08.15 16.14-16.34/20	06.43	05.58	04.24	03.26
	15.44 13.15-13.40/25	17.18 15.30-16.00/30	18.39	21.06	22.34	23.40
19	09.39 12.19-12.42/23	08.12 16.13-16.35/22	06.39	05.55	04.21	03.25
	15.46 13.15-13.40/25	17.21 15.31-16.00/29	18.42	21.09	22.37	23.40
20	09.36 12.19-12.41/22	08.09 16.11-16.36/25	06.36	05.51	04.18	03.25
	15.49 13.15-13.40/25	17.24 15.30-15.59/29	18.44	21.12	22.40	23.41
21	09.34 12.20-12.41/21	08.05 16.11-16.37/26	06.33	05.48	04.15	03.25
	15.52 13.16-13.40/24	17.27 15.31-15.59/28	18.47	21.15	22.43	23.41
22	09.32 12.22-12.41/19	08.02 16.10-16.37/27	06.29	05.45	04.13	03.25
	15.55 13.17-13.41/24	17.30 15.32-15.58/26	18.50	21.18	22.46	23.41
23	09.29 12.22-12.40/18	07.59 16.10-16.38/28	06.26	05.42	04.10	03.26
	15.58 13.17-13.40/23	17.33 15.33-15.57/24	18.53	21.21	22.49	23.41
24	09.27 12.24-12.39/15	07.56 16.09-16.37/28	06.22	05.38	04.07	03.26
	16.01 13.19-13.40/21	17.36 15.34-15.55/21	18.56	21.24	22.51	23.41
25	09.24 12.26-12.38/12	07.52 16.09-16.38/29	06.19	05.35	04.05	03.27
	16.04 13.20-13.40/20	17.38 15.36-15.54/18	18.58	21.26	22.54	23.41
26	09.22 12.28-12.36/8	07.49 16.08-16.37/29	06.16	05.32	04.02	03.27
	16.07 13.20-13.39/19	17.41 15.38-15.51/13	19.01	21.29	22.57	23.41
27	09.19 13.22-13.38/16	07.46 16.09-16.37/28	06.12	05.28	04.00	03.28
	16.10	17.44	19.04	21.32	22.59	23.40
28	09.17 13.24-13.36/12	07.43 16.08-16.36/28	06.09	05.25	03.57	03.29
	16.13	17.47	19.07	21.35	23.02	23.40
29	09.14 13.28-13.33/5		07.06	05.22	03.55	03.30
	16.16		20.10	21.38	23.05	23.39
30	09.11		07.02	05.19	03.53	03.31
	16.19		20.12	21.41	23.07	23.38
31	09.09		06.59		03.51	
	16.22		20.15		23.10	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	1170	831	120	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 03 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October		November		December	
1	03.33	04.47	06.15	07.37		08.05	15.03-15.27/24	09.32	11.57-12.22/25
	23.37	22.27	20.47	19.05		16.24		15.08	12.55-13.19/24
2	03.34	04.50	06.18	07.39		08.08	15.03-15.25/22	09.35	11.58-12.22/24
	23.36	22.24	20.43	19.02		16.21		15.06	12.56-13.20/24
3	03.35	04.53	06.21	07.42		08.11	15.05-15.25/20	09.37	11.58-12.22/24
	23.35	22.21	20.40	18.58		16.18		15.04	12.56-13.19/23
4	03.37	04.56	06.24	07.45		08.14	15.07-15.22/15	09.40	11.59-12.22/23
	23.33	22.18	20.36	18.55		16.15		15.03	12.57-13.19/22
5	03.39	04.59	06.26	07.48		08.17	15.10-15.19/9	09.42	12.00-12.23/23
	23.32	22.15	20.33	18.52		16.12		15.01	12.58-13.20/22
6	03.41	05.01	06.29	07.50		08.20		09.44	12.00-12.22/22
	23.30	22.12	20.30	18.48		16.09		15.00	12.58-13.19/21
7	03.42	05.04	06.32	07.53	16.57-16.59/2	08.23		09.46	12.01-12.23/22
	23.29	22.08	20.26	18.45		16.07		14.59	12.59-13.20/21
8	03.44	05.07	06.34	07.56	16.51-17.04/13	08.26		09.48	12.01-12.23/22
	23.27	22.05	20.23	18.42		16.04		14.57	13.00-13.19/19
9	03.47	05.10	06.37	07.59	16.48-17.06/18	08.29		09.51	12.02-12.24/22
	23.25	22.02	20.20	18.38		16.01		14.56	13.01-13.20/19
10	03.49	05.13	06.40	08.01	16.46-17.08/22	08.32		09.52	12.02-12.24/22
	23.23	21.59	20.16	18.35		15.58		14.55	13.02-13.20/18
11	03.51	05.16	06.43	08.04	16.45-17.09/24	08.35		09.54	12.03-12.24/21
	23.21	21.56	20.13	18.32		15.55		14.54	13.02-13.20/18
12	03.53	05.19	06.45	08.07	16.44-17.09/25	08.38		09.56	12.04-12.24/20
	23.19	21.53	20.09	18.28		15.52		14.54	13.03-13.20/17
13	03.56	05.22	06.48	08.10	16.43-17.10/27	08.41	12.59-13.05/6	09.58	12.04-12.24/20
	23.17	21.49	20.06	18.25		15.50		14.53	13.04-13.20/16
14	03.58	05.25	06.51	08.13	16.42-17.10/28	08.44	12.56-13.09/13	09.59	12.05-12.25/20
	23.15	21.46	20.03	18.22		15.47		14.52	13.04-13.19/15
15	04.00	05.27	06.53	08.16	16.41-17.10/29	08.47	12.55-13.11/16	10.01	12.06-12.24/18
	23.13	21.43	19.59	18.18	16.14-16.21/7	15.44		14.52	13.06-13.20/14
16	04.03	05.30	06.56	08.18	16.41-17.10/29	08.50	12.01-12.09/8	10.02	12.06-12.24/18
	23.10	21.40	19.56	18.15	16.10-16.25/15	15.42	12.53-13.11/18	14.52	13.06-13.20/14
17	04.05	05.33	06.59	08.21	16.41-17.10/29	08.53	11.59-12.11/12	10.03	12.07-12.25/18
	23.08	21.36	19.52	18.12	16.07-16.26/19	15.39	12.53-13.13/20	14.51	13.07-13.20/13
18	04.08	05.36	07.01	08.24	16.41-17.09/28	08.56	11.58-12.13/15	10.04	12.07-12.25/18
	23.05	21.33	19.49	18.09	16.05-16.28/23	15.36	12.52-13.14/22	14.51	13.08-13.20/12
19	04.11	05.39	07.04	08.27	16.41-17.09/28	08.59	11.57-12.15/18	10.05	12.08-12.26/18
	23.03	21.30	19.46	18.05	16.04-16.28/24	15.34	12.52-13.15/23	14.51	13.08-13.20/12
20	04.13	05.42	07.07	08.30	16.41-17.08/27	09.02	11.57-12.16/19	10.06	12.09-12.26/17
	23.00	21.27	19.42	18.02	16.02-16.29/27	15.31	12.52-13.16/24	14.52	13.09-13.21/12
21	04.16	05.45	07.10	08.33	16.41-17.07/26	09.05	11.55-12.16/21	10.07	12.09-12.27/18
	22.58	21.23	19.39	17.59	16.01-16.29/28	15.29	12.51-13.15/24	14.52	13.09-13.20/11
22	04.19	05.47	07.12	08.36	16.42-17.06/24	09.08	11.55-12.17/22	10.07	12.09-12.27/18
	22.55	21.20	19.35	17.56	16.01-16.31/30	15.27	12.52-13.16/24	14.52	13.10-13.21/11
23	04.21	05.50	07.15	08.38	16.43-17.05/22	09.11	11.55-12.18/23	10.08	12.10-12.27/17
	22.53	21.17	19.32	17.52	16.01-16.31/30	15.24	12.52-13.17/25	14.53	13.10-13.21/11
24	04.24	05.53	07.18	08.41	16.44-17.03/19	09.13	11.55-12.19/24	10.08	12.10-12.28/18
	22.50	21.13	19.29	17.49	16.00-16.30/30	15.22	12.52-13.17/25	14.53	13.11-13.23/12
25	04.27	05.56	07.20	07.44	15.46-16.01/15	09.16	11.56-12.19/23	10.08	12.11-12.29/18
	22.47	21.10	19.25	16.46	15.00-15.30/30	15.20	12.53-13.18/25	14.54	13.11-13.24/13
26	04.30	05.59	07.23	07.47	15.50-15.58/8	09.19	11.56-12.20/24	10.08	12.11-12.29/18
	22.44	21.07	19.22	16.43	15.00-15.31/31	15.18	12.53-13.18/25	14.55	13.11-13.24/13
27	04.33	06.01	07.26	07.50	15.00-15.30/30	09.22	11.56-12.21/25	10.08	12.11-12.30/19
	22.41	21.03	19.18	16.40		15.16	12.53-13.18/25	14.56	13.12-13.25/13
28	04.35	06.04	07.28	07.53	15.00-15.30/30	09.25	11.56-12.20/24	10.08	12.12-12.31/19
	22.39	21.00	19.15	16.37		15.14	12.53-13.18/25	14.57	13.12-13.26/14
29	04.38	06.07	07.31	07.56	15.01-15.30/29	09.27	11.56-12.21/25	10.08	12.12-12.31/19
	22.36	20.57	19.12	16.34		15.12	12.54-13.18/24	14.59	13.12-13.26/14
30	04.41	06.10	07.34	07.59	15.01-15.29/28	09.30	11.57-12.21/24	10.08	12.13-12.32/19
	22.33	20.53	19.08	16.31		15.10	12.54-13.19/25	15.00	13.11-13.27/16
31	04.44	06.13		08.02	15.01-15.27/26			10.07	12.13-12.33/20
	22.30	20.50		16.27				15.02	13.12-13.29/17
Potential sun hours	591	501	391	308		208		154	
Sum of minutes with flicker	0	0	0	880		786		1121	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 04 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (145)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.42	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.37	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.52	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.13	20.40	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.37	07.06	06.22	04.44	03.31	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.00	05.28	06.53	08.16	08.47	10.01
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.06	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.51
20	09.36	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.14	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.09
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.08
	16.13	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 05 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.07 11.48-12.04/16	09.06 09.49-10.01/12 13.46-13.56/10	07.39	06.55	05.16	03.48
	15.04 12.44-13.03/19	16.25 10.56-11.13/17 14.32-15.01/29	17.50	20.18	21.44	23.12
2	10.06 11.48-12.05/17 13.38-13.43/5	09.03 09.47-10.03/16 14.32-15.01/29	07.36	06.52	05.12	03.46
	15.05 12.45-13.04/19	16.29 10.58-11.12/14	17.53	20.21	21.47	23.14
3	10.05 11.47-12.06/19 13.36-13.45/9	09.00 09.46-10.04/18 14.32-15.01/29	07.33	06.49	05.09	03.44
	15.07 12.44-13.05/21	16.32 11.00-11.09/9 15.43-15.45/2	17.56	20.24	21.50	23.17
4	10.04 11.48-12.07/19 13.36-13.47/11	08.57 09.45-10.05/20 15.38-15.49/11	07.30	06.45	05.06	03.42
	15.09 12.45-13.06/21	16.35 14.33-15.02/29	17.59	20.26	21.53	23.19
5	10.03 11.47-12.08/21 13.35-13.48/13	08.54 09.44-10.05/21 15.36-15.52/16	07.26	06.42	05.03	03.41
	15.11 12.44-13.06/22	16.38 14.33-15.01/28	18.02	20.29	21.56	23.21
6	10.02 11.48-12.09/21 13.35-13.50/15	08.52 09.44-10.06/22 15.36-15.54/18	07.23	06.38	05.00	03.39
	15.13 12.45-13.08/23	16.41 14.33-15.01/28	18.05	20.32	21.59	23.23
7	10.00 11.48-12.10/22 13.35-13.51/16	08.49 09.44-10.06/22 15.34-15.55/21	07.20	06.35	04.57	03.37
	15.15 12.45-13.08/23	16.44 14.34-15.00/26	18.08	20.35	22.02	23.25
8	09.59 11.48-12.10/22 13.34-13.52/18	08.46 09.44-10.07/23 15.34-15.56/22	07.16	06.32	04.54	03.35
	15.18 12.45-13.09/24	16.47 14.35-15.00/25	18.10	20.38	22.05	23.27
9	09.58 11.48-12.11/23 13.34-13.53/19	08.43 09.43-10.07/24 15.33-15.56/23	07.13	06.28	04.50	03.34
	15.20 12.45-13.10/25	16.50 14.35-14.59/24	18.13	20.41	22.08	23.29
10	09.56 11.48-12.12/24 13.34-13.54/20	08.40 09.44-10.07/23 15.33-15.57/24	07.10	06.25	04.47	03.33
	15.22 12.45-13.10/25	16.53 14.37-14.59/22	18.16	20.43	22.11	23.30
11	09.54 10.58-11.02/4 12.45-13.11/26	08.37 09.45-10.07/22 15.32-15.57/25	07.06	06.22	04.44	03.31
