

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

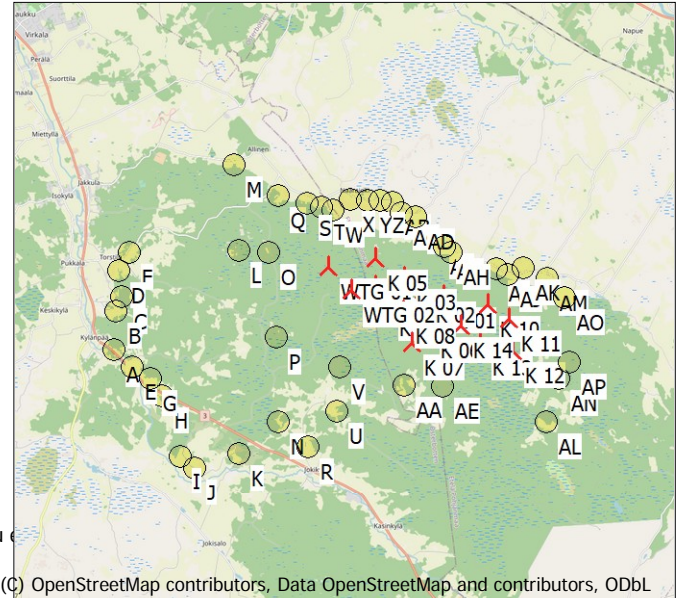
calculation so non visible WTG do not contribute to calculated flicker

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

WTGs

	East	North	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
			[m]									
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

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]	
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	

To be continued on next page...

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.

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: D - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (90) 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 1020 1265 1030 811 627 615 8527

Table with 12 columns for months (January-December) and 31 rows for days. Columns contain numerical values for sunshine hours and potential sun hours. Summary rows at the bottom include 'Potential sun hours', 'Total, worst case', 'Sun reduction', 'Oper. time red.', 'Wind dir. red.', 'Total reduction', and 'Total, real'.

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

Matrix with 4 columns: 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).

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

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

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	05.17	03.51		04.45	06.13		08.03		10.08
	16.23		20.16	21.40	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: G - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (87)

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	05.17	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: H - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (86)

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	05.52	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
 Assumptions for shadow calculations

Shadow receptor: I - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (85)

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	05.22	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: J - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (84)

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	05.17	03.52		04.45	06.13		08.02		10.07
	16.23		20.15	21.39	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

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

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	05.17	03.52		04.45	06.13		08.02		10.07
	16.23		20.15	21.39	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: L - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (82) 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	05.17	03.51		04.44	06.13		08.02		15.08
	16.23		20.15	21.40	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: M - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (81)

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

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: N - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (80)
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	05.17	03.51		04.45	06.13		08.02		10.07
	16.23		20.15	21.39	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: O - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (79)
 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 15.04	09.06 16.26	07.40 17.50	06.56 20.18	05.16 21.44	03.49 23.12	03.33 23.37	04.47 22.27	06.16 20.47	07.37 19.05	08.12 (WTG 01) 08.23 (WTG 01)	09.33 16.25
2	10.06 15.06	09.03 16.29	07.36 17.53	06.52 20.21	05.13 21.47	03.47 23.15	03.34 23.36	04.50 22.24	06.18 20.44	07.40 19.02	08.15 (WTG 01) 08.20 (WTG 01)	09.35 16.22
3	10.05 15.07	09.00 16.32	07.33 17.56	06.49 20.24	05.09 21.50	03.45 23.17	03.36 23.35	04.53 22.21	06.21 20.40	07.42 18.59		09.38 16.19
4	10.04 15.09	08.58 16.35	07.30 17.59	06.45 20.27	05.06 21.53	03.43 23.19	03.37 23.34	04.56 22.18	06.24 20.37	07.45 18.55		09.40 16.16
5	10.03 15.11	08.55 16.38	07.27 18.02	06.42 20.29	05.03 21.56	03.41 23.21	03.39 23.32	04.59 22.15	06.27 20.33	07.48 18.52		09.42 16.13
6	10.02 15.13	08.52 16.41	07.23 18.05	06.39 20.32	05.00 21.59	03.39 23.23	03.41 23.31	05.02 22.12	06.29 20.30	07.51 18.48		09.45 16.10
7	10.01 15.16	08.49 16.44	07.20 18.08	06.35 20.35	04.57 22.02	03.37 23.25	03.43 23.29	05.05 22.09	06.32 20.27	07.53 18.45		09.47 16.07
8	09.59 15.18	08.46 16.47	07.17 18.11	06.32 20.38	04.54 22.05	03.36 23.27	03.45 23.27	05.08 22.06	06.35 20.23	07.56 18.42		09.49 16.04
9	09.58 15.20	08.43 16.50	07.13 18.14	06.29 20.41	04.51 22.08	03.34 23.29	03.47 23.26	05.10 22.02	06.37 20.20	07.59 18.38		09.51 16.01
10	09.56 15.23	08.40 16.54	07.10 18.16	06.25 20.44	04.48 22.11	03.33 23.31	03.49 23.24	05.13 21.59	06.40 20.16	08.02 18.35		09.53 15.58
11	09.55 15.25	08.37 16.57	07.07 18.19	07.38 (WTG 01) 07.40 (WTG 01)	06.22 20.46	04.45 22.14	03.32 23.32	05.16 21.56	06.43 20.13	08.05 18.32		09.55 15.55
12	09.53 15.28	08.34 17.00	07.03 18.22	07.34 (WTG 01) 07.43 (WTG 01)	06.18 20.49	04.42 22.17	03.30 23.34	05.19 21.53	06.46 20.10	08.07 18.29		09.56 15.53
13	09.51 15.30	08.31 17.03	07.00 18.25	07.31 (WTG 01) 07.45 (WTG 01)	06.15 20.52	04.39 22.20	03.29 23.35	05.22 21.50	06.48 20.06	08.10 18.25		09.58 15.50
14	09.49 15.33	08.28 17.06	06.56 18.28	07.27 (WTG 01) 07.46 (WTG 01)	06.12 20.55	04.36 22.23	03.28 23.36	05.25 21.46	06.51 20.03	08.13 18.22		09.59 15.47
15	09.47 15.35	08.25 17.09	06.53 18.31	07.25 (WTG 01) 07.47 (WTG 01)	06.08 20.58	04.33 22.26	03.28 23.37	05.28 21.43	06.54 19.59	08.16 18.19		10.01 15.44
16	09.45 15.38	08.21 17.12	06.50 18.33	07.24 (WTG 01) 07.48 (WTG 01)	06.05 21.01	04.30 22.29	03.27 23.38	05.31 21.40	06.56 19.56	08.19 18.15		10.02 15.42
17	09.43 15.41	08.18 17.15	06.46 18.36	07.23 (WTG 01) 07.48 (WTG 01)	06.02 21.04	04.27 22.32	03.26 23.39	05.33 21.37	06.59 19.53	08.21 18.12	08.15 (WTG 01) 08.26 (WTG 01)	10.03 15.39
18	09.41 15.44	08.15 17.18	06.43 18.39	07.23 (WTG 01) 07.48 (WTG 01)	05.58 21.06	04.24 22.35	03.26 23.40	05.36 21.33	07.02 19.49	08.24 18.09	08.13 (WTG 01) 08.28 (WTG 01)	10.05 15.37
19	09.39 15.47	08.12 17.21	06.40 18.42	07.22 (WTG 01) 07.47 (WTG 01)	05.55 21.09	04.21 22.38	03.26 23.41	05.39 21.30	07.04 19.46	08.27 18.06	08.10 (WTG 01) 08.29 (WTG 01)	10.05 15.34
20	09.37 15.49	08.09 17.24	06.36 18.45	07.22 (WTG 01) 07.47 (WTG 01)	05.52 21.12	04.18 22.40	03.26 23.41	05.42 21.27	07.07 19.42	08.30 18.02	08.09 (WTG 01) 08.30 (WTG 01)	10.06 15.32
21	09.34 15.52	08.06 17.27	06.33 18.47	07.21 (WTG 01) 07.46 (WTG 01)	05.48 21.15	04.16 22.43	03.25 23.41	05.45 21.24	07.10 19.39	08.33 17.59	08.08 (WTG 01) 08.31 (WTG 01)	10.07 15.29
22	09.32 15.55	08.02 17.30	06.29 18.50	07.22 (WTG 01) 07.45 (WTG 01)	05.45 21.18	04.13 22.46	03.26 23.42	05.48 22.56	07.13 19.36	08.36 17.56	08.06 (WTG 01) 08.31 (WTG 01)	10.08 15.27
23	09.30 15.58	07.59 17.33	06.26 18.53	07.23 (WTG 01) 07.45 (WTG 01)	05.42 21.21	04.10 22.49	03.26 23.42	05.50 21.17	07.15 19.32	08.39 17.53	08.06 (WTG 01) 08.31 (WTG 01)	10.08 15.24
24	09.27 16.01	07.56 17.36	06.23 18.56	07.23 (WTG 01) 07.43 (WTG 01)	05.39 21.24	04.08 22.52	03.26 23.42	05.53 21.14	07.18 19.29	08.42 17.50	08.06 (WTG 01) 08.31 (WTG 01)	10.08 15.22
25	09.25 16.04	07.53 17.39	06.19 18.59	07.25 (WTG 01) 07.41 (WTG 01)	05.35 21.27	04.05 22.54	03.27 23.41	05.56 21.10	07.21 19.26	07.45 16.46	08.06 (WTG 01) 08.31 (WTG 01)	10.09 15.20
26	09.22 16.07	07.50 17.42	06.16 19.01	07.26 (WTG 01) 07.38 (WTG 01)	05.32 21.30	04.03 22.57	03.27 23.41	05.59 21.07	07.23 19.22	07.48 16.43	08.05 (WTG 01) 08.30 (WTG 01)	10.09 15.18
27	09.20 16.10	07.46 17.45	06.13 19.04		05.29 21.33	04.00 23.00	03.28 23.41	06.02 22.42	07.26 19.19	07.50 16.40	08.05 (WTG 01) 08.29 (WTG 01)	10.09 15.16
28	09.17 16.13	07.43 17.48	06.09 19.07		05.25 21.36	03.58 23.02	03.29 23.40	06.04 22.39	07.29 19.15	07.53 16.37	08.06 (WTG 01) 08.28 (WTG 01)	10.09 15.14
29	09.14 16.16		07.06 20.10		05.22 21.39	03.55 23.05	03.30 23.39	06.07 20.57	07.31 19.12	07.34 16.34	08.07 (WTG 01) 08.27 (WTG 01)	10.08 15.12
30	09.12 16.20		07.02 20.13		05.19 21.42	03.53 23.07	03.31 23.38	06.10 20.54	07.34 19.09	07.59 16.31	08.09 (WTG 01) 08.25 (WTG 01)	10.08 15.10
31	09.09 16.23		06.59 20.15		05.17 23.10	03.51 23.10		06.13 20.50	07.34 19.09	08.02 16.28		10.08 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

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

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

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: Q - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (77)
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	05.17	03.51		04.44	06.13		08.02		15.08
	16.22		20.15	21.30	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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