	15.25 11.48-12.12/24 13.34-13.55/21	16.56 14.38-14.57/19	18.19	20.46	22.14	23.32
12	09.53 10.55-11.04/9 12.46-13.11/25	08.34 09.45-10.06/21 15.32-15.58/26	07.03	06.18	04.41	03.30
	15.27 11.48-12.13/25 13.34-13.56/22	16.59 14.40-14.55/15	18.22	20.49	22.17	23.34
13	09.51 10.53-11.06/13 12.46-13.12/26	08.31 09.46-10.06/20 15.31-15.57/26	07.00	06.15	04.38	03.29
	15.30 11.48-12.14/26 13.34-13.57/23	17.02 14.44-14.53/9	18.25	20.52	22.20	23.35
14	09.49 10.53-11.08/15 12.46-13.13/27	08.27 09.46-10.05/19	06.56	06.12	04.35	03.28
	15.33 11.49-12.15/26 13.34-13.58/24	17.06 15.32-15.57/25	18.28	20.55	22.23	23.36
15	09.47 10.52-11.09/17 12.47-13.13/26	08.24 09.48-10.04/16	06.53	06.08	04.32	03.27
	15.35 11.49-12.15/26 13.34-13.58/24	17.09 15.33-15.58/25	18.30	20.58	22.26	23.37
16	09.45 10.51-11.09/18 12.46-13.13/27	08.21 09.49-10.01/12	06.50	06.05	04.30	03.27
	15.38 11.48-12.15/27 13.33-13.58/25	17.12 15.33-15.57/24	18.33	21.00	22.29	23.38
17	09.43 10.51-11.10/19 12.47-13.14/27	08.18 09.53-09.58/5	06.46	06.02	04.27	03.26
	15.41 11.49-12.15/26 13.34-13.59/25	17.15 15.34-15.56/22	18.36	21.03	22.32	23.39
18	09.41 10.51-11.12/21 12.47-13.14/27	08.15 15.34-15.55/21	06.43	05.58	04.24	03.26
	15.44 11.50-12.16/26 13.34-14.00/26	17.18	18.39	21.06	22.34	23.40
19	09.39 10.51-11.13/22 12.48-13.15/27	08.12 15.36-15.54/18	06.39	05.55	04.21	03.25
	15.46 11.50-12.17/27 13.35-14.01/26	17.21	18.42	21.09	22.37	23.40
20	09.37 10.50-11.13/23 12.48-13.14/26	08.09 15.37-15.52/15	06.36	05.52	04.18	03.25
	15.49 11.50-12.16/26 13.34-14.00/26	17.24	18.44	21.12	22.40	23.41
21	09.34 10.51-11.14/23 12.49-13.15/26 14.39-14.48/9	08.05 15.40-15.50/10	06.33	05.48	04.15	03.25
	15.52 11.51-12.17/26 13.35-14.01/26	17.27	18.47	21.15	22.43	23.41
22	09.32 10.51-11.14/23 12.50-13.15/25 14.37-14.51/14	08.02	06.29	05.45	04.13	03.25
	15.55 11.52-12.17/25 13.35-14.01/26	17.30	18.50	21.18	22.46	23.41
23	09.29 10.50-11.14/24 12.50-13.14/24 14.35-14.53/18	07.59	06.26	05.42	04.10	03.26
	15.58 11.51-12.16/25 13.35-14.01/26	17.33	18.53	21.21	22.49	23.41
24	09.27 10.51-11.15/24 12.51-13.14/23 14.35-14.55/20	07.56	06.23	05.38	04.07	03.26
	16.01 11.52-12.17/25 13.36-14.01/25	17.36	18.56	21.24	22.51	23.41
25	09.24 10.52-11.15/23 12.52-13.14/22 14.34-14.56/22	07.53	06.19	05.35	04.05	03.27
	16.04 11.54-12.17/23 13.37-14.02/25	17.39	18.58	21.27	22.54	23.41
26	09.22 10.51-11.15/24 12.53-13.13/20 14.33-14.57/24	07.49	06.16	05.32	04.02	03.27
	16.07 11.54-12.16/22 13.37-14.01/24	17.41	19.01	21.30	22.57	23.41
27	09.19 10.52-11.15/23 12.54-13.12/18 14.33-14.58/25	07.46	06.12	05.29	04.00	03.28
	16.10 11.55-12.15/20 13.38-14.01/23	17.44	19.04	21.32	22.59	23.40
28	09.17 10.53-11.16/23 12.56-13.12/16 14.32-14.58/26	07.43	06.09	05.25	03.58	03.29
	16.13 11.57-12.15/18 13.38-14.00/22	17.47	19.07	21.35	23.02	23.40
29	09.14 10.53-11.15/22 12.58-13.09/11 14.32-14.59/27		07.06	05.22	03.55	03.30
	16.16 11.58-12.13/15 13.40-14.00/20		20.10	21.38	23.05	23.39
30	09.11 10.54-11.15/21 13.42-13.59/17		07.02	05.19	03.53	03.31
	16.19 12.01-12.11/10 14.33-15.00/27		20.12	21.41	23.07	23.38
31	09.09 09.52-09.58/6 13.43-13.57/14		06.59		03.51	
	16.22 10.55-11.14/19 14.32-15.00/28		20.15		23.10	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	2615	1052	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 05 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.33	04.47	06.15	07.37	08.05 09.13-09.37/24 15.02-15.26/24	09.32 10.40-10.44/4 12.28-12.53/25
	23.37	22.27	20.47	19.05	16.24 14.06-14.28/22	15.08 11.30-11.55/25 13.16-13.37/21
2	03.34	04.50	06.18	07.39	08.08 09.14-09.37/23 15.02-15.25/23	09.35 11.31-11.55/24 13.17-13.37/20
	23.36	22.24	20.43	19.02	16.21 14.04-14.29/25	15.06 12.28-12.53/25
3	03.35	04.53	06.21	07.42	08.11 09.13-09.37/24 15.03-15.25/22	09.37 11.31-11.54/23 13.17-13.36/19
	23.35	22.21	20.40	18.58	16.18 14.04-14.30/26	15.04 12.28-12.53/25
4	03.37	04.56	06.24	07.45	08.14 09.14-09.37/23 15.04-15.24/20	09.40 11.32-11.55/23 13.19-13.36/17
	23.33	22.18	20.37	18.55	16.15 14.03-14.30/27	15.03 12.29-12.53/24
5	03.39	04.59	06.26	07.48	08.17 09.14-09.36/22 15.05-15.23/18	09.42 11.33-11.55/22 13.20-13.36/16
	23.32	22.15	20.33	18.52	16.12 14.03-14.31/28	15.01 12.30-12.54/24
6	03.41	05.01	06.29	07.50	08.20 09.15-09.36/21 15.06-15.21/15	09.44 11.33-11.54/21 13.21-13.35/14
	23.31	22.12	20.30	18.48	16.09 14.03-14.32/29	15.00 12.30-12.53/23
7	03.42	05.04	06.32	07.53	08.23 09.15-09.35/20 15.09-15.19/10	09.47 11.35-11.55/20 13.22-13.35/13
	23.29	22.08	20.26	18.45	16.07 14.02-14.31/29	14.59 12.32-12.54/22
8	03.44	05.07	06.34	07.56	08.26 09.16-09.34/18 14.03-14.32/29	09.49 11.35-11.54/19 13.23-13.34/11
	23.27	22.05	20.23	18.42	16.04 10.30-10.40/10	14.57 12.32-12.53/21
9	03.47	05.10	06.37	07.59	08.29 09.18-09.34/16 14.02-14.31/29	09.51 11.36-11.55/19 13.25-13.34/9
	23.25	22.02	20.20	18.38	16.01 10.28-10.42/14	14.56 12.33-12.54/21
10	03.49	05.13	06.40	08.02	08.32 09.20-09.32/12 13.16-13.27/11	09.53 11.37-11.55/18 13.27-13.33/6
	23.23	21.59	20.16	18.35	15.58 10.27-10.44/17 14.03-14.32/29	14.55 12.34-12.54/20
11	03.51	05.16	06.43	08.04	08.35 09.24-09.30/6 13.14-13.29/15	09.54 11.38-11.55/17
	23.21	21.56	20.13	18.32	15.55 10.26-10.45/19 14.04-14.32/28	14.54 12.35-12.54/19
12	03.53	05.19	06.45	08.07	08.38 10.26-10.47/21 12.34-12.36/2 14.03-14.31/28	09.56 11.39-11.55/16
	23.19	21.53	20.09	18.28	15.52 11.32-11.42/10 13.12-13.30/18	14.54 12.35-12.54/19
13	03.56	05.22	06.48	08.10	08.41 10.25-10.47/22 12.30-12.41/11 14.04-14.31/27	09.58 11.40-11.55/15
	23.17	21.49	20.06	18.25	15.50 11.30-11.45/15 13.12-13.32/20	14.53 12.36-12.54/18
14	03.58	05.25	06.51	08.13	08.44 10.25-10.48/23 12.28-12.44/16 14.05-14.31/26	09.59 11.41-11.55/14
	23.15	21.46	20.03	18.22	15.47 11.29-11.47/18 13.11-13.33/22	14.52 12.37-12.54/17
15	04.00	05.27	06.53	08.16	08.47 10.25-10.48/23 12.27-12.45/18 14.06-14.31/25	10.01 11.41-11.55/14
	23.13	21.43	19.59	18.18	15.44 11.28-11.48/20 13.11-13.34/23	14.52 12.38-12.54/16
16	04.03	05.30	06.56	08.18	08.50 10.24-10.48/24 12.25-12.46/21 14.06-14.30/24	10.02 11.42-11.54/12
	23.10	21.40	19.56	18.15	15.42 11.27-11.48/21 13.10-13.34/24	14.52 12.38-12.54/16
17	04.05	05.33	06.59	08.21	08.53 10.25-10.48/23 12.25-12.47/22 14.07-14.29/22	10.03 11.43-11.54/11
	23.08	21.36	19.52	18.12	15.39 11.27-11.50/23 13.10-13.35/25	14.51 12.39-12.54/15
18	04.08	05.36	07.02	08.24	08.56 10.25-10.49/24 12.25-12.48/23 14.09-14.28/19	10.04 11.44-11.55/11
	23.06	21.33	19.49	18.09	15.36 11.26-11.51/25 13.10-13.35/25	14.51 12.40-12.55/15
19	04.11	05.39	07.04	08.27	08.59 10.25-10.49/24 12.25-12.49/24 14.10-14.28/18	10.05 11.45-11.55/10
	23.03	21.30	19.46	18.05	15.34 11.26-11.51/25 13.10-13.36/26	14.51 12.41-12.55/14
20	04.13	05.42	07.07	08.30 16.14-16.17/3	09.02 10.26-10.49/23 12.25-12.50/25 14.12-14.26/14	10.06 11.45-11.56/11
	23.01	21.27	19.42	18.02	15.31 11.27-11.52/25 13.10-13.36/26	14.52 12.41-12.56/15
21	04.16	05.45	07.10	08.33 16.09-16.21/12	09.05 10.27-10.50/23 12.24-12.50/26 14.14-14.23/9	10.07 11.46-11.56/10
	22.58	21.23	19.39	17.59	15.29 11.27-11.53/26 13.10-13.36/26	14.52 12.42-12.56/14
22	04.19	05.47	07.12	08.36 16.07-16.24/17	09.08 10.26-10.49/23 12.24-12.50/26	10.07 11.46-11.56/10
	22.55	21.20	19.35	17.56	15.27 11.26-11.52/26 13.10-13.36/26	14.52 12.42-12.56/14
23	04.21	05.50	07.15	08.39 16.05-16.25/20	09.11 10.27-10.49/22 12.24-12.51/27	10.08 11.46-11.56/10
	22.53	21.17	19.32	17.53	15.24 11.26-11.53/27 13.11-13.37/26	14.53 12.42-12.56/14
24	04.24	05.53	07.18	08.41 16.04-16.25/21	09.14 10.28-10.49/21 12.25-12.51/26	10.08 11.47-11.57/10
	22.50	21.13	19.29	17.49	15.22 11.27-11.53/26 13.11-13.37/26	14.53 12.43-12.57/14
25	04.27	05.56	07.20	07.44 09.22-09.30/8	09.16 10.29-10.49/20 12.25-12.52/27	10.08 11.47-11.58/11
	22.47	21.10	19.25	16.46 15.03-15.26/23	15.20 11.27-11.54/27 13.12-13.37/25	14.54 12.43-12.58/15
26	04.30	05.59	07.23	07.47 09.19-09.32/13	09.19 10.30-10.48/18 12.25-12.52/27	10.09 11.47-11.59/12
	22.44	21.07	19.22	16.43 15.03-15.27/24	15.18 11.28-11.54/26 13.13-13.37/24	14.55 12.43-12.59/16
27	04.33	06.01	07.26	07.50 09.17-09.33/16	09.22 10.31-10.48/17 12.26-12.53/27	10.09 11.47-12.00/13
	22.41	21.03	19.19	16.40 15.02-15.27/25	15.16 11.28-11.54/26 13.13-13.38/25	14.56 12.44-12.59/15
28	04.36	06.04	07.29	07.53 09.15-09.34/19	09.25 10.33-10.48/15 12.26-12.52/26	10.08 11.48-12.01/13
	22.39	21.00	19.15	16.37 15.01-15.27/26	15.14 11.28-11.54/26 13.13-13.37/24	14.57 12.44-13.00/16
29	04.38	06.07	07.31	07.56 09.15-09.36/21 15.02-15.27/25	09.27 10.33-10.46/13 12.26-12.52/26	10.08 11.47-12.01/14
	22.36	20.57	19.12	16.34 14.12-14.23/11	15.12 11.29-11.54/25 13.14-13.37/23	14.59 12.44-13.01/17
30	04.41	06.10	07.34	07.59 09.14-09.36/22 15.01-15.27/26	09.30 10.36-10.46/10 12.27-12.53/26	10.08 11.48-12.03/15
	22.33	20.53	19.08	16.31 14.09-14.25/16	15.10 11.29-11.54/25 13.15-13.37/22	15.00 12.45-13.02/17
31	04.44	06.13		08.02 09.14-09.37/23 15.01-15.26/25		10.07 11.48-12.03/15
	22.30	20.50		16.27 14.08-14.27/19		15.02 12.45-13.03/18
Potential sun hours	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	415	2653	1192