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

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	05.17	03.51		04.45	06.13		08.02		10.07
	16.23		20.15	21.39	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: S - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (75) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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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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) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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
	23.38	22.27	20.47	19.05	16.25	15.08
2	03.34	04.50	06.18	07.40	08.08	09.35
	23.36	22.24	20.43	19.02	16.21	15.06
3	03.35	04.53	06.21	07.42	08.11	09.38
	23.35	22.21	20.40	18.58	16.18	15.04
4	03.37	04.56	06.24	07.45	08.14	09.40
	23.34	22.18	20.37	18.55	16.15	15.03
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)
	23.27	22.06	20.23	18.42	16.04	2 10.54 (WTG 01)
9	03.46	05.10	06.37	07.59	08.29	10.48 (WTG 01)
	23.26	22.02	20.20	18.38	16.01	11 10.59 (WTG 01)
10	03.49	05.13	06.40	08.02	08.32	10.46 (WTG 01)
	23.24	21.59	20.16	18.35	15.58	15 11.01 (WTG 01)
11	03.51	05.16	06.43	08.05	08.35	10.45 (WTG 01)
	23.22	21.56	20.13	18.32	15.55	18 11.03 (WTG 01)
12	03.53	05.19	06.45	08.07	08.38	10.44 (WTG 01)
	23.20	21.53	20.10	18.28	15.52	20 11.04 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41	10.43 (WTG 01)
	23.18	21.50	20.06	18.25	15.50	21 11.04 (WTG 01)
14	03.58	05.25	06.51	08.13	08.45	10.43 (WTG 01)
	23.15	21.46	20.03	18.22	15.47	22 11.05 (WTG 01)
15	04.00	05.28	06.54	08.16	08.48	10.43 (WTG 01)
	23.13	21.43	19.59	18.19	15.44	23 11.06 (WTG 01)
16	04.03	05.30	06.56	08.19	08.50	10.43 (WTG 01)
	23.11	21.40	19.56	18.15	15.42	24 11.07 (WTG 01)
17	04.05	05.33	06.59	08.21	08.53	10.42 (WTG 01)
	23.08	21.37	19.53	18.12	15.39	24 11.06 (WTG 01)
18	04.08	05.36	07.02	08.24	08.56	10.42 (WTG 01)
	23.06	21.33	19.49	18.09	15.36	25 11.07 (WTG 01)
19	04.11	05.39	07.04	08.27	08.59	10.43 (WTG 01)
	23.03	21.30	19.46	18.05	15.34	24 11.07 (WTG 01)
20	04.13	05.42	07.07	08.30	09.02	10.43 (WTG 01)
	23.01	21.27	19.42	18.02	15.31	25 11.08 (WTG 01)
21	04.16	05.45	07.10	08.33	09.05	10.43 (WTG 01)
	22.58	21.24	19.39	17.59	15.29	25 11.08 (WTG 01)
22	04.19	05.47	07.12	08.36	09.08	10.43 (WTG 01)
	22.56	21.20	19.36	17.56	15.27	24 11.07 (WTG 01)
23	04.21	05.50	07.15	08.39	09.11	10.44 (WTG 01)
	22.53	21.17	19.32	17.53	15.24	23 11.07 (WTG 01)
24	04.24	05.53	07.18	08.42	09.14	10.44 (WTG 01)
	22.50	21.14	19.29	17.49	15.22	24 11.08 (WTG 01)
25	04.27	05.56	07.21	07.45	09.17	10.45 (WTG 01)
	22.47	21.10	19.25	17.46	15.20	23 11.08 (WTG 01)
26	04.30	05.59	07.23	07.48	09.19	10.46 (WTG 01)
	22.45	21.07	19.22	17.43	15.18	22 11.08 (WTG 01)
27	04.33	06.02	07.26	07.50	09.22	10.47 (WTG 01)
	22.42	21.04	19.19	17.40	15.16	21 11.08 (WTG 01)
28	04.36	06.04	07.29	07.53	09.25	10.48 (WTG 01)
	22.39	21.00	19.15	17.37	15.14	20 11.08 (WTG 01)
29	04.38	06.07	07.31	07.56	09.28	10.48 (WTG 01)
	22.36	20.57	19.12	17.34	15.12	18 11.06 (WTG 01)
30	04.41	06.10	07.34	07.59	09.30	10.50 (WTG 01)
	22.33	20.54	19.09	17.31	15.10	16 11.06 (WTG 01)
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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: T - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (74)
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	12.12 (WTG 01)	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	12.15 (WTG 01)	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	12.15 (WTG 01)	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	12.15 (WTG 01)	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	12.16 (WTG 01)	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	12.17 (WTG 01)	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	12.17 (WTG 01)	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	12.18 (WTG 01)	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	12.19 (WTG 01)	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	12.20 (WTG 01)	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	12.21 (WTG 01)	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	12.22 (WTG 01)	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	12.23 (WTG 01)	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	12.24 (WTG 01)	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	12.24 (WTG 01)	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	12.24 (WTG 01)	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	12.25 (WTG 01)	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	12.26 (WTG 01)	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	12.26 (WTG 01)	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	12.26 (WTG 01)	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	12.27 (WTG 01)	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	12.26 (WTG 01)	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	12.27 (WTG 01)	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	12.28 (WTG 01)	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	12.29 (WTG 01)	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	12.30 (WTG 01)	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)	07.40	12.31 (WTG 01)	07.06	05.22	03.55	03.30		
	16.16	22	12.24 (WTG 01)	17.50	19.10	21.39	23.05	23.39		
30	09.12	12.03 (WTG 01)	07.37	12.32 (WTG 01)	07.02	05.19	03.53	03.31		
	16.19	21	12.24 (WTG 01)	17.53	19.12	21.41	23.07	23.38		
31	09.09	12.04 (WTG 01)	07.34	12.33 (WTG 01)	06.59	05.16	03.51	03.30		
	16.22	18	12.22 (WTG 01)	17.56	19.15	21.44	23.10	23.37		
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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
 Assumptions for shadow calculations

Shadow receptor: T - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (74)

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
	23.37	22.27	20.47	19.05	16.24		15.08
2	03.34	04.50	06.18	07.40	08.08		09.35
	23.36	22.24	20.43	19.02	16.21		15.06
3	03.35	04.53	06.21	07.42	08.11		09.38
	23.35	22.21	20.40	18.58	16.18		15.04
4	03.37	04.56	06.24	07.45	08.14		09.40
	23.34	22.18	20.37	18.55	16.15		15.03
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	03.40	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		09.49
	23.27	22.06	20.23	18.42	16.04		14.57
9	03.46	05.10	06.37	07.59	08.29		09.51
	23.26	22.02	20.20	18.38	16.01	9	11.40 (WTG 01)
10	03.49	05.13	06.40	08.02	08.32		09.53
	23.24	21.59	20.16	18.35	15.58	15	11.37 (WTG 01)
11	03.51	05.16	06.43	08.04	08.35		09.55
	23.22	21.56	20.13	18.32	15.55	18	11.52 (WTG 01)
12	03.53	05.19	06.45	08.07	08.38		09.56
	23.20	21.53	20.10	18.28	15.52	20	11.35 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41		09.58
	23.18	21.50	20.06	18.25	15.50	23	11.55 (WTG 01)
14	03.58	05.25	06.51	08.13	08.44		10.00
	23.15	21.46	20.03	18.22	15.47	24	11.33 (WTG 01)
15	04.00	05.28	06.54	08.16	08.47		10.01
	23.13	21.43	19.59	18.19	15.44	25	11.57 (WTG 01)
16	04.03	05.30	06.56	08.19	08.50		10.02
	23.11	21.40	19.56	18.15	15.42	26	11.33 (WTG 01)
17	04.05	05.33	06.59	08.21	08.53		10.03
	23.08	21.37	19.53	18.12	15.39	27	11.59 (WTG 01)
18	04.08	05.36	07.02	08.24	08.56		10.05
	23.06	21.33	19.49	18.09	15.36	27	11.32 (WTG 01)
19	04.11	05.39	07.04	08.27	08.59		10.06
	23.03	21.30	19.46	18.05	15.34	28	11.59 (WTG 01)
20	04.13	05.42	07.07	08.30	09.02		10.06
	23.01	21.27	19.42	18.02	15.31	28	11.33 (WTG 01)
21	04.16	05.45	07.10	08.33	09.05		10.07
	22.58	21.24	19.39	17.59	15.29	28	12.01 (WTG 01)
22	04.19	05.47	07.12	08.36	09.08		10.08
	22.56	21.20	19.36	17.56	15.27	28	11.32 (WTG 01)
23	04.21	05.50	07.15	08.39	09.11		10.08
	22.53	21.17	19.32	17.53	15.24	28	12.00 (WTG 01)
24	04.24	05.53	07.18	08.42	09.14		10.09
	22.50	21.14	19.29	17.49	15.22	28	11.33 (WTG 01)
25	04.27	05.56	07.21	07.45	09.17		10.09
	22.47	21.10	19.25	16.46	15.20	27	12.01 (WTG 01)
26	04.30	05.59	07.23	07.47	09.19		10.09
	22.45	21.07	19.22	16.43	15.18	27	11.35 (WTG 01)
27	04.33	06.02	07.26	07.50	09.22		10.09
	22.42	21.04	19.19	16.40	15.16	27	12.02 (WTG 01)
28	04.36	06.04	07.29	07.53	09.25		10.09
	22.39	21.00	19.15	16.37	15.14	26	11.36 (WTG 01)
29	04.38	06.07	07.31	07.56	09.28		10.08
	22.36	20.57	19.12	16.34	15.12	25	12.02 (WTG 01)
30	04.41	06.10	07.34	07.59	09.30		10.08
	22.33	20.54	19.08	16.31	15.10	24	12.01 (WTG 01)
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					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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: W - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (71) 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: W - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (71)

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 12.38 (WTG 01)
	23.20	21.53	20.10	18.28	15.52 24 12.50 (WTG 01) 14.54 12.40 (WTG 01)	
13	03.55	05.22	06.48	08.10	08.41	12.25 (WTG 01) 09.58 12.40 (WTG 01)
	23.17	21.50	20.06	18.25	15.50 25 12.50 (WTG 01) 14.53 12.42 (WTG 01)	
14	03.58	05.25	06.51	08.13	08.44	12.25 (WTG 01) 09.59 12.38 (WTG 01)
	23.15	21.46	20.03	18.22	15.47 26 12.51 (WTG 01) 14.52 12.42 (WTG 01)	
15	04.00	05.28	06.54	08.16	08.47	12.25 (WTG 01) 10.01 12.42 (WTG 01)
	23.13	21.43	19.59	18.18	15.44 27 12.52 (WTG 01) 14.52 12.42 (WTG 01)	
16	04.03	05.30	06.56	08.19	08.50	12.24 (WTG 01) 10.02 12.42 (WTG 01)
	23.11	21.40	19.56	18.15	15.42 28 12.52 (WTG 01) 14.52 12.42 (WTG 01)	
17	04.05	05.33	06.59	08.21	08.53	12.24 (WTG 01) 10.03 12.42 (WTG 01)
	23.08	21.37	19.53	18.12	15.39 29 12.53 (WTG 01) 14.51 12.42 (WTG 01)	
18	04.08	05.36	07.02	08.24	08.56	12.24 (WTG 01) 10.05 12.42 (WTG 01)
	23.06	21.33	19.49	18.09	15.36 29 12.53 (WTG 01) 14.51 12.42 (WTG 01)	
19	04.11	05.39	07.04	08.27	08.59	12.25 (WTG 01) 10.05 12.42 (WTG 01)
	23.03	21.30	19.46	18.05	15.34 29 12.54 (WTG 01) 14.51 12.42 (WTG 01)	
20	04.13	05.42	07.07	08.30	09.02	12.25 (WTG 01) 10.06 12.42 (WTG 01)
	23.01	21.27	19.42	18.02	15.31 29 12.54 (WTG 01) 14.51 12.42 (WTG 01)	
21	04.16	05.45	07.10	08.33	09.05	12.26 (WTG 01) 10.07 12.42 (WTG 01)
	22.58	21.24	19.39	17.59	15.29 29 12.55 (WTG 01) 14.52 12.42 (WTG 01)	
22	04.19	05.47	07.12	08.36	09.08	12.25 (WTG 01) 10.08 12.42 (WTG 01)
	22.56	21.20	19.36	17.56	15.27 29 12.54 (WTG 01) 14.52 12.42 (WTG 01)	
23	04.21	05.50	07.15	08.39	09.11	12.26 (WTG 01) 10.08 12.42 (WTG 01)
	22.53	21.17	19.32	17.53	15.24 28 12.54 (WTG 01) 14.53 12.42 (WTG 01)	
24	04.24	05.53	07.18	08.42	09.14	12.26 (WTG 01) 10.08 12.42 (WTG 01)
	22.50	21.14	19.29	17.49	15.22 29 12.55 (WTG 01) 14.53 12.42 (WTG 01)	
25	04.27	05.56	07.21	07.45	09.17	12.27 (WTG 01) 10.09 12.42 (WTG 01)
	22.47	21.10	19.25	16.46	8 09.30 (K 05) 15.20 28 12.55 (WTG 01) 14.54 12.42 (WTG 01)	
26	04.30	05.59	07.23	07.47	09.19	12.28 (WTG 01) 10.09 12.42 (WTG 01)
	22.45	21.07	19.22	16.43	13 09.32 (K 05) 15.18 27 12.55 (WTG 01) 14.55 12.42 (WTG 01)	
27	04.33	06.01	07.26	07.50	09.17	12.28 (WTG 01) 10.09 12.42 (WTG 01)
	22.42	21.04	19.19	16.40	16 09.33 (K 05) 15.16 27 12.55 (WTG 01) 14.56 12.42 (WTG 01)	
28	04.35	06.04	07.29	07.53	09.15	12.28 (WTG 01) 10.09 12.42 (WTG 01)
	22.39	21.00	19.15	16.37	19 09.34 (K 05) 15.13 26 12.54 (WTG 01) 14.57 12.42 (WTG 01)	
29	04.38	06.07	07.31	07.56	09.15	12.29 (WTG 01) 10.08 12.42 (WTG 01)
	22.36	20.57	19.12	16.34	21 09.36 (K 05) 15.12 25 12.54 (WTG 01) 14.59 12.42 (WTG 01)	
30	04.41	06.10	07.34	07.59	09.14	12.30 (WTG 01) 10.08 12.42 (WTG 01)
	22.33	20.54	19.08	16.31	22 09.36 (K 05) 15.10 24 12.54 (WTG 01) 15.00 12.42 (WTG 01)	
31	04.44	06.13	07.37	08.02	09.14	12.30 (WTG 01) 10.08 12.42 (WTG 01)
	22.30	20.50	19.05	16.28	23 09.37 (K 05) 15.01 15.01 12.42 (WTG 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: X - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (70) 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)	07.40	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)	07.37	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)	07.34	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: X - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (70)