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
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SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 06 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 148,5 m (TOT: 230,0 m) (151)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.55	22.23	23.36	23.15	21.46	20.02	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.32	03.28	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.36	14.51
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.52	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.55	21.23	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 07 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (150)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.45	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.29	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.52	16.12	15.02
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.07	14.59
8	09.59	08.45	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.42	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.57
10	09.56	08.39	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.36	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.03	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.36	14.52
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.08	06.36	05.52	04.18	03.26	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.26	04.16	05.45	07.10	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.10	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.23	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.03	03.28	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 08 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (158)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.16	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.37	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.27	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.00	05.28	06.53	08.15	08.47	10.00
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.11	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.08		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	601	591	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 09 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (157)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.24	15.08
2	10.06	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.12	15.01
6	10.02	08.51	07.23	06.38	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.57	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.56
10	09.56	08.40	07.10	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.37	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.30	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.00	05.28	06.53	08.16	08.47	10.01
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.05	21.33	19.49	18.09	15.36	14.51
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.09	06.36	05.52	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.31	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.38	09.11	10.08
	15.58	17.33	18.53	21.21	22.48	23.41	22.52	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.22	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.40	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.10	21.38	23.04	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	556	601	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 10 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (156)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.15	03.48	03.32	04.47	06.15	07.36	08.05 15.00-15.26/26	09.32
	15.03	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08 15.00-15.25/25	09.35
	15.05	16.28	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.01	16.21	15.06
3	10.05	09.00	07.33	06.48	05.09	03.44	03.35	04.53	06.21	07.42	08.11 15.01-15.24/23	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.20	20.40	18.58	16.18	15.04
4	10.04	08.57 15.38-15.46/8	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14 15.02-15.23/21	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.03	08.54 15.36-15.50/14	07.26	06.42	05.03	03.40	03.39	04.58	06.26	07.47	08.17 15.04-15.22/18	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51 15.33-15.51/18	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20 15.06-15.19/13	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48 15.32-15.53/21	07.19	06.35	04.56	03.37	03.42	05.04	06.32	07.53	08.23 15.09-15.16/7	09.46
	15.15	16.44	18.07	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.06	14.59
8	09.59	08.45 15.31-15.54/23	07.16	06.32	04.53	03.35	03.44	05.07	06.34	07.56	08.26	09.48
	15.17	16.47	18.10	20.37	22.05	23.27	23.27	22.05	20.23	18.41	16.03	14.57
9	09.57	08.42 15.31-15.56/25	07.13	06.28	04.50	03.34	03.46	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39 15.30-15.57/27	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36 15.29-15.57/28	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55	14.54
12	09.52	08.33 15.29-15.58/29	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30 15.29-15.58/29	06.59	06.15	04.38	03.29	03.55	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.24	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.49	14.53
14	09.49	08.27 15.29-15.58/29	06.56	06.11	04.35	03.28	03.58	05.24	06.51	08.12	08.44	09.59
	15.32	17.05	18.27	20.54	22.22	23.36	23.15	21.46	20.02	18.22	15.47	14.52
15	09.47	08.24 15.28-15.58/30	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21 15.29-15.58/29	06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.11	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.41	14.52
17	09.43	08.18 15.28-15.57/29	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.41	17.14	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.51
18	09.41	08.15 15.29-15.57/28	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24 16.08-16.21/13	08.56	10.04
	15.43	17.17	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.12 15.29-15.56/27	06.39	05.55	04.21	03.25	04.11	05.39	07.04	08.27 16.05-16.23/18	08.59	10.05
	15.46	17.20	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36	08.08 15.30-15.55/25	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30 16.03-16.24/21	09.02	10.06
	15.49	17.23	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.51
21	09.34	08.05 15.31-15.54/23	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32 16.02-16.25/23	09.05	10.06
	15.52	17.26	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02 15.33-15.53/20	06.29	05.45	04.13	03.25	04.19	05.47	07.12	08.35 16.00-16.26/26	09.08	10.07
	15.55	17.29	18.50	21.18	22.45	23.41	22.55	21.20	19.35	17.56	15.26	14.52
23	09.29	07.59 15.35-15.51/16	06.26	05.41	04.10	03.26	04.21	05.50	07.15	08.38 16.00-16.27/27	09.10	10.08
	15.58	17.32	18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.27	07.56 15.38-15.48/10	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41 15.59-16.27/28	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.50	21.13	19.28	17.49	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44 14.58-15.27/29	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.58	07.23	07.47 14.58-15.27/29	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50 14.58-15.28/30	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15	14.56
28	09.16	07.43	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53 14.58-15.27/29	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.13	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56 14.58-15.27/29	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.56	19.12	16.33	15.11	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59 14.59-15.27/28	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.59		03.51		04.44	06.12		08.02 14.59-15.26/27		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.01
Potential sun hours	185	243	364	446	556	601	591	501	391	308	208	155
Sum of minutes with flicker	0	488	0	0	0	0	0	0	0	357	133	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 11 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.06 12.17-12.36/19	09.05 12.23-12.50/27	07.39	06.55	05.15	03.48
	15.03 13.34-13.41/7	16.25 13.40-13.58/18	17.50	20.18	21.44	23.12
2	10.05 12.17-12.38/21	09.03 12.25-12.50/25 15.38-15.42/4	07.36	06.52	05.12	03.46
	15.05 13.34-13.45/11	16.28 13.42-13.57/15	17.53	20.20	21.47	23.14
3	10.04 12.18-12.39/21	09.00 12.27-12.49/22 15.36-15.46/10	07.33 17.14-17.21/7	06.48	05.09	03.44
	15.07 13.34-13.47/13	16.31 13.46-13.55/9	17.56	20.23	21.50	23.16
4	10.04 12.17-12.39/22	08.57 12.28-12.47/19	07.29 17.11-17.23/12	06.45	05.06	03.42
	15.09 13.33-13.47/14	16.35 15.34-15.49/15	17.59	20.26	21.53	23.18
5	10.02 12.17-12.41/24	08.54 12.31-12.45/14	07.26 17.10-17.27/17	06.42	05.03	03.40
	15.11 13.33-13.49/16	16.38 15.33-15.53/20	18.02	20.29	21.56	23.21
6	10.01 12.17-12.42/25	08.51 12.36-12.39/3	07.23 17.09-17.29/20	06.38	05.00	03.39
	15.13 13.32-13.50/18	16.41 15.32-15.53/21	18.04	20.32	21.59	23.23
7	10.00 12.17-12.42/25	08.48 15.31-15.55/24	07.19 17.08-17.31/23	06.35	04.56	03.37
	15.15 13.32-13.51/19	16.44	18.07	20.35	22.02	23.25
8	09.59 12.16-12.43/27	08.45 15.30-15.55/25	07.16 17.07-17.31/24	06.31	04.53	03.35
	15.17 13.32-13.52/20	16.47	18.10	20.37	22.05	23.26
9	09.57 12.16-12.44/28	08.42 15.30-15.56/26	07.13 17.07-17.31/24	06.28	04.50	03.34
	15.20 13.31-13.53/22	16.50	18.13	20.40	22.08	23.28
10	09.56 12.16-12.45/29	08.39 15.29-15.56/27	07.09 17.07-17.31/24	06.25	04.47	03.33
	15.22 13.31-13.54/23	16.53	18.16	20.43	22.11	23.30
11	09.54 12.16-12.45/29	08.36 15.30-15.56/26	07.06 17.06-17.30/24	06.21	04.44	03.31
	15.25 13.31-13.55/24	16.56	18.19	20.46	22.14	23.31
12	09.52 12.16-12.46/30	08.33 15.30-15.57/27	07.03 17.07-17.30/23	06.18	04.41	03.30
	15.27 13.31-13.55/24	16.59	18.22	20.49	22.16	23.33
13	09.51 12.16-12.47/31	08.30 15.30-15.56/26	06.59 17.07-17.29/22	06.15	04.38	03.29
	15.30 13.31-13.56/25	17.02	18.24	20.52	22.19	23.34
14	09.49 12.16-12.48/32	08.27 15.30-15.57/27	06.56 17.08-17.28/20	06.11	04.35	03.28
	15.32 13.31-13.57/26	17.05	18.27	20.54	22.22	23.36
15	09.47 12.17-12.49/32	08.24 15.30-15.56/26	06.53 17.08-17.26/18	06.08	04.32	03.27
	15.35 13.31-13.58/27	17.08	18.30	20.57	22.25	23.37
16	09.45 12.17-12.50/33	08.21 15.31-15.56/25	06.49 17.10-17.24/14	06.05	04.29	03.27
	15.38 13.32-13.59/27	17.11	18.33	21.00	22.28	23.38
17	09.43 12.17-12.51/34	08.18 15.31-15.54/23	06.46 17.12-17.21/9	06.01	04.27	03.26
	15.41 13.32-14.00/28	17.14	18.36	21.03	22.31	23.39
18	09.41 12.17-12.50/33	08.15 15.33-15.54/21	06.43	05.58	04.24	03.26
	15.43 13.31-14.00/29	17.17	18.39	21.06	22.34	23.39
19	09.38 12.17-12.51/34	08.11 15.34-15.52/18	06.39	05.55	04.21	03.25
	15.46 13.32-14.00/28	17.20	18.41	21.09	22.37	23.40
20	09.36 12.17-12.52/35	08.08 15.36-15.50/14	06.36	05.51	04.18	03.25
	15.49 13.32-14.01/29	17.23	18.44	21.12	22.40	23.40
21	09.34 12.17-12.51/34	08.05 15.39-15.46/7	06.32	05.48	04.15	03.25
	15.52 13.32-14.01/29	17.26	18.47	21.15	22.43	23.41
22	09.31 12.18-12.52/34	08.02	06.29	05.45	04.13	03.25
	15.55 13.32-14.01/29	17.29	18.50	21.17	22.45	23.41
23	09.29 12.18-12.53/35	07.59	06.26	05.41	04.10	03.26
	15.58 13.33-14.02/29	17.32	18.53	21.20	22.48	23.41
24	09.27 12.19-12.53/34	07.55	06.22	05.38	04.07	03.26
	16.01 13.34-14.02/28	17.35	18.55	21.23	22.51	23.41
25	09.24 12.19-12.53/34	07.52	06.19	05.35	04.05	03.27
	16.04 13.33-14.02/29	17.38	18.58	21.26	22.54	23.41
26	09.22 12.19-12.53/34	07.49	06.15	05.32	04.02	03.27
	16.07 13.34-14.02/28	17.41	19.01	21.29	22.56	23.40
27	09.19 12.19-12.52/33	07.46	06.12	05.28	04.00	03.28
	16.10 13.34-14.01/27	17.44	19.04	21.32	22.59	23.40
28	09.16 12.20-12.53/33	07.42	06.09	05.25	03.57	03.29
	16.13 13.35-14.01/26	17.47	19.06	21.35	23.02	23.39
29	09.14 12.21-12.53/32		07.05	05.22	03.55	03.30
	16.16 13.37-14.01/24		20.09	21.38	23.04	23.38
30	09.11 12.21-12.52/31		07.02	05.19	03.53	03.31
	16.19 13.37-14.00/23		20.12	21.41	23.07	23.38
31	09.08 12.23-12.52/29		06.59		03.51	
	16.22 13.39-14.00/21		20.15		23.09	
Potential sun hours	185	243	364	446	556	600
Sum of minutes with flicker	1650	564	281	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 11 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (155)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November	December
1	03.32	04.47	06.15	07.36 17.45-18.08/23	08.05 15.00-15.26/26	09.32 11.58-12.28/30
	23.37	22.26	20.46	19.05	16.24	15.08 13.13-13.37/24
2	03.34	04.50	06.18	07.39 17.45-18.08/23	08.08 15.00-15.25/25	09.35 11.59-12.28/29
	23.36	22.23	20.43	19.01	16.21	15.06 13.14-13.37/23
3	03.35	04.53	06.21	07.42 17.44-18.09/25	08.11 15.00-15.24/24	09.37 12.00-12.28/28
	23.34	22.20	20.40	18.58	16.18	15.04 13.16-13.37/21
4	03.37	04.56	06.23	07.45 17.44-18.09/25	08.14 15.01-15.24/23	09.39 12.01-12.27/26
	23.33	22.17	20.36	18.55	16.15	15.03 13.16-13.36/20
5	03.39	04.58	06.26	07.47 17.44-18.08/24	08.17 12.05-12.11/6	09.42 12.02-12.28/26
	23.32	22.14	20.33	18.51	16.12 15.02-15.24/22	15.01 13.17-13.36/19
6	03.41	05.01	06.29	07.50 17.44-18.08/24	08.20 12.00-12.15/15	09.44 12.03-12.28/25
	23.30	22.11	20.29	18.48	16.09 15.03-15.22/19	15.00 13.19-13.36/17
7	03.42	05.04	06.32	07.53 17.45-18.07/22	08.23 11.58-12.18/20	09.46 12.04-12.27/23
	23.28	22.08	20.26	18.45	16.06 15.05-15.19/14	14.59 13.19-13.36/17
8	03.44	05.07	06.34	07.56 17.44-18.03/19	08.26 11.56-12.19/23 15.06-15.15/9	09.48 12.05-12.28/23
	23.27	22.05	20.23	18.41	16.03 13.15-13.25/10	14.57 13.21-13.36/15
9	03.46	05.10	06.37	07.58 17.45-18.00/15	08.29 11.55-12.21/26 15.09-15.12/3	09.50 12.06-12.27/21
	23.25	22.02	20.19	18.38	16.01 13.13-13.28/15	14.56 13.22-13.35/13
10	03.49	05.13	06.40	08.01 17.47-17.56/9	08.32 11.55-12.22/27	09.52 12.06-12.27/21
	23.23	21.59	20.16	18.35	15.58 13.11-13.30/19	14.55 13.23-13.34/11
11	03.51	05.16	06.42	08.04 17.49-17.53/4	08.35 11.53-12.23/30	09.54 12.07-12.27/20
	23.21	21.55	20.13	18.31	15.55 13.09-13.31/22	14.54 13.24-13.32/8
12	03.53	05.19	06.45	08.07	08.38 11.53-12.24/31	09.56 12.08-12.27/19
	23.19	21.52	20.09	18.28	15.52 13.09-13.32/23	14.54 13.26-13.30/4
13	03.55	05.22	06.48	08.10	08.41 11.53-12.25/32	09.57 12.09-12.27/18
	23.17	21.49	20.06	18.25	15.49 13.08-13.33/25	14.53
14	03.58	05.24	06.50	08.12	08.44 11.52-12.25/33	09.59 12.11-12.27/16
	23.15	21.46	20.02	18.21	15.47 13.07-13.33/26	14.52
15	04.00	05.27	06.53	08.15	08.47 11.52-12.25/33	10.00 12.11-12.26/15
	23.12	21.43	19.59	18.18	15.44 13.07-13.34/27	14.52
16	04.03	05.30	06.56	08.18	08.50 11.52-12.26/34	10.02 12.13-12.27/14
	23.10	21.39	19.56	18.15	15.41 13.07-13.35/28	14.52
17	04.05	05.33	06.59	08.21	08.53 11.53-12.27/34	10.03 12.14-12.27/13
	23.08	21.36	19.52	18.12	15.39 13.07-13.36/29	14.51
18	04.08	05.36	07.01	08.24	08.56 11.53-12.27/34	10.04 12.14-12.27/13
	23.05	21.33	19.49	18.08	15.36 13.07-13.35/28	14.51
19	04.11	05.39	07.04	08.27	08.59 11.52-12.27/35	10.05 12.15-12.27/12
	23.03	21.30	19.45	18.05	15.34 13.07-13.36/29	14.51
20	04.13	05.42	07.07	08.30	09.02 11.53-12.27/34	10.06 12.16-12.27/11
	23.00	21.26	19.42	18.02	15.31 13.07-13.36/29	14.51
21	04.16	05.44	07.09	08.32 16.09-16.19/10	09.05 11.53-12.27/34	10.06 12.16-12.28/12
	22.57	21.23	19.39	17.59	15.29 13.08-13.37/29	14.52
22	04.19	05.47	07.12	08.35 16.05-16.21/16	09.07 11.54-12.28/34	10.07 12.16-12.28/12
	22.55	21.20	19.35	17.56	15.26 13.08-13.37/29	14.52
23	04.21	05.50	07.15	08.38 16.03-16.22/19	09.10 11.54-12.28/34	10.07 12.17-12.28/11
	22.52	21.16	19.32	17.52	15.24 13.09-13.37/28	14.53
24	04.24	05.53	07.17	08.41 16.03-16.24/21	09.13 11.54-12.27/33	10.08 12.17-12.29/12
	22.49	21.13	19.28	17.49	15.22 13.08-13.37/29	14.53
25	04.27	05.56	07.20	07.44 15.01-15.25/24	09.16 11.54-12.28/34	10.08 12.18-12.30/12
	22.47	21.10	19.25	16.46	15.20 13.09-13.37/28	14.54
26	04.30	05.58	07.23 17.57-18.02/5	07.47 15.00-15.25/25	09.19 11.55-12.28/33	10.08 12.17-12.31/14
	22.44	21.06	19.22	16.43	15.18 13.10-13.37/27	14.55
27	04.33	06.01	07.26 17.52-18.05/13	07.50 15.00-15.26/26	09.22 11.56-12.28/32	10.08 12.17-12.31/14
	22.41	21.03	19.18	16.40	15.15 13.10-13.37/27	14.56
28	04.35	06.04	07.28 17.50-18.07/17	07.53 14.59-15.26/27	09.24 11.57-12.28/31	10.08 12.18-12.33/15
	22.38	21.00	19.15	16.37	15.13 13.11-13.37/26	14.57
29	04.38	06.07	07.31 17.48-18.08/20	07.56 14.59-15.26/27	09.27 11.57-12.28/31	10.08 12.17-12.33/16
	22.35	20.56	19.11	16.33	15.11 13.12-13.38/26	14.59
30	04.41	06.10	07.34 17.47-18.09/22	07.59 14.59-15.26/27	09.29 11.57-12.28/31	10.07 12.18-12.35/17
	22.32	20.53	19.08	16.30	15.10 13.12-13.37/25	15.00
31	04.44	06.12		08.02 14.59-15.26/27		10.07 12.18-12.35/17
	22.29	20.50		16.27		15.01 13.36-13.38/2
Potential sun hours	590	501	391	308	208	155
Sum of minutes with flicker	0	0	77	462	1523	749