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
	23.37	22.27	20.47	19.05	16.24	15.08
2	03.34	04.50	06.18	07.40	08.08	09.35
	23.36	22.24	20.43	19.02	16.21	15.06
3	03.35	04.53	06.21	07.42	08.11	09.38
	23.35	22.21	20.40	18.58	16.18	15.04
4	03.37	04.56	06.24	07.45	08.14	09.40
	23.34	22.18	20.37	18.55	16.15	15.03
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	03.40	05.01	06.29	07.51	08.20	09.45
	23.31	22.12	20.30	18.48	16.09	15.00
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)
	23.27	22.06	20.23	18.42	16.04	10.40 (K 05)
9	03.46	05.10	06.37	07.59	08.29	10.28 (K 05)
	23.26	22.02	20.20	18.38	16.01	10.42 (K 05)
10	03.49	05.13	06.40	08.02	08.32	10.27 (K 05)
	23.24	21.59	20.16	18.35	15.58	13.34 (WTG 01)
11	03.51	05.16	06.43	08.04	08.35	10.26 (K 05)
	23.22	21.56	20.13	18.32	15.55	13.37 (WTG 01)
12	03.53	05.19	06.45	08.07	08.38	10.26 (K 05)
	23.20	21.53	20.09	18.28	15.52	13.40 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41	10.25 (K 05)
	23.17	21.50	20.06	18.25	15.50	13.40 (WTG 01)
14	03.58	05.25	06.51	08.13	08.44	10.25 (K 05)
	23.15	21.46	20.03	18.22	15.47	13.42 (WTG 01)
15	04.00	05.27	06.53	08.16	08.47	10.25 (K 05)
	23.13	21.43	19.59	18.18	15.44	13.43 (WTG 01)
16	04.03	05.30	06.56	08.19	08.50	10.24 (K 05)
	23.11	21.40	19.56	18.15	15.41	13.43 (WTG 01)
17	04.05	05.33	06.59	08.21	08.53	10.25 (K 05)
	23.08	21.37	19.52	18.12	15.39	13.43 (WTG 01)
18	04.08	05.36	07.02	08.24	08.56	10.25 (K 05)
	23.06	21.33	19.49	18.09	15.36	13.44 (WTG 01)
19	04.11	05.39	07.04	08.27	08.59	10.25 (K 05)
	23.03	21.30	19.46	18.05	15.34	13.45 (WTG 01)
20	04.13	05.42	07.07	08.30	09.02	10.26 (K 05)
	23.01	21.27	19.42	18.02	15.31	13.45 (WTG 01)
21	04.16	05.45	07.10	08.33	09.05	10.27 (K 05)
	22.58	21.23	19.39	17.59	15.29	13.46 (WTG 01)
22	04.19	05.47	07.12	08.36	09.08	10.26 (K 05)
	22.56	21.20	19.36	17.56	15.27	13.45 (WTG 01)
23	04.21	05.50	07.15	08.39	09.11	10.27 (K 05)
	22.53	21.17	19.32	17.53	15.24	13.45 (WTG 01)
24	04.24	05.53	07.18	08.42	09.14	10.28 (K 05)
	22.50	21.14	19.29	17.49	15.22	13.46 (WTG 01)
25	04.27	05.56	07.20	07.44	09.17	10.29 (K 05)
	22.47	21.10	19.25	17.46	15.20	13.46 (WTG 01)
26	04.30	05.59	07.23	07.47	09.19	10.30 (K 05)
	22.45	21.07	19.22	17.43	15.18	13.46 (WTG 01)
27	04.33	06.01	07.26	07.50	09.22	10.31 (K 05)
	22.42	21.04	19.19	17.40	15.15	13.46 (WTG 01)
28	04.35	06.04	07.29	07.53	09.25	10.33 (K 05)
	22.39	21.00	19.15	17.37	15.13	13.46 (WTG 01)
29	04.38	06.07	07.31	07.56	09.27	10.33 (K 05)
	22.36	20.57	19.12	17.34	15.11	13.45 (WTG 01)
30	04.41	06.10	07.34	07.59	09.30	10.36 (K 05)
	22.33	20.53	19.08	17.31	15.10	13.45 (WTG 01)
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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

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

Calendar grid showing shadow calculations for each day from January to December. Columns include month, day, hour, and various shadow reduction factors (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)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: AA - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (67)

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

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AC - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (65) 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	03.48
	15.03	20 12.33 (K 03)	16.25	29 15.01 (K 05)	17.50	20.18	21.44
2	10.06	12.13 (K 03)	09.03	14.32 (K 05)	07.36	06.52	05.12
	15.05	21 12.34 (K 03)	16.28	29 15.01 (K 05)	17.53	20.21	21.47
3	10.05	12.13 (K 03)	09.00	14.32 (K 05)	07.33	06.49	05.09
	15.07	21 12.34 (K 03)	16.32	29 15.01 (K 05)	17.56	20.24	21.50
4	10.04	12.14 (K 03)	08.57	14.33 (K 05)	07.30	06.45	05.06
	15.09	21 12.35 (K 03)	16.35	29 15.02 (K 05)	17.59	20.26	21.53
5	10.03	12.13 (K 03)	08.54	14.33 (K 05)	07.26	06.42	05.03
	15.11	23 12.36 (K 03)	16.38	28 15.01 (K 05)	18.02	20.29	21.56
6	10.02	12.14 (K 03)	08.52	14.33 (K 05)	07.23	06.38	05.00
	15.13	23 12.37 (K 03)	16.41	28 15.01 (K 05)	18.05	20.32	21.59
7	10.01	12.14 (K 03)	08.49	14.34 (K 05)	07.20	06.35	04.57
	15.15	23 12.37 (K 03)	16.44	26 15.00 (K 05)	18.08	20.35	22.02
8	09.59	12.14 (K 03)	08.46	14.35 (K 05)	07.16	06.32	04.53
	15.17	24 12.38 (K 03)	16.47	25 15.00 (K 05)	18.10	20.38	22.05
9	09.58	12.15 (K 03)	08.43	14.35 (K 05)	07.13	06.28	04.50
	15.20	23 12.38 (K 03)	16.50	24 14.59 (K 05)	18.13	20.40	22.08
10	09.56	12.15 (K 03)	08.40	14.37 (K 05)	07.10	06.25	04.47
	15.22	24 12.39 (K 03)	16.53	22 14.59 (K 05)	18.16	20.43	22.11
11	09.55	12.15 (K 03)	08.37	14.38 (K 05)	07.06	06.22	04.44
	15.25	24 12.39 (K 03)	16.56	19 14.57 (K 05)	18.19	20.46	22.14
12	09.53	12.16 (K 03)	08.34	14.40 (K 05)	07.03	06.18	04.41
	15.27	24 12.40 (K 03)	16.59	15 14.55 (K 05)	18.22	20.49	22.17
13	09.51	12.16 (K 03)	08.31	14.44 (K 05)	07.00	06.15	04.38
	15.30	24 12.40 (K 03)	17.02	9 14.53 (K 05)	18.25	20.52	22.20
14	09.49	12.17 (K 03)	08.27		06.56	06.11	04.35
	15.32	24 12.41 (K 03)	17.05		18.27	20.55	22.23
15	09.47	12.16 (K 03)	08.24		06.53	06.08	04.32
	15.35	24 12.40 (K 03)	17.08		18.30	20.58	22.26
16	09.45	12.17 (K 03)	08.21		06.49	06.05	04.29
	15.38	24 12.41 (K 03)	17.12		18.33	21.00	22.29
17	09.43	12.17 (K 03)	08.18		06.46	06.01	04.26
	15.41	24 12.41 (K 03)	17.15		18.36	21.03	22.32
18	09.41	12.18 (K 03)	08.15		06.43	05.58	04.24
	15.43	24 12.42 (K 03)	17.18		18.39	21.06	22.35
19	09.39	12.19 (K 03)	08.12		06.39	05.55	04.21
	15.46	23 12.42 (K 03)	17.21		18.42	21.09	22.37
20	09.37	12.19 (K 03)	08.09		06.36	05.51	04.18
	15.49	22 12.41 (K 03)	17.24		18.44	21.12	22.40
21	09.34	12.20 (K 03)	08.05		06.33	05.48	04.15
	15.52	30 14.48 (K 05)	17.27		18.47	21.15	22.43
22	09.32	12.22 (K 03)	08.02		06.29	05.45	04.13
	15.55	33 14.51 (K 05)	17.30		18.50	21.18	22.46
23	09.29	12.22 (K 03)	07.59		06.26	05.42	04.10
	15.58	36 14.53 (K 05)	17.33		18.53	21.21	22.49
24	09.27	12.24 (K 03)	07.56		06.22	05.38	04.07
	16.01	35 14.55 (K 05)	17.35		18.56	21.24	22.51
25	09.25	12.26 (K 03)	07.53		06.19	05.35	04.05
	16.04	34 14.56 (K 05)	17.38		18.58	21.27	22.54
26	09.22	12.28 (K 03)	07.49		06.16	05.32	04.02
	16.07	32 14.57 (K 05)	17.41		19.01	21.30	22.57
27	09.19	14.33 (K 05)	07.46		06.12	05.28	04.00
	16.10	25 14.58 (K 05)	17.44		19.04	21.32	23.00
28	09.17	14.32 (K 05)	07.43		06.09	05.25	03.57
	16.13	26 14.58 (K 05)	17.47		19.07	21.35	23.02
29	09.14	14.32 (K 05)			07.05	05.22	03.55
	16.16	27 14.59 (K 05)			20.10	21.38	23.05
30	09.11	14.33 (K 05)			07.02	05.19	03.53
	16.19	27 15.00 (K 05)			20.12	21.41	23.07
31	09.09	14.32 (K 05)			06.59	05.16	03.50
	16.22	28 15.00 (K 05)			20.15	21.44	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AC - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (65) 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
	23.37	22.27	20.47	19.05	16.24	22 14.28 (K 05) 15.08
2	03.34	04.50	06.18	07.39	08.08	14.04 (K 05) 09.35
	23.36	22.24	20.43	19.02	16.21	25 14.29 (K 05) 15.06
3	03.35	04.53	06.21	07.42	08.11	14.04 (K 05) 09.37
	23.35	22.21	20.40	18.58	16.18	26 14.30 (K 05) 15.04
4	03.37	04.56	06.23	07.45	08.14	14.03 (K 05) 09.40
	23.34	22.18	20.37	18.55	16.15	27 14.30 (K 05) 15.03
5	03.39	04.58	06.26	07.48	08.17	14.03 (K 05) 09.42
	23.32	22.15	20.33	18.52	16.12	28 14.31 (K 05) 15.01
6	03.40	05.01	06.29	07.50	08.20	14.03 (K 05) 09.44
	23.31	22.12	20.30	18.48	16.09	29 14.32 (K 05) 15.00
7	03.42	05.04	06.32	07.53	08.23	14.02 (K 05) 09.47
	23.29	22.09	20.26	18.45	16.06	29 14.31 (K 05) 14.59
8	03.44	05.07	06.34	07.56	08.26	14.03 (K 05) 09.49
	23.27	22.05	20.23	18.41	16.04	29 14.32 (K 05) 14.57
9	03.46	05.10	06.37	07.59	08.29	14.02 (K 05) 09.51
	23.25	22.02	20.20	18.38	16.01	29 14.31 (K 05) 14.56
10	03.48	05.13	06.40	08.02	08.32	14.03 (K 05) 09.53
	23.24	21.59	20.16	18.35	15.58	29 14.32 (K 05) 14.55
11	03.51	05.16	06.43	08.04	08.35	14.04 (K 05) 09.54
	23.22	21.56	20.13	18.32	15.55	28 14.32 (K 05) 14.54
12	03.53	05.19	06.45	08.07	08.38	14.03 (K 05) 09.56
	23.19	21.53	20.09	18.28	15.52	28 14.31 (K 05) 14.53
13	03.55	05.22	06.48	08.10	08.41	14.04 (K 05) 09.58
	23.17	21.49	20.06	18.25	15.49	27 14.31 (K 05) 14.53
14	03.58	05.25	06.51	08.13	08.44	14.05 (K 05) 09.59
	23.15	21.46	20.03	18.22	15.47	26 14.31 (K 05) 14.52
15	04.00	05.27	06.53	08.16	08.47	14.06 (K 05) 10.01
	23.13	21.43	19.59	18.18	15.44	25 14.31 (K 05) 14.52
16	04.03	05.30	06.56	08.18	08.50	12.01 (K 03) 10.02
	23.11	21.40	19.56	18.15	15.41	32 14.30 (K 05) 14.51
17	04.05	05.33	06.59	08.21	08.53	11.59 (K 03) 10.03
	23.08	21.37	19.52	18.12	15.39	34 14.29 (K 05) 14.51
18	04.08	05.36	07.01	08.24	08.56	11.58 (K 03) 10.04
	23.06	21.33	19.49	18.09	15.36	34 14.28 (K 05) 14.51
19	04.10	05.39	07.04	08.27	08.59	11.57 (K 03) 10.05
	23.03	21.30	19.46	18.05	15.34	36 14.28 (K 05) 14.51
20	04.13	05.42	07.07	08.30	09.02	11.57 (K 03) 10.06
	23.01	21.27	19.42	18.02	15.31	33 14.26 (K 05) 14.51
21	04.16	05.44	07.10	08.33	09.05	11.55 (K 03) 10.07
	22.58	21.23	19.39	17.59	15.29	30 14.23 (K 05) 14.52
22	04.19	05.47	07.12	08.36	09.08	11.55 (K 03) 10.08
	22.55	21.20	19.35	17.56	15.26	22 12.17 (K 03) 14.52
23	04.21	05.50	07.15	08.39	09.11	11.55 (K 03) 10.08
	22.53	21.17	19.32	17.52	15.24	23 12.18 (K 03) 14.53
24	04.24	05.53	07.18	08.41	09.14	11.55 (K 03) 10.08
	22.50	21.13	19.29	17.49	15.22	24 12.19 (K 03) 14.53
25	04.27	05.56	07.20	07.44	09.16	11.56 (K 03) 10.09
	22.47	21.10	19.25	16.46	15.20	23 12.19 (K 03) 14.54
26	04.30	05.59	07.23	07.47	09.19	11.56 (K 03) 10.09
	22.44	21.07	19.22	16.43	15.17	24 12.20 (K 03) 14.55
27	04.33	06.01	07.26	07.50	09.22	11.56 (K 03) 10.09
	22.42	21.03	19.18	16.40	15.15	25 12.21 (K 03) 14.56
28	04.35	06.04	07.29	07.53	09.25	11.56 (K 03) 10.09
	22.39	21.00	19.15	16.37	15.13	24 12.20 (K 03) 14.57
29	04.38	06.07	07.31	07.56	09.27	11.56 (K 03) 10.08
	22.36	20.57	19.12	16.34	15.11	25 12.21 (K 03) 14.58
30	04.41	06.10	07.34	07.59	09.30	11.57 (K 03) 10.08
	22.33	20.53	19.08	16.30	15.10	24 12.21 (K 03) 15.00
31	04.44	06.12	07.37	08.02	09.33	11.57 (K 03) 10.07
	22.30	20.50	19.05	16.27	15.08	20 15.01
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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AD - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (64) 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	03.48			
	15.03	17 13.29 (K 03)	16.25	17.50	20.18	23.12			
2	10.06	13.12 (K 03)	09.03	07.36	06.52	03.46			
	15.05	18 13.30 (K 03)	16.28	17.53	20.21	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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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) 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	15.10 (K 05) 09.49 13.00 (K 03)
	23.27	22.05	20.23	18.41	16.03 19 14.57 13.19 (K 03)	
9	03.46	05.10	06.37	07.59	08.29	15.11 (K 05) 09.51 13.01 (K 03)
	23.25	22.02	20.20	18.38	16.01 19 14.56 13.20 (K 03)	
10	03.48	05.13	06.40	08.01	08.32	15.12 (K 05) 09.53 13.02 (K 03)
	23.23	21.59	20.16	18.35	15.58 18 14.55 13.20 (K 03)	
11	03.51	05.16	06.43	08.04	08.35	15.13 (K 05) 09.54 13.02 (K 03)
	23.21	21.56	20.13	18.32	15.55 18 14.54 13.20 (K 03)	
12	03.53	05.19	06.45	08.07	08.38	15.14 (K 05) 09.56 13.03 (K 03)
	23.19	21.53	20.09	18.28	15.52 17 14.53 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	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	09.05	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	09.08	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	09.11	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	09.14	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	09.16	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	09.19	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	09.22	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	09.25	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	09.27	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	09.30	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	07.37	08.02	09.33	15.01 (K 05) 10.07 13.12 (K 03)
	22.30	20.50	19.05	16.27	25 15.26 (K 05) 15.01 17 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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SHADOW - Calendar

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

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AF - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (61) 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	18.17 (K 05)	08.17	13.18 (K 02)	09.42	11.42 (K 01)					
	23.32	22.15	20.33	18.51	22	16.12	15.19 (K 03)	15.01	29	13.33 (K 02)				
6	03.40	05.01	06.29	07.50	18.20	13.15 (K 02)	09.44	11.43 (K 01)						
	23.30	22.12	20.30	18.48	17	16.09	13.32 (K 02)	15.00	23	12.06 (K 01)				
7	03.42	05.04	06.32	07.53	18.23	13.14 (K 02)	09.46	11.43 (K 01)						
	23.29	22.08	20.26	18.45	20	16.06	13.34 (K 02)	14.59	23	12.06 (K 01)				
8	03.44	05.07	06.34	07.56	18.26	13.13 (K 02)	09.49	11.45 (K 01)						
	23.27	22.05	20.23	18.41	23	16.03	13.36 (K 02)	14.57	21	12.06 (K 01)				
9	03.46	05.10	06.37	07.59	18.29	13.12 (K 02)	09.51	11.45 (K 01)						
	23.25	22.02	20.19	18.38	24	16.01	13.36 (K 02)	14.56	21	12.06 (K 01)				
10	03.48	05.13	06.40	08.01	18.32	11.44 (K 01)	09.52	11.47 (K 01)						
	23.23	21.59	20.16	18.35	34	15.58	13.38 (K 02)	14.55	20	12.07 (K 01)				
11	03.51	05.16	06.42	08.04	18.35	11.42 (K 01)	09.54	11.47 (K 01)						
	23.21	21.56	20.13	18.31	41	15.55	13.39 (K 02)	14.54	20	12.07 (K 01)				
12	03.53	05.19	06.45	08.07	18.38	11.39 (K 01)	09.56	11.48 (K 01)						
	23.19	21.53	20.09	18.28	45	15.52	13.38 (K 02)	14.53	19	12.07 (K 01)				
13	03.55	05.22	06.48	08.10	18.41	11.38 (K 01)	09.58	11.49 (K 01)						
	23.17	21.49	20.06	18.25	49	15.49	13.39 (K 02)	14.53	18	12.07 (K 01)				
14	03.58	05.24	06.51	08.13	18.44	11.37 (K 01)	09.59	11.49 (K 01)						
	23.15	21.46	20.02	18.22	53	15.47	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	07.37	18.08 (K 05)	08.02	15.01 (K 03)	09.33	11.39 (K 01)	10.07	11.57 (K 01)				
	22.30	20.50	19.05	26	16.27	15.27 (K 03)	15.01	46	13.39 (K 02)	15.00	17	12.14 (K 01)		
Potential sun hours	591	501	391	308	208	154	624							
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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

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

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: AG - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (62)

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	08.23	12.20 (K 01) 09.46 12.18 (K 01)
	23.29	22.08	20.26	18.45	2 16.57 (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	08.26	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	08.29	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	08.32	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	08.35	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	08.38	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	08.41	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	08.44	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	08.47	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	08.50	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	08.53	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	08.56	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	08.59	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	09.02	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	09.05	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	09.08	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	09.11	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	09.13	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	09.16	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	09.19	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	15.17 31 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	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	09.30	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	07.37	08.02	09.33	13.55 (K 02) 10.07 12.31 (K 01)
	22.30	20.50	19.05	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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AH - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (60°)
 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: AH - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (60°)

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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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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SHADOW - Calendar

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

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: AI - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (59)
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	07.36	08.02	12.49 (K 10)	10.07 11.27 (K 11)
	22.30	20.50	19.05	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

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

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AJ - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (58) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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
	23.37	22.27	20.46	19.05	22 18.20 (K 01)	16.24
2	03.34	04.50	06.18	07.39	17.57 (K 01)	08.08
	23.36	22.24	20.43	19.01	22 18.19 (K 01)	16.21
3	03.35	04.53	06.21	07.42	17.57 (K 01)	08.11
	23.34	22.21	20.40	18.58	21 18.18 (K 01)	16.18
4	03.37	04.55	06.23	07.45	17.58 (K 01)	08.14
	23.33	22.17	20.36	18.55	19 18.17 (K 01)	16.15
5	03.39	04.58	06.26	07.47	17.58 (K 01)	08.17
	23.32	22.14	20.33	18.51	16 18.14 (K 01)	16.12
6	03.40	05.01	06.29	07.50	17.59 (K 01)	08.20
	23.30	22.11	20.29	18.48	12 18.11 (K 01)	16.09
7	03.42	05.04	06.32	07.53	18.00 (K 01)	08.23
	23.29	22.08	20.26	18.45	7 18.07 (K 01)	16.06
8	03.44	05.07	06.34	07.56	18.03 (K 01)	08.26
	23.27	22.05	20.23	18.41	1 18.04 (K 01)	16.03
9	03.46	05.10	06.37	07.58	18.09	08.29
	23.25	22.02	20.19	18.38	16.01	55 14.43 (K 01)
10	03.48	05.13	06.40	08.01	08.32	11.55 (K 11)
	23.23	21.59	20.16	18.35	15.58	53 14.42 (K 10)
11	03.51	05.16	06.42	08.04	08.35	11.53 (K 11)
	23.21	21.56	20.13	18.31	15.55	53 14.40 (K 10)
12	03.53	05.19	06.45	08.07	08.38	11.53 (K 11)
	23.19	21.52	20.09	18.28	15.52	49 14.38 (K 10)
13	03.55	05.21	06.48	08.10	08.41	11.53 (K 11)
	23.17	21.49	20.06	18.25	15.49	45 14.36 (K 10)
14	03.58	05.24	06.50	08.12	08.44	11.52 (K 11)
	23.15	21.46	20.02	18.21	15.47	34 14.29 (K 10)
15	04.00	05.27	06.53	08.15	15.26 (K 10)	08.47
	23.12	21.43	19.59	18.18	10 15.36 (K 10)	15.44
16	04.03	05.30	06.56	08.18	15.21 (K 10)	08.50
	23.10	21.39	19.56	18.15	19 15.40 (K 10)	15.41
17	04.05	05.33	06.59	08.21	15.19 (K 10)	08.53
	23.08	21.36	19.52	18.12	24 15.43 (K 10)	15.39
18	04.08	05.36	07.01	08.24	15.16 (K 10)	08.56
	23.05	21.33	19.49	18.08	28 15.44 (K 10)	15.36
19	04.10	05.39	07.04	08.27	15.15 (K 10)	08.59
	23.03	21.30	19.45	18.05	30 15.45 (K 10)	15.34
20	04.13	05.42	07.07	08.30	15.13 (K 10)	09.02
	23.00	21.26	19.42	18.02	33 15.46 (K 10)	15.31
21	04.16	05.44	07.09	08.32	15.12 (K 10)	09.05
	22.58	21.23	19.39	17.59	35 15.47 (K 10)	15.29
22	04.18	05.47	07.12	08.35	15.10 (K 10)	09.08
	22.55	21.20	19.35	17.55	37 15.47 (K 10)	15.26
23	04.21	05.50	07.15	08.38	15.10 (K 10)	09.10
	22.52	21.16	19.32	17.52	39 15.49 (K 10)	15.24
24	04.24	05.53	07.17	08.41	15.10 (K 10)	09.13
	22.50	21.13	19.28	17.49	39 15.49 (K 10)	15.22
25	04.27	05.56	07.20	18.07 (K 01)	07.44	14.09 (K 10)
	22.47	21.10	19.25	8 18.15 (K 01)	16.46	40 14.49 (K 10)
26	04.30	05.58	07.23	18.04 (K 01)	07.47	14.08 (K 10)
	22.44	21.06	19.22	13 18.17 (K 01)	16.43	41 14.49 (K 10)
27	04.32	06.01	07.26	18.02 (K 01)	07.50	14.08 (K 10)
	22.41	21.03	19.18	17 18.19 (K 01)	16.40	41 14.49 (K 10)
28	04.35	06.04	07.28	18.00 (K 01)	07.53	14.08 (K 10)
	22.38	21.00	19.15	19 18.19 (K 01)	16.37	41 14.49 (K 10)
29	04.38	06.07	07.31	17.59 (K 01)	07.56	14.08 (K 10)
	22.35	20.56	19.11	20 18.19 (K 01)	16.33	41 14.49 (K 10)
30	04.41	06.10	07.34	17.59 (K 01)	07.59	14.08 (K 10)
	22.32	20.53	19.08	21 18.20 (K 01)	16.30	41 14.49 (K 10)
31	04.44	06.12		08.02	14.08 (K 10)	
	22.30	20.50		16.27	41 14.49 (K 10)	
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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 Shadow receptor: AK - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (57) 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	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	15.36 (K 10)	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