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 12 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (154)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.15	03.48	03.33	04.47	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.11	23.36	22.26	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.34
	15.05	16.28	17.53	20.20	21.47	23.14	23.35	22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.33	06.48	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.20	20.40	18.58	16.18	15.04
4	10.03	08.57	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.58	06.26	07.47	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.20	23.31	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.04	20.32	21.59	23.22	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.35	22.02	23.24	23.28	22.08	20.26	18.45	16.06	14.59
8	09.59	08.45	07.16	06.31	04.53	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.05	23.26	23.27	22.05	20.23	18.41	16.03	14.57
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.13	23.31	23.21	21.55	20.12	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.16	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.50	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.24	20.52	22.19	23.34	23.17	21.49	20.06	18.25	15.49	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.24	06.50	08.12	08.44	09.59
	15.32	17.05	18.27	20.54	22.22	23.35	23.14	21.46	20.02	18.21	15.47	14.52
15	09.47	08.24	06.53	06.08	04.32	03.27	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.29	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.41	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.41	17.14	18.36	21.03	22.31	23.38	23.07	21.36	19.52	18.12	15.39	14.51
18	09.40	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.43	17.17	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.11	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.20	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.29	09.02	10.05
	15.49	17.23	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32	09.05	10.06
	15.52	17.26	18.47	21.15	22.42	23.41	22.57	21.23	19.39	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.41	04.10	03.26	04.21	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.52	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.26	07.55	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.49	21.13	19.28	17.49	15.22	14.53
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.21	07.49	06.15	05.32	04.02	03.27	04.30	05.58	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.21	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.15	14.56
28	09.16	07.42	06.09	05.25	03.57	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.06	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.13	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.11	16.33	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.07	23.37	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.59		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.29	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 13 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (153)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.05	07.39	06.55	05.16	03.49	03.33	04.47	06.15	07.36	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.12	23.37	22.26	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.28	17.53	20.21	21.47	23.14	23.35	22.23	20.43	19.01	16.21	15.06
3	10.04	09.00	07.33	06.48	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.20	20.40	18.58	16.18	15.04
4	10.04	08.57	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.02	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.47	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.29	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.06	14.59
8	09.59	08.45	07.16	06.32	04.53	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.05	23.26	23.27	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.58	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.31	23.21	21.56	20.13	18.31	15.55	14.55
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.19	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.12	08.44	09.59
	15.33	17.05	18.27	20.54	22.22	23.36	23.15	21.46	20.02	18.22	15.47	14.52
15	09.47	08.24	06.53	06.08	04.32	03.28	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.01
	15.38	17.11	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.41	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.08	15.36	14.51
19	09.38	08.11	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.32	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.57	21.23	19.39	17.59	15.29	14.52
22	09.31	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.07	10.07
	15.55	17.29	18.50	21.17	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.41	04.10	03.26	04.21	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.27	07.55	06.22	05.38	04.07	03.26	04.24	05.53	07.17	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.49	21.13	19.28	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.06	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.42	06.09	05.25	03.58	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.38	22.35	20.56	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.29	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.59		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.29	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** K 14 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (152)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.06	09.06	07.39	06.55	05.16	03.48	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.25	17.50	20.18	21.44	23.12	23.37	22.27	20.46	19.05	16.24	15.08
2	10.05	09.03	07.36	06.52	05.12	03.46	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.01	16.21	15.06
3	10.05	09.00	07.33	06.48	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.23	21.50	23.16	23.34	22.21	20.40	18.58	16.18	15.04
4	10.04	08.57	07.29	06.45	05.06	03.42	03.37	04.56	06.23	07.45	08.14	09.39
	15.09	16.35	17.59	20.26	21.53	23.18	23.33	22.17	20.36	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.47	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.14	20.33	18.51	16.12	15.01
6	10.01	08.51	07.23	06.38	05.00	03.39	03.41	05.01	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.11	20.30	18.48	16.09	15.00
7	10.00	08.48	07.19	06.35	04.57	03.37	03.43	05.04	06.32	07.53	08.23	09.46
	15.15	16.44	18.07	20.35	22.02	23.25	23.28	22.08	20.26	18.45	16.06	14.59
8	09.59	08.45	07.16	06.32	04.53	03.36	03.45	05.07	06.34	07.56	08.26	09.48
	15.18	16.47	18.10	20.37	22.05	23.27	23.27	22.05	20.23	18.41	16.04	14.58
9	09.57	08.42	07.13	06.28	04.50	03.34	03.47	05.10	06.37	07.59	08.29	09.50
	15.20	16.50	18.13	20.40	22.08	23.28	23.25	22.02	20.19	18.38	16.01	14.56
10	09.56	08.39	07.09	06.25	04.47	03.33	03.49	05.13	06.40	08.01	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.55
11	09.54	08.36	07.06	06.21	04.44	03.31	03.51	05.16	06.42	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.31	15.55	14.54
12	09.52	08.33	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	16.59	18.22	20.49	22.17	23.33	23.19	21.52	20.09	18.28	15.52	14.54
13	09.51	08.30	06.59	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.57
	15.30	17.02	18.25	20.52	22.20	23.34	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.11	04.35	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.05	18.27	20.55	22.22	23.36	23.15	21.46	20.02	18.22	15.47	14.52
15	09.47	08.24	06.53	06.08	04.32	03.28	04.00	05.27	06.53	08.15	08.47	10.00
	15.35	17.08	18.30	20.57	22.25	23.37	23.12	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.49	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.00	22.28	23.38	23.10	21.39	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.01	04.27	03.26	04.05	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.31	23.39	23.08	21.36	19.52	18.12	15.39	14.51
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.01	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.39	23.05	21.33	19.49	18.09	15.36	14.51
19	09.38	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.46	17.21	18.41	21.09	22.37	23.40	23.03	21.30	19.45	18.05	15.34	14.51
20	09.36	08.08	06.36	05.51	04.18	03.25	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.40	23.00	21.26	19.42	18.02	15.31	14.52
21	09.34	08.05	06.32	05.48	04.15	03.25	04.16	05.44	07.09	08.33	09.05	10.06
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.47	07.12	08.35	09.08	10.07
	15.55	17.30	18.50	21.18	22.45	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.21	05.50	07.15	08.38	09.10	10.07
	15.58	17.32	18.53	21.20	22.48	23.41	22.52	21.16	19.32	17.52	15.24	14.53
24	09.27	07.56	06.22	05.38	04.07	03.26	04.24	05.53	07.18	08.41	09.13	10.08
	16.01	17.35	18.55	21.23	22.51	23.41	22.50	21.13	19.28	17.49	15.22	14.54
25	09.24	07.52	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.38	18.58	21.26	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.02	03.27	04.30	05.59	07.23	07.47	09.19	10.08
	16.07	17.41	19.01	21.29	22.56	23.40	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.28	04.00	03.28	04.33	06.01	07.26	07.50	09.22	10.08