Shadow receptor: AK - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (57)
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 13.27 (K 11)
	23.17	21.49	20.06	18.25	15.49	25 13.33 (K 11) 14.53 13.28 (K 11)
14	03.58	05.24	06.50	08.12	08.44	13.07 (K 11) 09.59 13.29 (K 11)
	23.15	21.46	20.02	18.21	15.47	26 13.33 (K 11) 14.52 13.30 (K 11)
15	04.00	05.27	06.53	08.15	08.47	13.07 (K 11) 10.00 13.31 (K 11)
	23.12	21.43	19.59	18.18	15.44	27 13.34 (K 11) 14.52 13.32 (K 11)
16	04.03	05.30	06.56	08.18	08.50	13.07 (K 11) 10.02 13.33 (K 11)
	23.10	21.39	19.56	18.15	15.41	28 13.35 (K 11) 14.51 13.34 (K 11)
17	04.05	05.33	06.59	08.21	08.53	13.07 (K 11) 10.03 13.35 (K 11)
	23.08	21.36	19.52	18.12	15.39	29 13.36 (K 11) 14.51 13.36 (K 11)
18	04.08	05.36	07.01	08.24	16.08 (K 10)	08.56 13.07 (K 11) 10.04 13.37 (K 11)
	23.05	21.33	19.49	18.08	13 16.21 (K 10) 15.36 28 13.35 (K 11) 14.51 13.38 (K 11)	
19	04.10	05.39	07.04	08.27	16.05 (K 10)	08.59 13.07 (K 11) 10.05 13.39 (K 11)
	23.03	21.30	19.45	18.05	18 16.23 (K 10) 15.34 29 13.36 (K 11) 14.51 13.40 (K 11)	
20	04.13	05.41	07.07	08.30	16.03 (K 10)	09.02 13.07 (K 11) 10.06 13.41 (K 11)
	23.00	21.26	19.42	18.02	21 16.24 (K 10) 15.31 29 13.36 (K 11) 14.51 13.42 (K 11)	
21	04.16	05.44	07.09	08.32	16.02 (K 10)	09.05 13.08 (K 11) 10.06 13.43 (K 11)
	22.58	21.23	19.39	17.59	23 16.25 (K 10) 15.29 29 13.37 (K 11) 14.52 13.44 (K 11)	
22	04.18	05.47	07.12	08.35	16.00 (K 10)	09.08 13.08 (K 11) 10.07 13.45 (K 11)
	22.55	21.20	19.35	17.55	26 16.26 (K 10) 15.26 29 13.37 (K 11) 14.52 13.46 (K 11)	
23	04.21	05.50	07.15	08.38	16.00 (K 10)	09.10 13.09 (K 11) 10.08 13.47 (K 11)
	22.52	21.16	19.32	17.52	27 16.27 (K 10) 15.24 28 13.37 (K 11) 14.53 13.48 (K 11)	
24	04.24	05.53	07.17	08.41	15.59 (K 10)	09.13 13.08 (K 11) 10.08 13.49 (K 11)
	22.50	21.13	19.28	17.49	28 16.27 (K 10) 15.22 29 13.37 (K 11) 14.53 13.50 (K 11)	
25	04.27	05.56	07.20	07.44	14.58 (K 10)	09.16 13.09 (K 11) 10.08 13.51 (K 11)
	22.47	21.10	19.25	16.46	29 15.27 (K 10) 15.20 28 13.37 (K 11) 14.54 13.52 (K 11)	
26	04.30	05.58	07.23	07.47	14.58 (K 10)	09.19 13.10 (K 11) 10.08 13.53 (K 11)
	22.44	21.06	19.22	16.43	29 15.27 (K 10) 15.17 27 13.37 (K 11) 14.55 13.54 (K 11)	
27	04.32	06.01	07.26	07.50	14.58 (K 10)	09.22 13.10 (K 11) 10.08 13.55 (K 11)
	22.41	21.03	19.18	16.40	30 15.28 (K 10) 15.15 27 13.37 (K 11) 14.56 13.56 (K 11)	
28	04.35	06.04	07.28	07.53	14.58 (K 10)	09.24 13.11 (K 11) 10.08 13.57 (K 11)
	22.38	21.00	19.15	16.36	29 15.27 (K 10) 15.13 26 13.37 (K 11) 14.57 13.58 (K 11)	
29	04.38	06.07	07.31	07.56	14.58 (K 10)	09.27 13.12 (K 11) 10.08 13.59 (K 11)
	22.35	20.56	19.11	16.33	29 15.27 (K 10) 15.11 26 13.38 (K 11) 14.58 13.60 (K 11)	
30	04.41	06.09	07.34	07.59	14.59 (K 10)	09.30 13.12 (K 11) 10.07 13.61 (K 11)
	22.32	20.53	19.08	16.30	28 15.27 (K 10) 15.09 25 13.37 (K 11) 15.00 13.62 (K 11)	
31	04.44	06.12	07.37	08.02	14.59 (K 10)	09.33 13.13 (K 11) 10.07 13.63 (K 11)
	22.30	20.50	19.05	16.27	27 15.26 (K 10) 15.07 24 13.36 (K 11) 15.01 13.64 (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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20220502 Kattiharju extension

Licensed user:

PROKON Regenerative Energien eG

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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:** AO - Shadow Receptor: 5,0 x 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									
2	15.03	16.25	17.50									
3	10.04	09.00	07.33									
4	15.07	16.31	17.56									
5	10.02	08.54	07.26									
6	15.11	16.38	18.01									
7	10.00	08.48	07.19									
8	15.15	16.44	18.07									
9	09.57	08.42	07.13									
10	15.20	16.50	18.13									
11	09.54	08.36	07.06									
12	15.24	16.56	18.19									
13	09.50	08.30	06.59									
14	15.30	17.02	18.24									
15	09.47	08.24	06.53									
16	15.38	17.11	18.33									
17	09.43	08.18	06.46									
18	15.43	17.17	18.38									
19	09.38	08.11	06.39									
20	15.49	17.23	18.44									
21	09.34	08.05	06.32									
22	15.52	17.26	18.47									
23	09.29	07.59	06.26									
24	15.58	17.32	18.52									
25	09.24	07.52	06.19									
26	16.04	17.38	18.58									
27	09.19	07.46	06.12									
28	16.13	17.47	19.06									
29	09.14	07.05	06.07									
30	16.16	18.09	19.06									
31	09.08	07.02	06.08									
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154
Total, worst case			281							213		
Sun reduction			0,40							0,26		
Oper. time red.			0,97							0,97		
Wind dir. red.			0,60							0,60		
Total reduction			0,23							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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



Project:

20220502 Kattiharju extension

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: AP - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (52) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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	20.03 (K 12)	04.50	03.34	03.47	05.10			07.58	08.29	09.50		
	15.20	16.50	18.13	20.40	2	20.05 (K 12)	22.07	23.28	23.25	22.02		18.38	16.01	14.56		
10	09.55	08.39	07.09	06.25	20.00 (K 12)	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	20.07 (K 12)	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	19.58 (K 12)	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	20.10 (K 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	19.56 (K 12)	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	20.12 (K 12)	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	19.55 (K 12)	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	20.15 (K 12)	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	19.54 (K 12)	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	20.18 (K 12)	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	19.54 (K 12)	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	20.19 (K 12)	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	19.53 (K 12)	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	20.19 (K 12)	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	19.52 (K 12)	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	20.18 (K 12)	22.31	23.38	23.07	8	20.14 (K 12)	19.52	18.12	15.39	14.51	
18	09.40	08.14	06.42	05.58	19.52 (K 12)	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	20.18 (K 12)	22.34	23.39	23.05	13	20.17 (K 12)	19.49	18.08	15.36	14.51	
19	09.38	08.11	06.39	05.55	19.52 (K 12)	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	20.17 (K 12)	22.37	23.40	23.02	17	20.18 (K 12)	19.45	18.05	15.34	14.51	
20	09.36	08.08	06.36	05.51	19.53 (K 12)	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	20.17 (K 12)	22.40	23.40	23.00	20	20.20 (K 12)	19.42	18.02	15.31	14.52	
21	09.34	08.05	06.32	05.48	19.53 (K 12)	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	20.16 (K 12)	22.42	23.40	22.57	22	20.20 (K 12)	19.38	17.59	15.29	14.52	
22	09.31	08.02	06.29	05.45	19.54 (K 12)	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	20.15 (K 12)	22.45	23.41	22.55	24	20.21 (K 12)	19.35	17.55	15.26	14.52	
23	09.29	07.59	06.25	05.41	19.55 (K 12)	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	20.14 (K 12)	22.48	23.41	22.52	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						

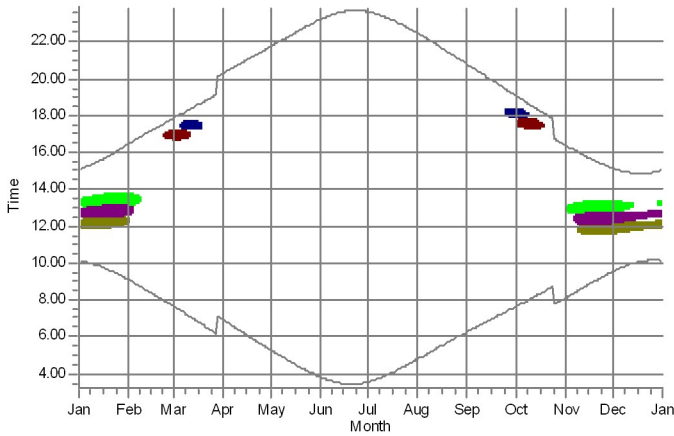
Table layout: For each day in each month the following matrix apply

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

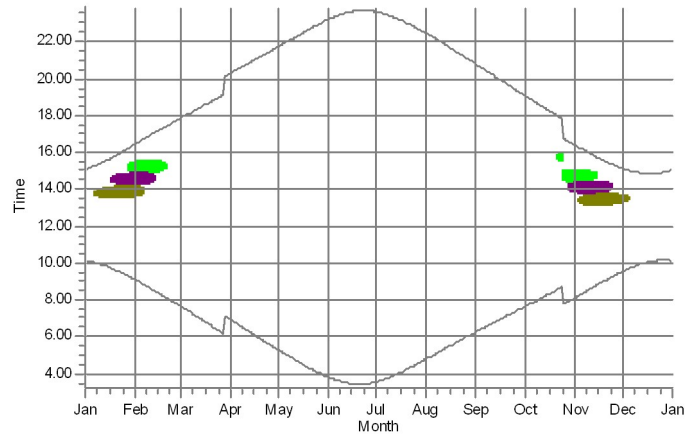
SHADOW - Calendar per WTG, graphical

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

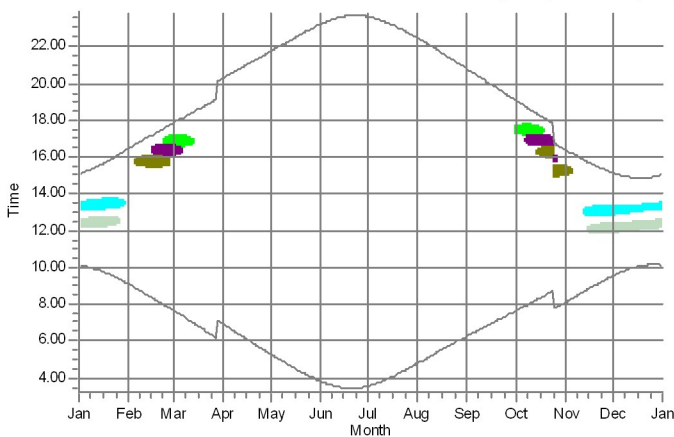
K 01: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



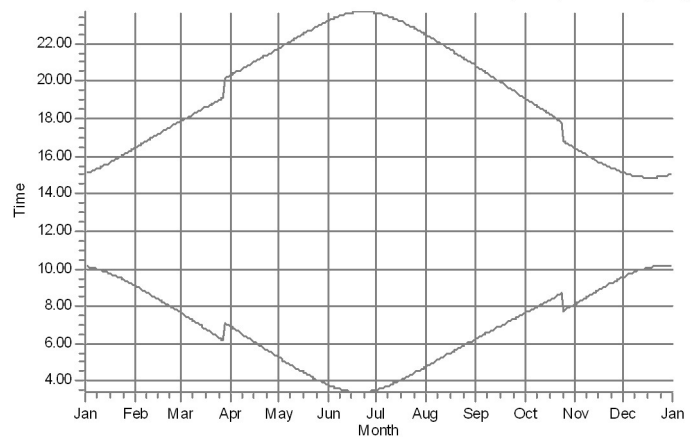
K 02: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 149,5 m (TOT: 231,0 m)



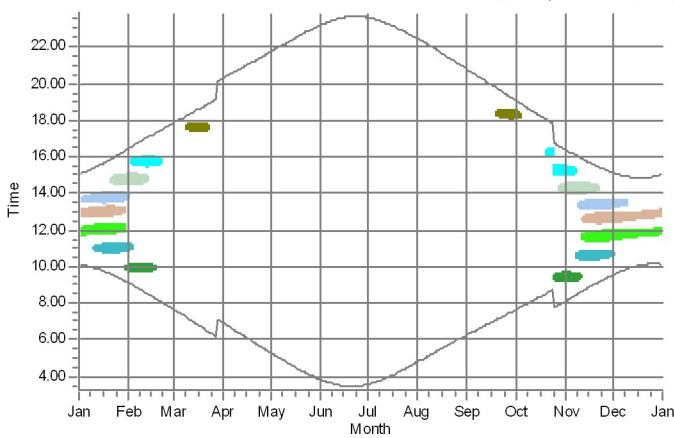
K 03: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



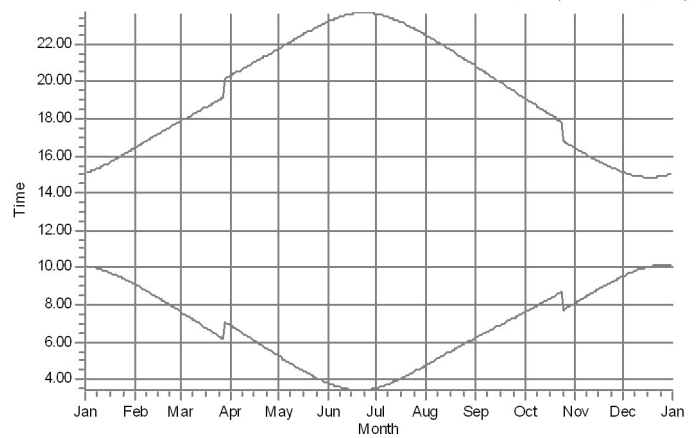
K 04: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



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)



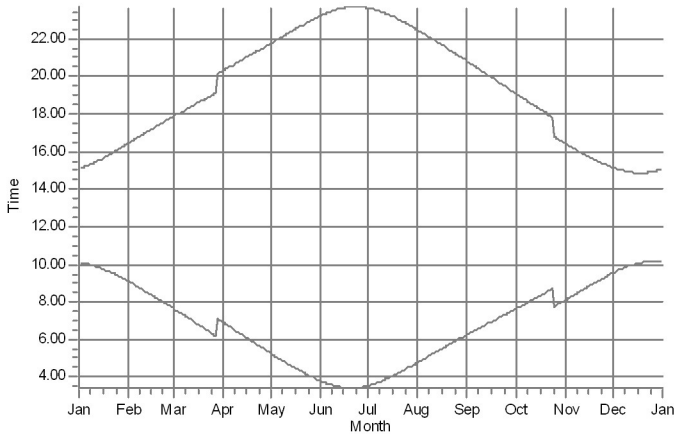
Shadow receptors

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

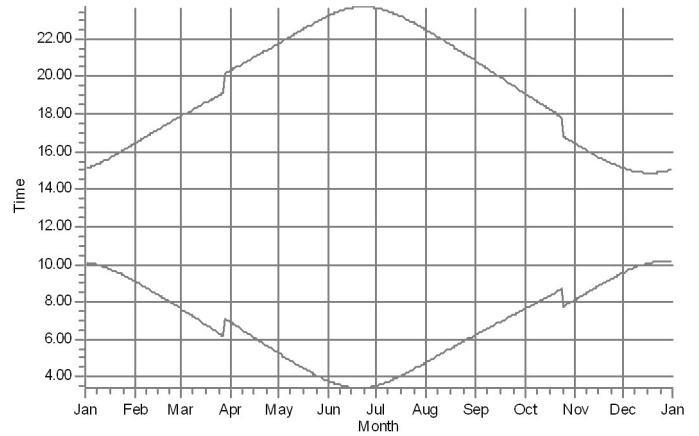
SHADOW - Calendar per WTG, graphical

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

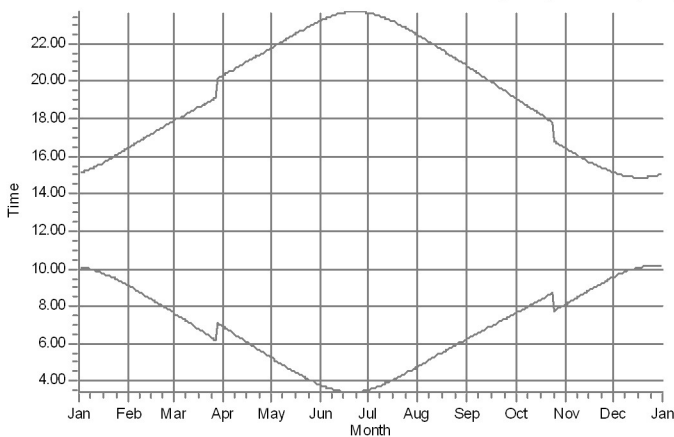
K 07: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 149,5 m (TOT: 231,0 m)



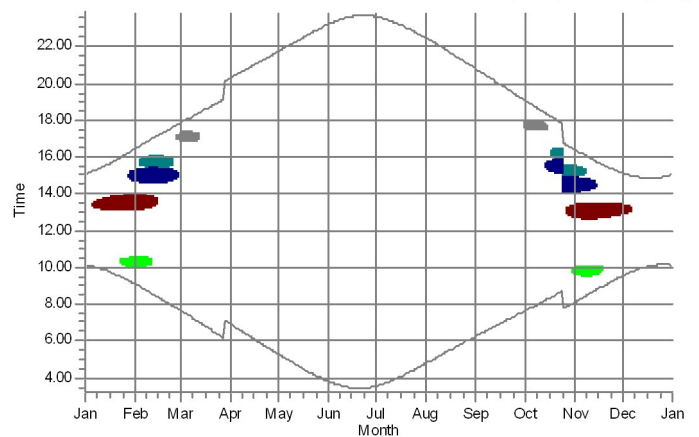
K 08: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 149,5 m (TOT: 231,0 m)



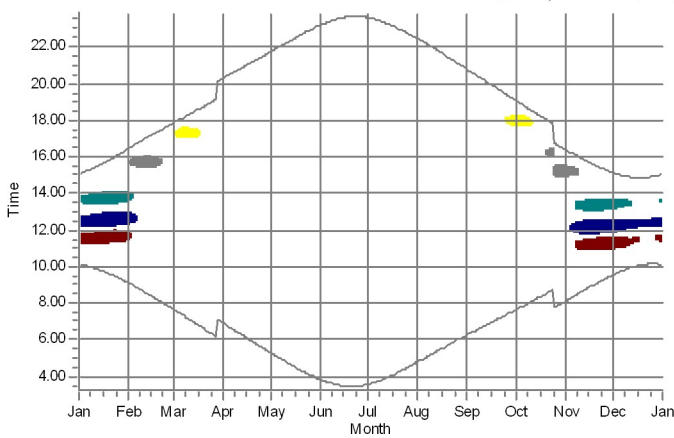
K 09: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



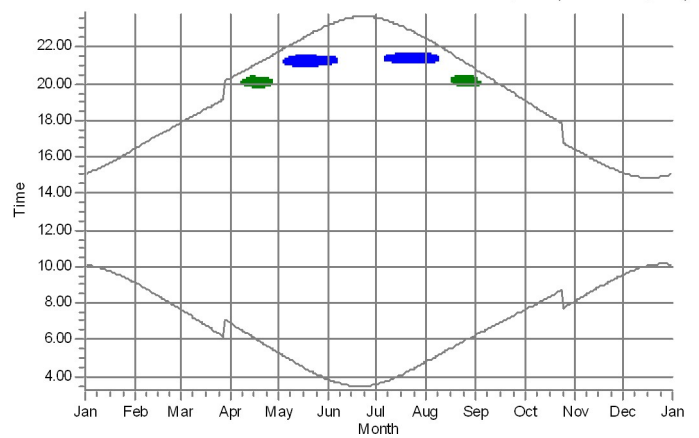
K 10: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



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 x 5,0 Azimuth: 0,0° Slope: 90,0° (52)
- AO: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (53)
- AN: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (54)

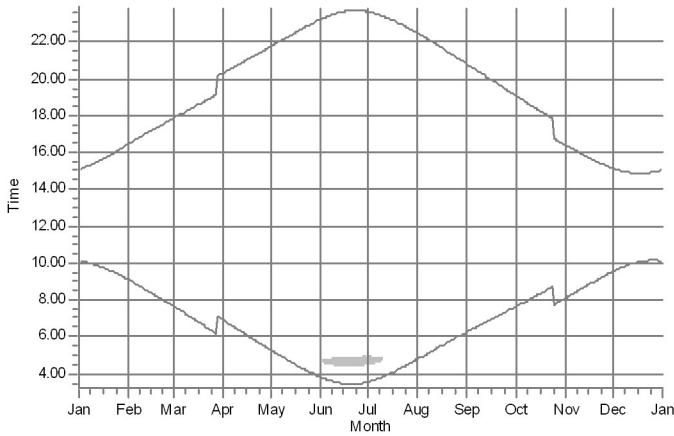
- AM: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (55)
- AK: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (57)
- AJ: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (58)

- AI: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (59)
- AH: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (60)

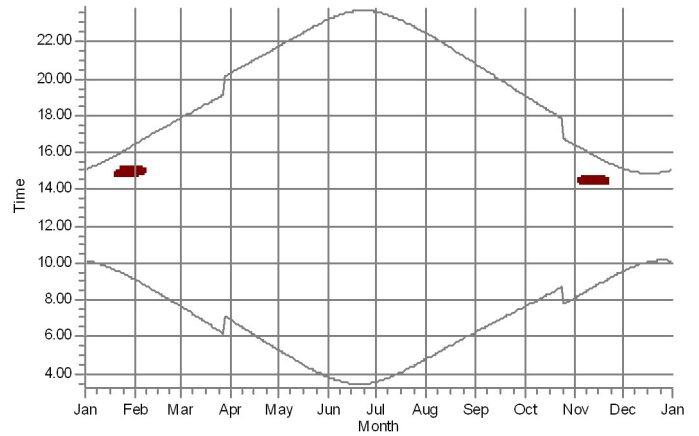
SHADOW - Calendar per WTG, graphical

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

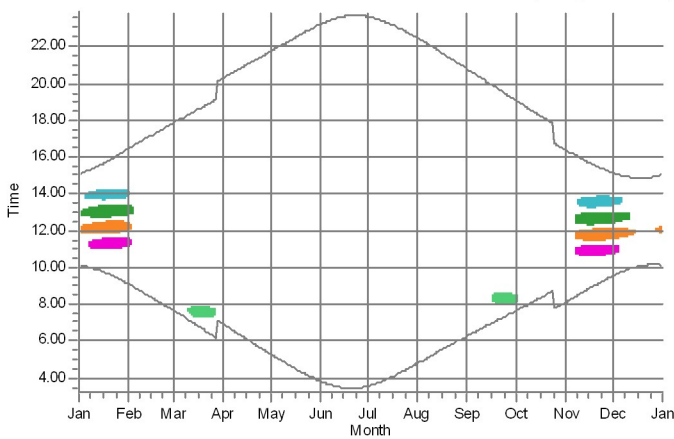
K 13: NORDEX N163/6.X-6800 6800 163.0 !-hub: 150,5 m (TOT: 232,0 m)