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.18	16.40	15.16	14.56
28	09.16	07.43	06.09	05.25	03.58	03.29	04.35	06.04	07.28	07.53	09.24	10.08
	16.13	17.47	19.07	21.35	23.02	23.39	22.38	21.00	19.15	16.37	15.14	14.57
29	09.14		07.05	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.09	21.38	23.04	23.39	22.35	20.56	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.07
	16.19		20.12	21.41	23.07	23.38	22.32	20.53	19.08	16.30	15.10	15.00
31	09.08		06.59		03.51		04.44	06.12		08.02		10.07
	16.22		20.15		23.09		22.30	20.50		16.27		15.02
Potential sun hours	185	243	364	446	556	600	590	501	391	308	208	155
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** WTG 01 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June
1	10.07 11.58-12.09/11	09.06 12.07-12.21/14 13.59-14.02/3	07.40	06.55	05.16	03.49
	15.04 12.53-12.59/6	16.26 12.57-13.16/19	17.50	20.18	21.44	23.12
2	10.06 11.58-12.10/12	09.03 12.10-12.18/8	07.36	06.52	05.13	03.46
	15.05 12.52-13.01/9	16.29 12.59-13.15/16	17.53	20.21	21.47	23.14
3	10.05 11.58-12.12/14	09.00 13.01-13.13/12	07.33	06.49	05.09	03.44
	15.07 12.51-13.02/11	16.32	17.56	20.24	21.50	23.17
4	10.04 11.57-12.13/16	08.57	07.30	06.45	05.06	03.43
	15.09 12.51-13.04/13	16.35	17.59	20.26	21.53	23.19
5	10.03 11.56-12.13/17	08.55	07.26	06.42	05.03	03.41
	15.11 12.50-13.05/15	16.38	18.02	20.29	21.56	23.21
6	10.02 11.57-12.15/18 13.50-13.55/5	08.52	07.23	06.39	05.00	03.39
	15.13 12.51-13.07/16	16.41	18.05	20.32	21.59	23.23
7	10.01 11.56-12.16/20 13.48-13.57/9	08.49	07.20	06.35	04.57	03.37
	15.15 12.50-13.08/18	16.44	18.08	20.35	22.02	23.25
8	09.59 11.56-12.17/21 13.47-13.59/12	08.46	07.16	06.32	04.54	03.36
	15.18 12.50-13.09/19	16.47	18.11	20.38	22.05	23.27
9	09.58 11.56-12.17/21 13.47-14.00/13	08.43	07.13	06.28	04.51	03.34
	15.20 12.49-13.10/21	16.50	18.13	20.41	22.08	23.29
10	09.56 11.56-12.18/22 13.46-14.01/15	08.40	07.10	06.25	04.48	03.33
	15.22 12.49-13.11/22	16.53	18.16	20.43	22.11	23.31
11	09.55 11.56-12.19/23 13.46-14.03/17	08.37	07.06	06.22	04.44	03.31
	15.25 12.49-13.12/23	16.56	18.19	20.46	22.14	23.32
12	09.53 11.56-12.20/24 13.46-14.04/18	08.34	07.03	06.18	04.41	03.30
	15.27 12.49-13.13/24	17.00	18.22	20.49	22.17	23.34
13	09.51 11.56-12.21/25 13.46-14.05/19	08.31	07.00	06.15	04.38	03.29
	15.30 12.49-13.14/25	17.03	18.25	20.52	22.20	23.35
14	09.49 11.56-12.22/26 13.46-14.06/20	08.28	06.56	06.12	04.36	03.28
	15.33 12.49-13.15/26	17.06	18.28	20.55	22.23	23.36
15	09.47 11.56-12.23/27 13.46-14.07/21	08.24	06.53	06.08	04.33	03.28
	15.35 12.49-13.16/27	17.09	18.30	20.58	22.26	23.37
16	09.45 11.56-12.22/26 13.45-14.07/22	08.21	06.50	06.05	04.30	03.27
	15.38 12.49-13.16/27	17.12	18.33	21.01	22.29	23.38
17	09.43 11.56-12.23/27 13.45-14.08/23	08.18	06.46	06.02	04.27	03.26
	15.41 12.49-13.17/28	17.15	18.36	21.03	22.32	23.39
18	09.41 11.56-12.24/28 13.46-14.08/22	08.15	06.43	05.58	04.24	03.26
	15.44 12.49-13.17/28	17.18	18.39	21.06	22.35	23.40
19	09.39 11.57-12.25/28 13.46-14.09/23	08.12	06.40	05.55	04.21	03.26
	15.47 12.50-13.18/28	17.21	18.42	21.09	22.37	23.40
20	09.37 11.56-12.24/28 13.46-14.09/23	08.09	06.36	05.52	04.18	03.25
	15.49 12.49-13.18/29	17.24	18.45	21.12	22.40	23.41
21	09.34 11.57-12.25/28 13.46-14.10/24	08.06	06.33	05.48	04.16	03.25
	15.52 12.50-13.19/29	17.27	18.47	21.15	22.43	23.41
22	09.32 11.58-12.26/28 13.47-14.10/23	08.02	06.29	05.45	04.13	03.26
	15.55 12.50-13.19/29	17.30	18.50	21.18	22.46	23.41
23	09.30 11.57-12.25/28 13.46-14.10/24	07.59	06.26	05.42	04.10	03.26
	15.58 12.50-13.19/29	17.33	18.53	21.21	22.49	23.42
24	09.27 11.58-12.26/28 13.47-14.10/23	07.56	06.23	05.38	04.08	03.26
	16.01 12.51-13.19/28	17.36	18.56	21.24	22.51	23.41
25	09.25 11.59-12.26/27 13.48-14.10/22	07.53	06.19	05.35	04.05	03.27
	16.04 12.51-13.20/29	17.39	18.58	21.27	22.54	23.41
26	09.22 11.59-12.25/26 13.48-14.10/22	07.49	06.16	05.32	04.03	03.27
	16.07 12.51-13.19/28	17.42	19.01	21.30	22.57	23.41
27	09.19 12.00-12.25/25 13.49-14.10/21	07.46	06.12	05.29	04.00	03.28
	16.10 12.52-13.19/27	17.45	19.04	21.33	23.00	23.40
28	09.17 12.01-12.25/24 13.51-14.10/19	07.43	06.09	05.25	03.58	03.29
	16.13 12.53-13.20/27	17.47	19.07	21.35	23.02	23.40
29	09.14 12.02-12.24/22 13.51-14.08/17		07.06	05.22	03.55	03.30
	16.16 12.53-13.19/26		20.10	21.38	23.05	23.39
30	09.11 12.03-12.24/21 13.53-14.08/15		07.02	05.19	03.53	03.31
	16.19 12.55-13.18/23		20.12	21.41	23.07	23.38
31	09.09 12.04-12.22/18 13.55-14.05/10		06.59		03.51	
	16.23 12.55-13.17/22		20.15		23.10	
Potential sun hours	185	243	364	446	557	601
Sum of minutes with flicker	1903	72	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Benjamin Stjernberg / b.stjernberg@prokon.net
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** WTG 01 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	July	August	September	October	November		December	
1	03.33	04.47	06.15	07.37	08.05		09.33	11.38-12.02/24 13.28-13.45/17
	23.37	22.27	20.47	19.05	16.25		15.08	12.31-12.54/23
2	03.34	04.50	06.18	07.40	08.08		09.35	11.39-12.02/23 13.29-13.45/16
	23.36	22.24	20.43	19.02	16.22		15.06	12.32-12.54/22
3	03.36	04.53	06.21	07.42	08.11		09.37	11.39-12.01/22 13.30-13.44/14
	23.35	22.21	20.40	18.58	16.18		15.05	12.33-12.53/20
4	03.37	04.56	06.24	07.45	08.14		09.40	11.40-12.01/21 13.31-13.43/12
	23.34	22.18	20.37	18.55	16.15		15.03	12.34-12.54/20
5	03.39	04.59	06.26	07.48	08.17		09.42	11.42-12.01/19 13.33-13.43/10
	23.32	22.15	20.33	18.52	16.13		15.02	12.35-12.54/19
6	03.41	05.02	06.29	07.51	08.20		09.44	11.42-12.00/18 13.35-13.41/6
	23.31	22.12	20.30	18.48	16.10		15.00	12.36-12.53/17
7	03.43	05.05	06.32	07.53	08.23		09.47	11.44-12.01/17
	23.29	22.09	20.26	18.45	16.07		14.59	12.38-12.53/15
8	03.45	05.07	06.35	07.56	08.26	12.32-12.43/11	09.49	11.44-12.00/16
	23.27	22.05	20.23	18.42	16.04		14.58	12.38-12.52/14
9	03.47	05.10	06.37	07.59	08.29	11.40-11.49/9	09.51	11.46-12.00/14
	23.25	22.02	20.20	18.38	16.01	12.30-12.46/16	14.56	12.40-12.52/12
10	03.49	05.13	06.40	08.02	08.32	11.37-11.52/15 13.29-13.34/5	09.53	11.47-12.00/13
	23.23	21.59	20.16	18.35	15.58	12.28-12.47/19	14.55	12.42-12.51/9
11	03.51	05.16	06.43	08.04	08.35	11.36-11.54/18 13.26-13.37/11	09.54	11.48-11.59/11
	23.22	21.56	20.13	18.32	15.55	12.27-12.49/22	14.55	12.43-12.50/7
12	03.53	05.19	06.45	08.07	08.38	11.35-11.55/20 13.25-13.40/15	09.56	11.49-11.59/10
	23.19	21.53	20.10	18.28	15.52	12.26-12.50/24	14.54	
13	03.56	05.22	06.48	08.10	08.41	11.33-11.56/23 13.23-13.40/17	09.58	11.51-11.58/7
	23.17	21.50	20.06	18.25	15.50	12.25-12.50/25	14.53	
14	03.58	05.25	06.51	08.13	08.44	11.33-11.57/24 13.22-13.42/20	09.59	11.54-11.57/3
	23.15	21.46	20.03	18.22	15.47	12.25-12.51/26	14.53	
15	04.00	05.28	06.54	08.16	08.47	11.33-11.58/25 13.22-13.43/21	10.01	
	23.13	21.43	19.59	18.19	15.44	12.25-12.52/27	14.52	
16	04.03	05.30	06.56	08.19	08.50	11.33-11.59/26 13.21-13.43/22	10.02	
	23.11	21.40	19.56	18.15	15.42	12.24-12.52/28	14.52	
17	04.06	05.33	06.59	08.21	08.53	11.32-11.59/27 13.21-13.43/22	10.03	
	23.08	21.37	19.53	18.12	15.39	12.24-12.53/29	14.52	
18	04.08	05.36	07.02	08.24	08.56	11.32-11.59/27 13.21-13.44/23	10.04	
	23.06	21.33	19.49	18.09	15.37	12.24-12.53/29	14.51	
19	04.11	05.39	07.04	08.27	08.59	11.32-12.00/28 13.21-13.45/24	10.05	
	23.03	21.30	19.46	18.05	15.34	12.25-12.54/29	14.52	
20	04.13	05.42	07.07	08.30	09.02	11.33-12.01/28 13.22-13.45/23	10.06	
	23.01	21.27	19.42	18.02	15.32	12.25-12.54/29	14.52	
21	04.16	05.45	07.10	08.33	09.05	11.33-12.01/28 13.22-13.46/24	10.07	
	22.58	21.23	19.39	17.59	15.29	12.26-12.55/29	14.52	
22	04.19	05.48	07.12	08.36	09.08	11.32-12.00/28 13.22-13.45/23	10.07	
	22.55	21.20	19.36	17.56	15.27	12.25-12.54/29	14.52	
23	04.22	05.50	07.15	08.39	09.11	11.33-12.01/28 13.22-13.45/23	10.08	
	22.53	21.17	19.32	17.53	15.24	12.26-12.54/28	14.53	
24	04.24	05.53	07.18	08.42	09.14	11.33-12.01/28 13.23-13.46/23	10.08	
	22.50	21.14	19.29	17.49	15.22	12.26-12.55/29	14.54	
25	04.27	05.56	07.21	07.44	09.16	11.34-12.01/27 13.23-13.46/23	10.09	
	22.47	21.10	19.25	16.46	15.20	12.27-12.55/28	14.54	
26	04.30	05.59	07.23	07.47	09.19	11.35-12.02/27 13.24-13.46/22	10.09	
	22.44	21.07	19.22	16.43	15.18	12.28-12.55/27	14.55	
27	04.33	06.02	07.26	07.50	09.22	11.35-12.02/27 13.25-13.46/21	10.09	
	22.42	21.04	19.19	16.40	15.16	12.28-12.55/27	14.56	
28	04.36	06.04	07.29	07.53	09.25	11.36-12.02/26 13.26-13.46/20	10.09	
	22.39	21.00	19.15	16.37	15.14	12.28-12.54/26	14.57	
29	04.38	06.07	07.31	07.56	09.27	11.36-12.01/25 13.26-13.45/19	10.08	12.01-12.02/1
	22.36	20.57	19.12	16.34	15.12	12.29-12.54/25	14.59	
30	04.41	06.10	07.34	07.59	09.30	11.37-12.01/24 13.27-13.45/18	10.08	12.00-12.06/6
	22.33	20.53	19.08	16.31	15.10	12.30-12.54/24	15.00	
31	04.44	06.13		08.02			10.07	11.59-12.07/8
	22.30	20.50		16.28			15.02	
Potential sun hours	591	501	391	308	208		154	
Sum of minutes with flicker	0	0	0	0	1543		486	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **WTG:** WTG 02 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (140)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,97	2,54	4,68	6,30	8,61	9,20	8,65	6,68	4,67	2,58	1,03	0,55