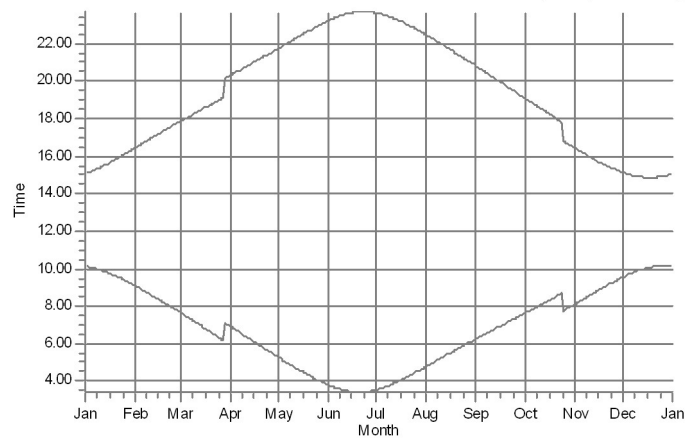
K 14: NORDEX N163/6.X-6800 6800 163.0 !-hub: 150,5 m (TOT: 232,0 m)



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



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



Shadow receptors

- AI: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (59)
- AE: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (63)
- X: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (70)

- W: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (71)
- T: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (74)
- S: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (75)

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

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 l-l 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

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 12.12-12.31/18	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

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

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

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 l-l 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

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

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 I-I hub: 150,5 m (TOT: 232,0 m) (145)**
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

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 15.04 12.44-13.03/19	09.06 09.49-10.01/12 13.46-13.56/10 16.25 10.56-11.13/17 14.32-15.01/29	07.39 17.50	06.55 20.18	05.16 21.44	03.48 23.12
2	10.06 11.48-12.05/17 13.38-13.43/5 15.05 12.45-13.04/19	09.03 09.47-10.03/16 14.32-15.01/29 16.29 10.58-11.12/14	07.36 17.53	06.52 20.21	05.12 21.47	03.46 23.14
3	10.05 11.47-12.06/19 13.36-13.45/9 15.07 12.44-13.05/21	09.00 09.46-10.04/18 14.32-15.01/29 16.32 11.00-11.09/9 15.43-15.45/2	07.33 17.56	06.49 20.24	05.09 21.50	03.44 23.17
4	10.04 11.48-12.07/19 13.36-13.47/11 15.09 12.45-13.06/21	08.57 09.45-10.05/20 15.38-15.49/11 16.35 14.33-15.02/29	07.30 17.59	06.45 20.26	05.06 21.53	03.42 23.19
5	10.03 11.47-12.08/21 13.35-13.48/13 15.11 12.44-13.06/22	08.54 09.44-10.05/21 15.36-15.52/16 16.38 14.33-15.01/28	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.21
6	10.02 11.48-12.09/21 13.35-13.50/15 15.13 12.45-13.08/23	08.52 09.44-10.06/22 15.36-15.54/18 16.41 14.33-15.01/28	07.23 18.05	06.38 20.32	05.00 21.59	03.39 23.23
7	10.00 11.48-12.10/22 13.35-13.51/16 15.15 12.45-13.08/23	08.49 09.44-10.06/22 15.34-15.55/21 16.44 14.34-15.00/26	07.20 18.08	06.35 20.35	04.57 22.02	03.37 23.25
8	09.59 11.48-12.10/22 13.34-13.52/18 15.18 12.45-13.09/24	08.46 09.44-10.07/23 15.34-15.56/22 16.47 14.35-15.00/25	07.16 18.10	06.32 20.38	04.54 22.05	03.35 23.27
9	09.58 11.48-12.11/23 13.34-13.53/19 15.20 12.45-13.10/25	08.43 09.43-10.07/24 15.33-15.56/23 16.50 14.35-14.59/24	07.13 18.13	06.28 20.41	04.50 22.08	03.34 23.29
10	09.56 11.48-12.12/24 13.34-13.54/20 15.22 12.45-13.10/25	08.40 09.44-10.07/23 15.33-15.57/24 16.53 14.37-14.59/22	07.10 18.16	06.25 20.43	04.47 22.11	03.33 23.30
11	09.54 10.58-11.02/4 12.45-13.11/26 15.25 11.48-12.12/24 13.34-13.55/21	08.37 09.45-10.07/22 15.32-15.57/25 16.56 14.38-14.57/19	07.06 18.19	06.22 20.46	04.44 22.14	03.31 23.32
12	09.53 10.55-11.04/9 12.46-13.11/25 15.27 11.48-12.13/25 13.34-13.56/22	08.34 09.45-10.06/21 15.32-15.58/26 16.59 14.40-14.55/15	07.03 18.22	06.18 20.49	04.41 22.17	03.30 23.34
13	09.51 10.53-11.06/13 12.46-13.12/26 15.30 11.48-12.14/26 13.34-13.57/23	08.31 09.46-10.06/20 15.31-15.57/26 17.02 14.44-14.53/9	07.00 18.25	06.15 20.52	04.38 22.20	03.29 23.35
14	09.49 10.53-11.08/15 12.46-13.13/27 15.33 11.49-12.15/26 13.34-13.58/24	08.27 09.46-10.05/19 17.06 15.32-15.57/25	06.56 18.28	06.12 20.55	04.35 22.23	03.28 23.36
15	09.47 10.52-11.09/17 12.47-13.13/26 15.35 11.49-12.15/26 13.34-13.58/24	08.24 09.48-10.04/16 17.09 15.33-15.58/25	06.53 18.30	06.08 20.58	04.32 22.26	03.27 23.37
16	09.45 10.51-11.09/18 12.46-13.13/27 15.38 11.48-12.15/27 13.33-13.58/25	08.21 09.49-10.01/12 17.12 15.33-15.57/24	06.50 18.33	06.05 21.00	04.30 22.29	03.27 23.38
17	09.43 10.51-11.10/19 12.47-13.14/27 15.41 11.49-12.15/26 13.34-13.59/25	08.18 09.53-09.58/5 17.15 15.34-15.56/22	06.46 18.36	06.02 21.03	04.27 22.32	03.26 23.39
18	09.41 10.51-11.12/21 12.47-13.14/27 15.44 11.50-12.16/26 13.34-14.00/26	08.15 15.34-15.55/21 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.26 23.40
19	09.39 10.51-11.13/22 12.48-13.15/27 15.46 11.50-12.17/27 13.35-14.01/26	08.12 15.36-15.54/18 17.21	06.39 18.42	05.55 21.09	04.21 22.37	03.25 23.40
20	09.37 10.50-11.13/23 12.48-13.14/26 15.49 11.50-12.16/26 13.34-14.00/26	08.09 15.37-15.52/15 17.24	06.36 18.44	05.52 21.12	04.18 22.40	03.25 23.41
21	09.34 10.51-11.14/23 12.49-13.15/26 14.39-14.48/9 15.52 11.51-12.17/26 13.35-14.01/26	08.05 15.40-15.50/10 17.27	06.33 18.47	05.48 21.15	04.15 22.43	03.25 23.41
22	09.32 10.51-11.14/23 12.50-13.15/25 14.37-14.51/14 15.55 11.52-12.17/25 13.35-14.01/26	08.02 17.30	06.29 18.50	05.45 21.18	04.13 22.46	03.25 23.41
23	09.29 10.50-11.14/24 12.50-13.14/24 14.35-14.53/18 15.58 11.51-12.16/25 13.35-14.01/26	07.59 17.33	06.26 18.53	05.42 21.21	04.10 22.49	03.26 23.41
24	09.27 10.51-11.15/24 12.51-13.14/23 14.35-14.55/20 16.01 11.52-12.17/25 13.36-14.01/25	07.56 17.36	06.23 18.56	05.38 21.24	04.07 22.51	03.26 23.41
25	09.24 10.52-11.15/23 12.52-13.14/22 14.34-14.56/22 16.04 11.54-12.17/23 13.37-14.02/25	07.53 17.39	06.19 18.58	05.35 21.27	04.05 22.54	03.27 23.41
26	09.22 10.51-11.15/24 12.53-13.13/20 14.33-14.57/24 16.07 11.54-12.16/22 13.37-14.01/24	07.49 17.41	06.16 19.01	05.32 21.30	04.02 22.57	03.27 23.41
27	09.19 10.52-11.15/23 12.54-13.12/18 14.33-14.58/25 16.10 11.55-12.15/20 13.38-14.01/23	07.46 17.44	06.12 19.04	05.29 21.32	04.00 22.59	03.28 23.40
28	09.17 10.53-11.16/23 12.56-13.12/16 14.32-14.58/26 16.13 11.57-12.15/18 13.38-14.00/22	07.43 17.47	06.09 19.07	05.25 21.35	03.58 23.02	03.29 23.40
29	09.14 10.53-11.15/22 12.58-13.09/11 14.32-14.59/27 16.16 11.58-12.13/15 13.40-14.00/20	07.40 17.44	06.06 19.10	05.22 21.38	03.55 23.05	03.30 23.39
30	09.11 10.54-11.15/21 13.42-13.59/17 16.19 12.01-12.11/10 14.33-15.00/27	07.37 17.41	06.03 19.12	05.19 21.41	03.53 23.07	03.31 23.38
31	09.09 09.52-09.58/6 13.43-13.57/14 16.22 10.55-11.14/19 14.32-15.00/28	07.34 17.38	06.00 19.15	05.16 21.44	03.50 23.10	03.28 23.38
	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

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 l-l 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	1192
Sum of minutes with flicker	0	0	204	464	2653	

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

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163
Assumptions for shadow calculations

WTG: K 06 - NORDEX N163/6.X-6800 6800 163.0 I-! hub: 148,5 m (TOT: 230,0 m) (151

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

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 I-I hub: 149,5 m (TOT: 231,0 m) (150) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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	23.48	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