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
655	459	397	401	441	806	1 020	1 265	1 030	811	627	615	8 527

	January	February	March	April	May	June	July	August	September	October	November	December
1	10.07	09.06	07.40	06.55	05.16	03.49	03.33	04.47	06.15	07.37	08.05	09.32
	15.04	16.26	17.50	20.18	21.44	23.12	23.37	22.27	20.47	19.05	16.25	15.08
2	10.06	09.03	07.36	06.52	05.12	03.47	03.34	04.50	06.18	07.39	08.08	09.35
	15.05	16.29	17.53	20.21	21.47	23.14	23.36	22.24	20.43	19.02	16.21	15.06
3	10.05	09.00	07.33	06.49	05.09	03.44	03.36	04.53	06.21	07.42	08.11	09.37
	15.07	16.32	17.56	20.24	21.50	23.17	23.35	22.21	20.40	18.58	16.18	15.05
4	10.04	08.57	07.30	06.45	05.06	03.43	03.37	04.56	06.24	07.45	08.14	09.40
	15.09	16.35	17.59	20.26	21.53	23.19	23.33	22.18	20.37	18.55	16.15	15.03
5	10.03	08.54	07.26	06.42	05.03	03.41	03.39	04.59	06.26	07.48	08.17	09.42
	15.11	16.38	18.02	20.29	21.56	23.21	23.32	22.15	20.33	18.52	16.13	15.02
6	10.02	08.52	07.23	06.39	05.00	03.39	03.41	05.02	06.29	07.50	08.20	09.44
	15.13	16.41	18.05	20.32	21.59	23.23	23.30	22.12	20.30	18.48	16.10	15.00
7	10.00	08.49	07.20	06.35	04.57	03.37	03.43	05.05	06.32	07.53	08.23	09.46
	15.15	16.44	18.08	20.35	22.02	23.25	23.29	22.08	20.26	18.45	16.07	14.59
8	09.59	08.46	07.16	06.32	04.54	03.36	03.45	05.07	06.35	07.56	08.26	09.49
	15.18	16.47	18.11	20.38	22.05	23.27	23.27	22.05	20.23	18.42	16.04	14.58
9	09.58	08.43	07.13	06.28	04.51	03.34	03.47	05.10	06.37	07.59	08.29	09.51
	15.20	16.50	18.13	20.41	22.08	23.29	23.25	22.02	20.20	18.38	16.01	14.57
10	09.56	08.40	07.10	06.25	04.48	03.33	03.49	05.13	06.40	08.02	08.32	09.52
	15.22	16.53	18.16	20.43	22.11	23.30	23.23	21.59	20.16	18.35	15.58	14.56
11	09.54	08.37	07.06	06.22	04.44	03.32	03.51	05.16	06.43	08.04	08.35	09.54
	15.25	16.56	18.19	20.46	22.14	23.32	23.21	21.56	20.13	18.32	15.55	14.55
12	09.53	08.34	07.03	06.18	04.41	03.30	03.53	05.19	06.45	08.07	08.38	09.56
	15.27	17.00	18.22	20.49	22.17	23.33	23.19	21.53	20.09	18.28	15.52	14.54
13	09.51	08.31	07.00	06.15	04.38	03.29	03.56	05.22	06.48	08.10	08.41	09.58
	15.30	17.03	18.25	20.52	22.20	23.35	23.17	21.49	20.06	18.25	15.50	14.53
14	09.49	08.27	06.56	06.12	04.36	03.28	03.58	05.25	06.51	08.13	08.44	09.59
	15.33	17.06	18.28	20.55	22.23	23.36	23.15	21.46	20.03	18.22	15.47	14.53
15	09.47	08.24	06.53	06.08	04.33	03.28	04.01	05.28	06.53	08.16	08.47	10.01
	15.35	17.09	18.30	20.58	22.26	23.37	23.13	21.43	19.59	18.18	15.44	14.52
16	09.45	08.21	06.50	06.05	04.30	03.27	04.03	05.30	06.56	08.18	08.50	10.02
	15.38	17.12	18.33	21.01	22.29	23.38	23.10	21.40	19.56	18.15	15.42	14.52
17	09.43	08.18	06.46	06.02	04.27	03.26	04.06	05.33	06.59	08.21	08.53	10.03
	15.41	17.15	18.36	21.03	22.32	23.39	23.08	21.37	19.52	18.12	15.39	14.52
18	09.41	08.15	06.43	05.58	04.24	03.26	04.08	05.36	07.02	08.24	08.56	10.04
	15.44	17.18	18.39	21.06	22.34	23.40	23.06	21.33	19.49	18.09	15.37	14.52
19	09.39	08.12	06.39	05.55	04.21	03.26	04.11	05.39	07.04	08.27	08.59	10.05
	15.47	17.21	18.42	21.09	22.37	23.40	23.03	21.30	19.46	18.05	15.34	14.52
20	09.36	08.09	06.36	05.52	04.18	03.26	04.13	05.42	07.07	08.30	09.02	10.06
	15.49	17.24	18.44	21.12	22.40	23.41	23.00	21.27	19.42	18.02	15.32	14.52
21	09.34	08.05	06.33	05.48	04.16	03.25	04.16	05.45	07.10	08.33	09.05	10.07
	15.52	17.27	18.47	21.15	22.43	23.41	22.58	21.23	19.39	17.59	15.29	14.52
22	09.32	08.02	06.29	05.45	04.13	03.26	04.19	05.48	07.12	08.36	09.08	10.07
	15.55	17.30	18.50	21.18	22.46	23.41	22.55	21.20	19.35	17.56	15.27	14.52
23	09.29	07.59	06.26	05.42	04.10	03.26	04.22	05.50	07.15	08.39	09.11	10.08
	15.58	17.33	18.53	21.21	22.49	23.41	22.53	21.17	19.32	17.53	15.24	14.53
24	09.27	07.56	06.23	05.38	04.08	03.26	04.24	05.53	07.18	08.41	09.14	10.08
	16.01	17.36	18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	14.54
25	09.24	07.53	06.19	05.35	04.05	03.27	04.27	05.56	07.20	07.44	09.16	10.08
	16.04	17.39	18.58	21.27	22.54	23.41	22.47	21.10	19.25	16.46	15.20	14.54
26	09.22	07.49	06.16	05.32	04.03	03.27	04.30	05.59	07.23	07.47	09.19	10.09
	16.07	17.42	19.01	21.30	22.57	23.41	22.44	21.07	19.22	16.43	15.18	14.55
27	09.19	07.46	06.12	05.29	04.00	03.28	04.33	06.02	07.26	07.50	09.22	10.09
	16.10	17.44	19.04	21.32	22.59	23.40	22.41	21.03	19.19	16.40	15.16	14.56
28	09.17	07.43	06.09	05.25	03.58	03.29	04.36	06.04	07.29	07.53	09.25	10.08
	16.13	17.47	19.07	21.35	23.02	23.40	22.39	21.00	19.15	16.37	15.14	14.58
29	09.14		07.06	05.22	03.55	03.30	04.38	06.07	07.31	07.56	09.27	10.08
	16.16		20.10	21.38	23.05	23.39	22.36	20.57	19.12	16.34	15.12	14.59
30	09.11		07.02	05.19	03.53	03.31	04.41	06.10	07.34	07.59	09.30	10.08
	16.19		20.12	21.41	23.07	23.38	22.33	20.53	19.08	16.31	15.10	15.00
31	09.09		06.59		03.51		04.44	06.13		08.02		10.07
	16.23		20.15		23.10		22.30	20.50		16.28		15.02
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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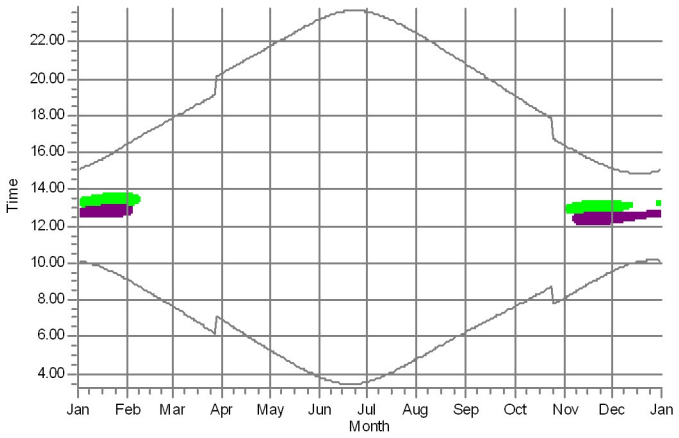
Calculated:
29/11/2024 10.37/4.0.552

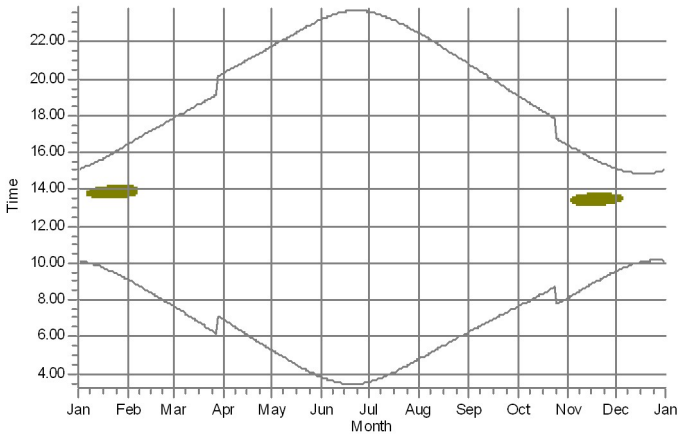
SHADOW - Calendar per WTG, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

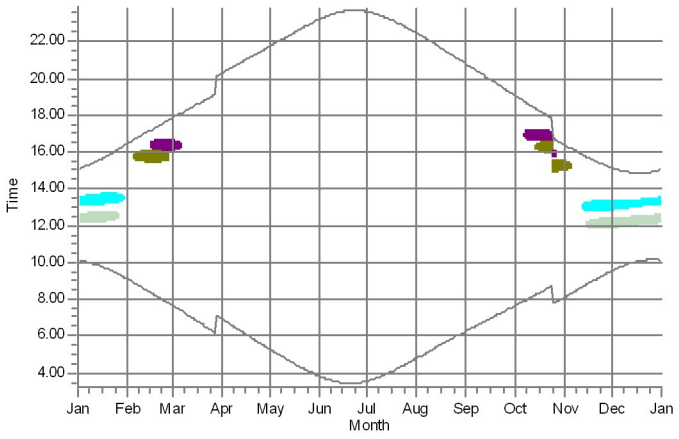
K 01: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



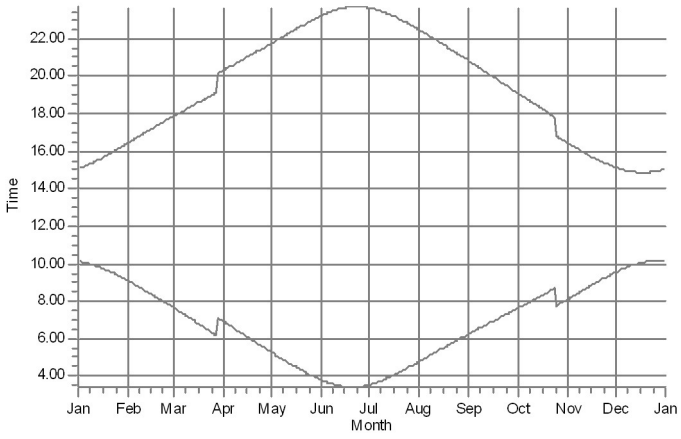
K 02: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 149,5 m (TOT: 231,0 m)



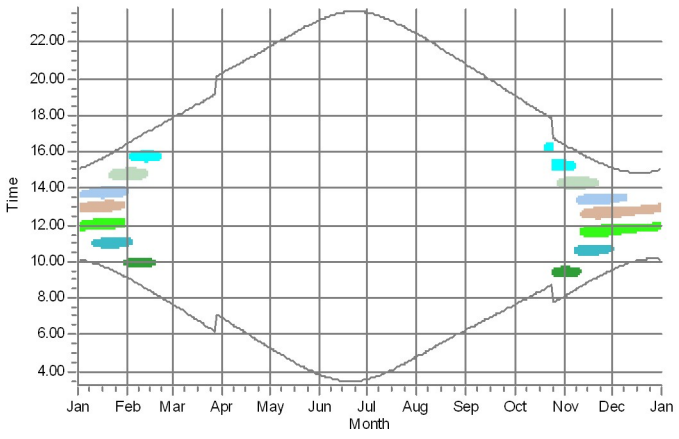
K 03: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



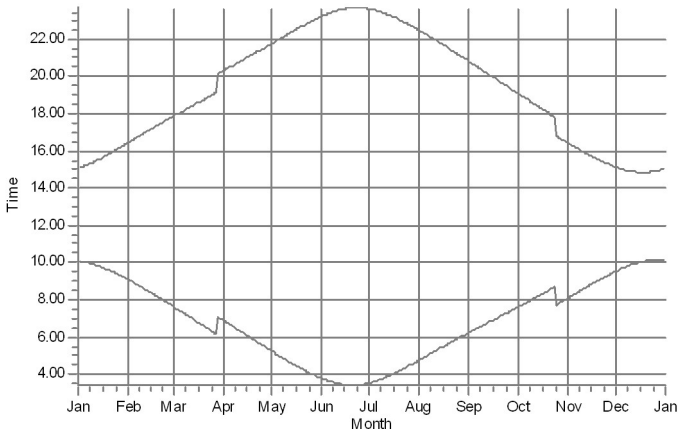
K 04: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 05: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 06: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 148,5 m (TOT: 230,0 m)



Shadow receptors

AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)
AF: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)
AG: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)
AD: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)
AC: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (65)
AB: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)
Z: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)
Y: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)
X: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)
W: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

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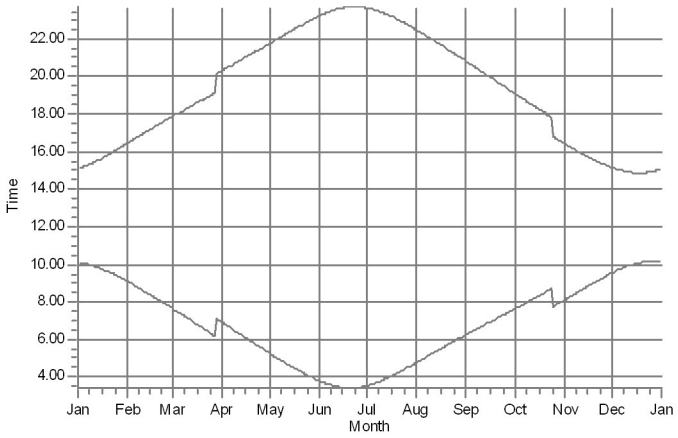
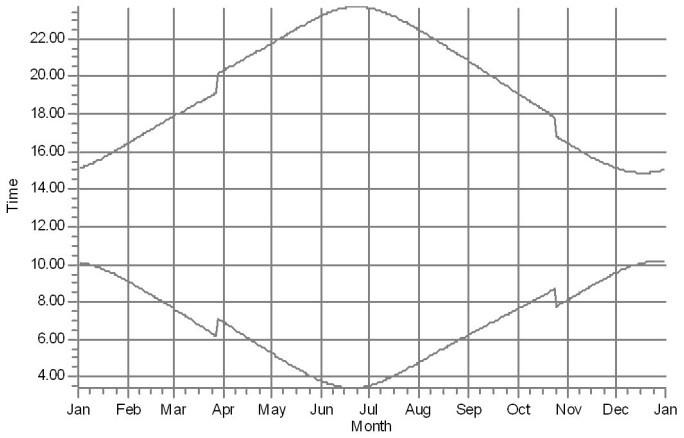
SHADOW - Calendar per WTG, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

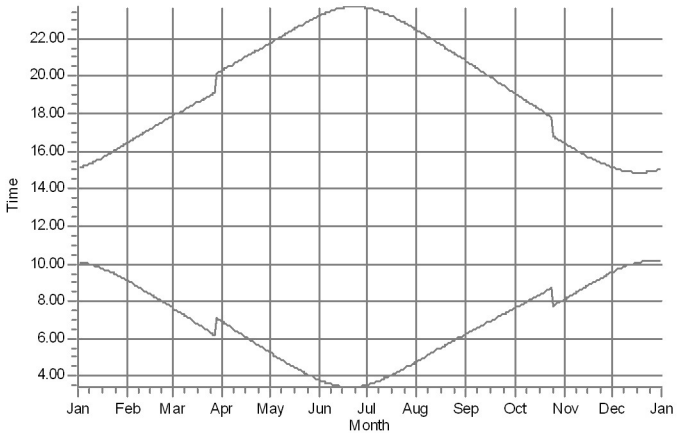
K 07: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 149,5 m (TOT: 231,0 m)



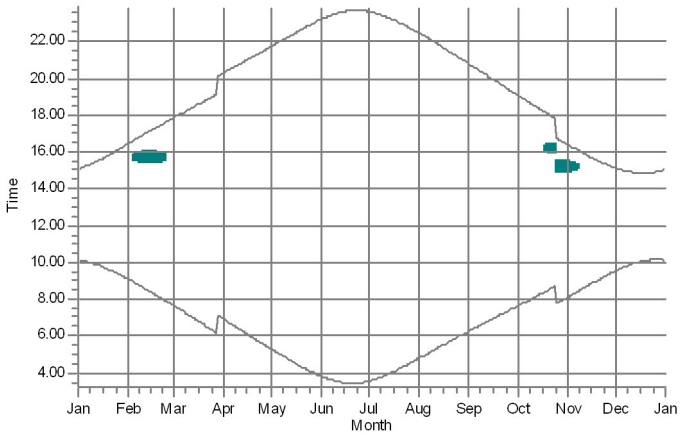
K 08: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 149,5 m (TOT: 231,0 m)



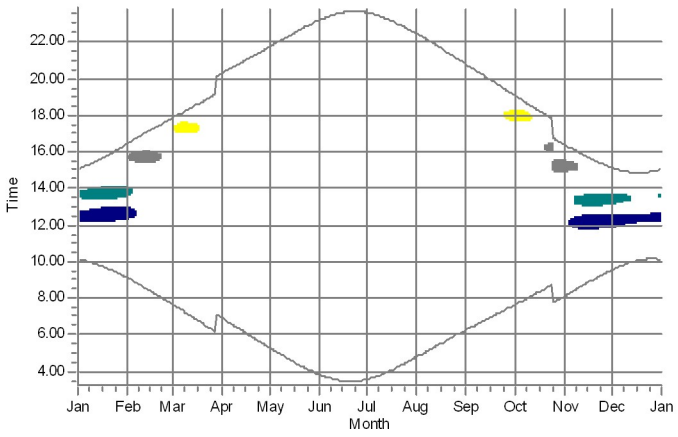
K 09: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



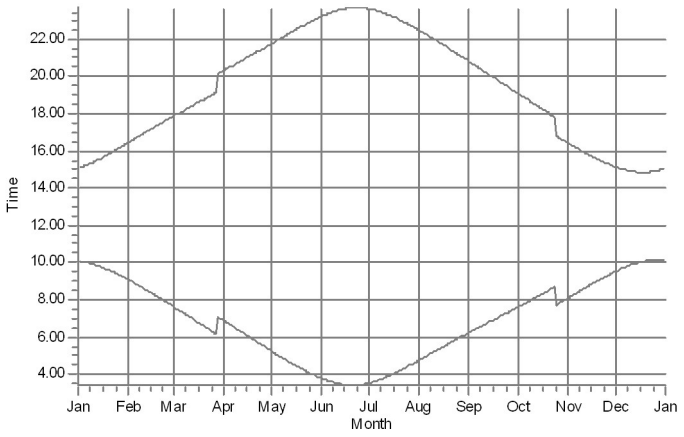
K 10: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 11: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



K 12: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



Shadow receptors

AO: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (53)
AM: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)
AK: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)
AJ: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (58)

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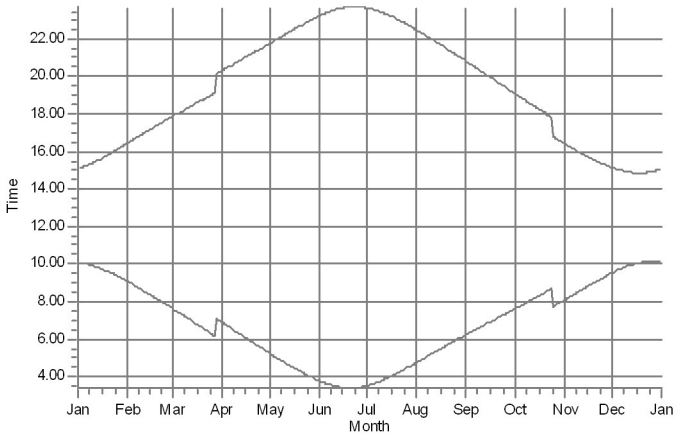
Calculated:
29/11/2024 10.37/4.0.552

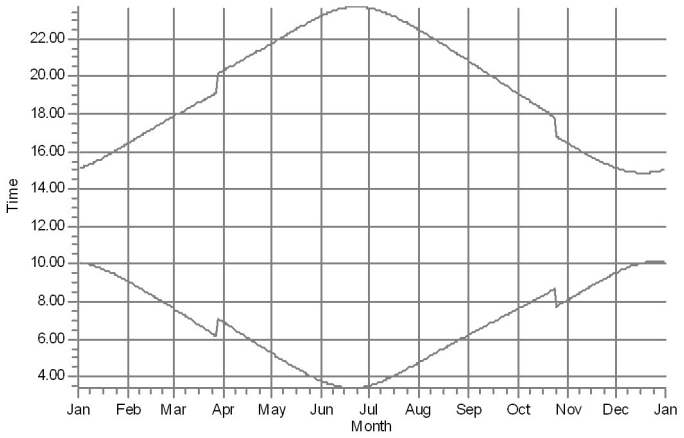
SHADOW - Calendar per WTG, graphical

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest

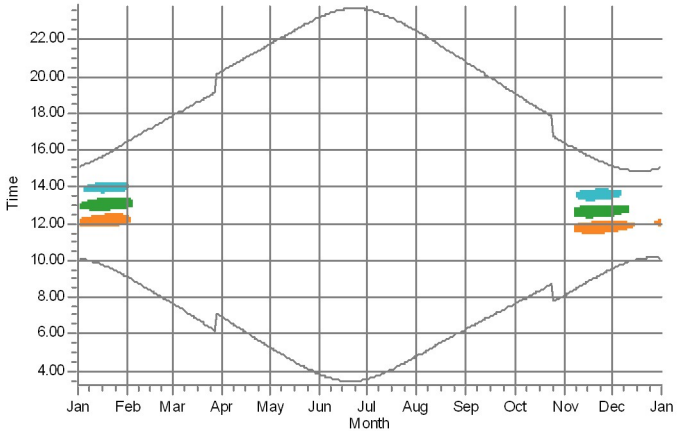
K 13: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



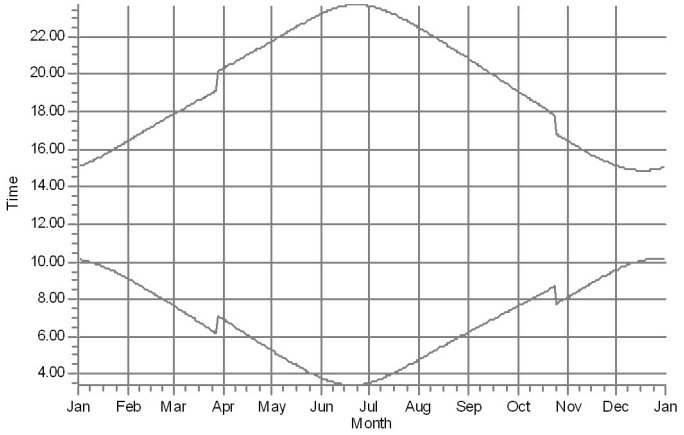
K 14: NORDEX N163/6.X-6800 6800 163.0 ┣! hub: 150,5 m (TOT: 232,0 m)



WTG 01: NORDEX N175/6.X-6800 6800 175.0 ┣! hub: 171,5 m (TOT: 259,0



WTG 02: NORDEX N175/6.X-6800 6800 175.0 ┣! hub: 171,5 m (TOT: 259,0



Shadow receptors

X: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (70)

W: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (71)

T: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)

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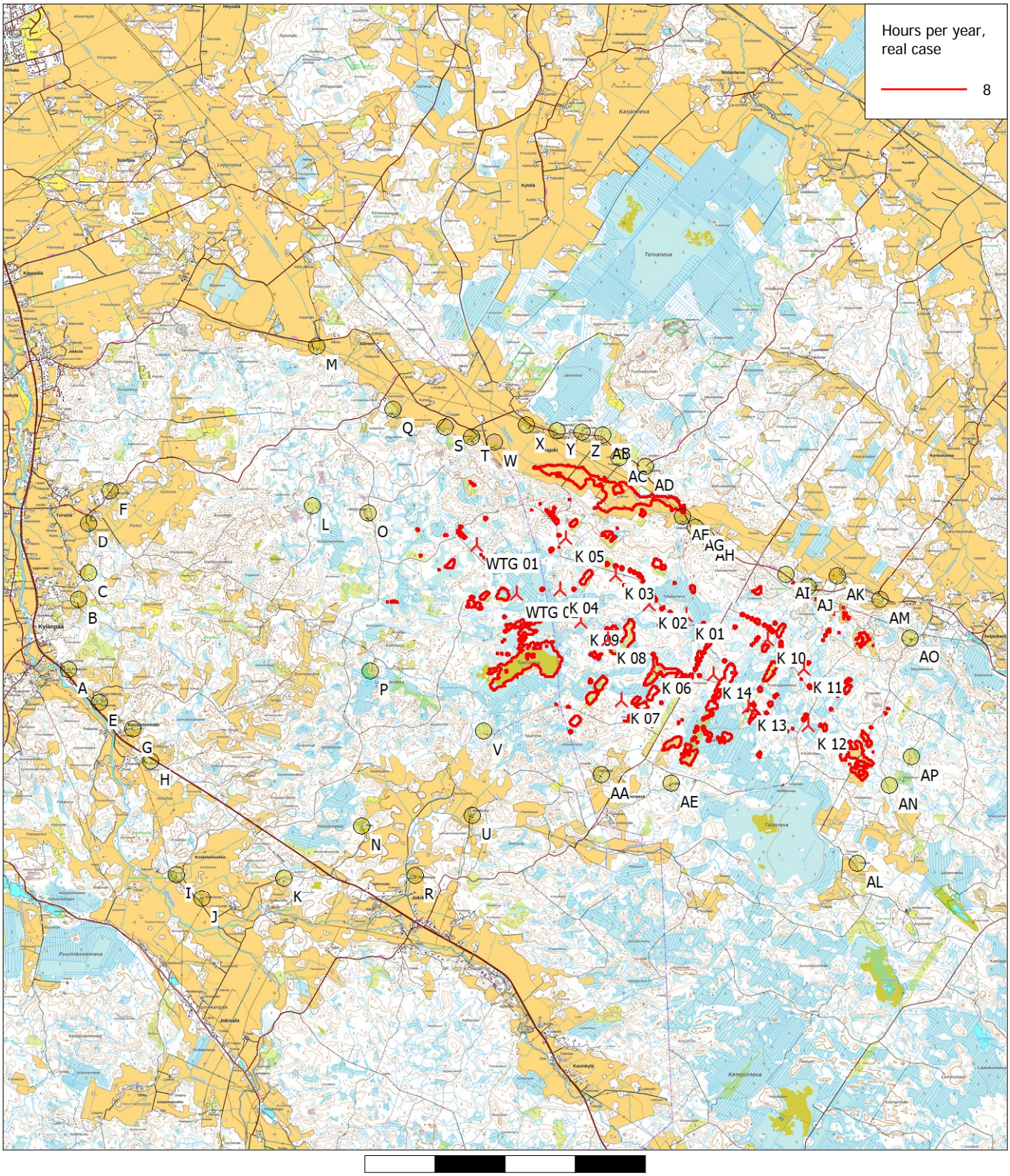
Calculated:
29/11/2024 10.37/4.0.552

SHADOW - Map

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest



Map: Peruskartta 5/2023 , Print scale 1:80 000, Map center Finish TM ETRS-TM35FIN-ETRS89 East: 255 480,0 North: 6 984 300,0

New WTG Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_20220502 Kattiharju extension_1.wpo (2)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,5 m