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 l-! 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 15.04	09.06 16.26	07.39 17.50	06.55 20.18	05.16 21.44	03.49 23.12	03.33 23.37	04.47 22.27	06.15 20.47	07.37 19.05	08.05 16.24	09.32 15.08
2	10.06 15.05	09.03 16.29	07.36 17.53	06.52 20.21	05.12 21.47	03.46 23.14	03.34 23.36	04.50 22.24	06.18 20.43	07.39 19.02	08.08 16.21	09.35 15.06
3	10.05 15.07	09.00 16.32	07.33 17.56	06.49 20.24	05.09 21.50	03.44 23.16	03.36 23.35	04.53 22.21	06.21 20.40	07.42 18.58	08.11 16.18	09.37 15.05
4	10.04 15.09	08.57 16.35	07.30 17.59	06.45 20.26	05.06 21.53	03.43 23.19	03.37 23.33	04.56 22.18	06.24 20.36	07.45 18.55	08.14 16.15	09.40 15.03
5	10.03 15.11	08.54 16.38	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.21	03.39 23.32	04.59 22.15	06.26 20.33	07.48 18.52	08.17 16.12	09.42 15.01
6	10.02 15.13	08.51 16.41	07.23 18.05	06.38 20.32	05.00 21.59	03.39 23.23	03.41 23.30	05.02 22.11	06.29 20.30	07.50 18.48	08.20 16.09	09.44 15.00
7	10.00 15.15	08.48 16.44	07.20 18.08	06.35 20.35	04.57 22.02	03.37 23.25	03.43 23.29	05.04 22.08	06.32 20.26	07.53 18.45	08.23 16.07	09.46 14.59
8	09.59 15.18	08.46 16.47	07.16 18.10	06.32 20.38	04.54 22.05	03.36 23.27	03.45 23.27	05.07 22.05	06.34 20.23	07.56 18.42	08.26 16.04	09.48 14.58
9	09.57 15.20	08.43 16.50	07.13 18.13	06.28 20.40	04.51 22.08	03.34 23.28	03.47 23.25	05.10 22.02	06.37 20.20	07.59 18.38	08.29 16.01	09.50 14.56
10	09.56 15.22	08.40 16.53	07.10 18.16	06.25 20.43	04.47 22.11	03.33 23.30	03.49 23.23	05.13 21.59	06.40 20.16	08.01 18.35	08.32 15.58	09.52 14.55
11	09.54 15.25	08.37 16.56	07.06 18.19	06.22 20.46	04.44 22.14	03.32 23.32	03.51 23.21	05.16 21.56	06.43 20.13	08.04 18.32	08.35 15.55	09.54 14.55
12	09.53 15.27	08.33 16.59	07.03 18.22	06.18 20.49	04.41 22.17	03.30 23.33	03.53 23.19	05.19 21.53	06.45 20.09	08.07 18.28	08.38 15.52	09.56 14.54
13	09.51 15.30	08.30 17.02	07.00 18.25	06.15 20.52	04.38 22.20	03.29 23.35	03.56 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.50	09.57 14.53
14	09.49 15.33	08.27 17.06	06.56 18.27	06.12 20.55	04.35 22.23	03.28 23.36	03.58 23.15	05.25 21.46	06.51 20.03	08.13 18.22	08.44 15.47	09.59 14.53
15	09.47 15.35	08.24 17.09	06.53 18.30	06.08 20.58	04.33 22.26	03.28 23.37	04.00 23.13	05.28 21.43	06.53 19.59	08.15 18.18	08.47 15.44	10.00 14.52
16	09.45 15.38	08.21 17.12	06.49 18.33	06.05 21.00	04.30 22.28	03.27 23.38	04.03 23.10	05.30 21.40	06.56 19.56	08.18 18.15	08.50 15.42	10.02 14.52
17	09.43 15.41	08.18 17.15	06.46 18.36	06.01 21.03	04.27 22.31	03.26 23.39	04.06 23.08	05.33 21.36	06.59 19.52	08.21 18.12	08.53 15.39	10.03 14.52
18	09.41 15.44	08.15 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.26 23.40	04.08 23.05	05.36 21.33	07.01 19.49	08.24 18.09	08.56 15.36	10.04 14.51
19	09.39 15.46	08.12 17.21	06.39 18.42	05.55 21.09	04.21 22.37	03.26 23.40	04.11 23.03	05.39 21.30	07.04 19.46	08.27 18.05	08.59 15.34	10.05 14.52
20	09.36 15.49	08.09 17.24	06.36 18.44	05.52 21.12	04.18 22.40	03.25 23.41	04.13 23.00	05.42 21.27	07.07 19.42	08.30 18.02	09.02 15.31	10.06 14.52
21	09.34 15.52	08.05 17.27	06.33 18.47	05.48 21.15	04.16 22.43	03.25 23.41	04.16 22.58	05.45 21.23	07.10 19.39	08.33 17.59	09.05 15.29	10.07 14.52
22	09.32 15.55	08.02 17.30	06.29 18.50	05.45 21.18	04.13 22.46	03.26 23.41	04.19 22.55	05.47 21.20	07.12 19.35	08.36 17.56	09.08 15.27	10.07 14.52
23	09.29 15.58	07.59 17.33	06.26 18.53	05.42 21.21	04.10 22.48	03.26 23.41	04.22 22.52	05.50 21.17	07.15 19.32	08.38 17.53	09.11 15.24	10.08 14.53
24	09.27 16.01	07.56 17.36	06.22 18.56	05.38 21.24	04.08 22.51	03.26 23.41	04.24 22.50	05.53 21.13	07.18 19.29	08.41 17.49	09.13 15.22	10.08 14.54
25	09.24 16.04	07.52 17.39	06.19 18.58	05.35 21.26	04.05 22.54	03.27 23.41	04.27 22.47	05.56 21.10	07.20 19.25	07.44 16.46	09.16 15.20	10.08 14.54
26	09.22 16.07	07.49 17.41	06.16 19.01	05.32 21.29	04.02 22.57	03.27 23.41	04.30 22.44	05.59 21.07	07.23 19.22	07.47 16.43	09.19 15.18	10.08 14.55
27	09.19 16.10	07.46 17.44	06.12 19.04	05.29 21.32	04.00 22.59	03.28 23.40	04.33 22.41	06.01 21.03	07.26 19.18	07.50 16.40	09.22 15.16	10.08 14.56
28	09.17 16.13	07.43 17.47	06.09 19.07	05.25 21.35	03.58 23.02	03.29 23.39	04.36 22.38	06.04 21.00	07.28 19.15	07.53 16.37	09.24 15.14	10.08 14.57
29	09.14 16.16	07.40 17.49	06.06 19.09	05.22 21.38	03.55 23.04	03.30 23.39	04.38 22.36	06.07 20.57	07.31 19.12	07.56 16.34	09.27 15.12	10.08 14.59
30	09.11 16.19	07.37 17.46	06.03 19.06	05.19 21.41	03.53 23.07	03.31 23.38	04.41 22.33	06.10 20.53	07.34 19.08	07.59 16.31	09.30 15.10	10.08 15.00
31	09.08 16.22	07.34 17.51	06.00 19.03	05.16 21.44	03.50 23.04	03.29 23.37	04.37 22.30	06.03 20.50	07.27 19.01	07.52 16.27	09.23 15.03	10.07 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

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

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

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)
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 23.37	04.47 22.27	06.15 20.46	07.36 19.05	08.05 16.24	09.41-09.54/13 12.48-13.19/31
2	03.34 23.36	04.50 22.24	06.18 20.43	07.39 19.01	08.08 16.21	09.39-09.55/16 12.46-13.20/34
3	03.35 23.34	04.53 22.20	06.21 20.40	07.42 18.58	08.11 16.18	09.38-09.57/19 12.46-13.21/35
4	03.37 23.33	04.56 22.17	06.23 20.36	07.45 18.55	08.14 16.15	09.37-09.57/20 12.45-13.21/36
5	03.39 23.32	04.58 22.14	06.26 20.33	07.47 18.51	08.17 16.12	09.37-09.58/21 12.44-13.23/39
6	03.41 23.30	05.01 22.11	06.29 20.29	07.50 18.48	08.20 16.09	09.36-09.58/22 12.43-13.22/39
7	03.42 23.28	05.04 22.08	06.32 20.26	07.53 18.45	08.23 16.06	09.36-09.59/23 12.43-13.23/40
8	03.44 23.27	05.07 22.05	06.34 20.23	07.56 18.41	08.26 16.03	09.36-10.00/24 12.43-13.23/40
9	03.46 23.25	05.10 22.02	06.37 20.19	07.58 18.38	08.29 16.01	09.36-09.59/23 12.43-13.24/41
10	03.49 23.23	05.13 21.59	06.40 20.16	08.01 18.35	08.32 15.58	09.36-10.00/24 12.43-13.24/41
11	03.51 23.21	05.16 21.56	06.42 20.13	08.04 18.31	08.35 15.55	09.36-09.59/23 12.43-13.24/41
12	03.53 23.19	05.19 21.52	06.45 20.09	08.07 18.28	08.38 15.52	09.37-09.59/22 12.43-13.24/41
13	03.55 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.49	09.37-09.59/22 12.44-13.25/41
14	03.58 23.15	05.24 21.46	06.51 20.02	08.12 18.22	08.44 15.47	09.38-09.59/21 12.43-13.24/41
15	04.00 23.12	05.27 21.43	06.53 19.59	08.15 18.18	08.47 15.44	09.39-09.58/19 12.44-13.25/41
16	04.03 23.10	05.30 21.39	06.56 19.56	08.18 18.15	08.50 15.41	09.42-09.57/15 12.44-13.25/41
17	04.05 23.08	05.33 21.36	06.59 19.52	08.21 18.12	08.53 15.39	09.46-09.56/10 12.45-13.25/40
18	04.08 23.05	05.36 21.33	07.01 19.49	08.24 18.08	08.56 15.36	09.50-09.55/5 12.46-13.25/39
19	04.11 23.03	05.39 21.30	07.04 19.45	08.27 18.05	08.59 15.34	15.15-15.45/30 16.05-16.23/18
20	04.13 23.00	05.42 21.26	07.07 19.42	08.30 18.02	09.02 15.31	12.46-13.24/38 16.03-16.24/21
21	04.16 22.58	05.44 21.23	07.09 19.39	08.32 17.59	09.05 15.29	15.12-15.47/35 16.02-16.25/23
22	04.19 22.55	05.47 21.20	07.12 19.35	08.35 17.56	09.08 15.26	15.10-15.47/37 16.00-16.26/26
23	04.21 22.52	05.50 21.16	07.15 19.32	08.38 17.52	09.10 15.24	15.10-15.49/39 16.00-16.27/27
24	04.24 22.50	05.53 21.13	07.17 19.28	08.41 17.49	09.13 15.22	15.10-15.49/39 15.59-16.27/28
25	04.27 22.47	05.56 21.10	07.20 19.25	07.44 16.46	09.16 15.20	14.09-14.49/40 14.58-15.27/29
26	04.30 22.44	05.58 21.06	07.23 19.22	07.47 16.43	09.19 15.18	14.08-14.49/41 14.58-15.27/29
27	04.33 22.41	06.01 21.03	07.26 19.18	07.50 16.40	09.22 15.15	14.08-14.49/41 14.58-15.28/30
28	04.35 22.38	06.04 21.00	07.28 19.15	07.53 16.37	09.24 15.13	12.56-13.11/15 14.08-14.49/41
29	04.38 22.35	06.07 20.56	07.31 19.12	07.56 16.33	09.27 15.11	12.52-13.14/22 14.08-14.49/41
30	04.41 22.32	06.10 20.53	07.34 19.08	07.59 16.30	09.30 15.10	12.51-13.16/25 14.08-14.49/41
31	04.44 22.30	06.12 20.50		08.02 16.27		09.43-09.50/7 12.49-13.17/28
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) Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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

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	08.05	09.32
	23.37	22.26	20.46	17.45-18.08/23	15.00-15.26/26	11.03-11.29/26
2	03.34	04.50	06.18	07.39	08.08	09.35
	23.36	22.23	20.43	17.45-18.08/23	15.00-15.25/25	11.04-11.29/25
3	03.35	04.53	06.21	07.42	08.11	09.37
	23.34	22.20	20.40	17.44-18.09/25	15.00-15.24/24	11.05-11.30/25
4	03.37	04.56	06.23	07.45	08.14	09.39
	23.33	22.17	20.36	17.44-18.09/25	15.01-15.24/23	11.05-11.29/24
5	03.39	04.58	06.26	07.47	08.17	09.42
	23.32	22.14	20.33	17.44-18.08/24	12.05-12.11/6	11.06-11.29/23
6	03.41	05.01	06.29	07.50	08.20	09.44
	23.30	22.11	20.29	17.44-18.08/24	12.00-12.15/15	11.08-11.30/22
7	03.42	05.04	06.32	07.53	08.23	09.46
	23.28	22.08	20.26	17.45-18.07/22	11.58-12.18/20	11.08-11.29/21
8	03.44	05.07	06.34	07.56	08.26	09.48
	23.27	22.05	20.23	17.44-18.03/19	11.56-12.19/23	11.09-11.29/20
9	03.46	05.10	06.37	07.58	08.29	09.50
	23.25	22.02	20.19	17.45-18.00/15	11.05-11.17/12	11.10-11.29/19
10	03.49	05.13	06.40	08.01	08.32	09.52
	23.23	21.59	20.16	17.47-17.56/9	11.03-11.20/17	11.11-11.29/18
11	03.51	05.16	06.42	08.04	08.35	09.54
	23.21	21.55	20.13	17.49-17.53/4	11.01-11.21/20	11.14-11.28/14
12	03.53	05.19	06.45	08.07	08.38	09.56
	23.19	21.52	20.09	18.38	11.01-11.22/21	11.17-11.28/11
13	03.55	05.22	06.48	08.10	08.41	09.57
	23.17	21.49	20.06	18.41	11.00-11.24/24	11.20-11.28/8
14	03.58	05.24	06.50	08.12	08.44	09.59
	23.15	21.46	20.02	18.48	11.03-11.24/25	11.23-11.29/6
15	04.00	05.27	06.53	08.15	08.47	10.00
	23.12	21.43	19.59	18.51	11.05-11.25/26	11.25-11.28/3
16	04.03	05.30	06.56	08.18	08.50	10.02
	23.10	21.39	19.56	18.55	11.08-11.26/28	11.28-11.29/1
17	04.05	05.33	06.59	08.21	08.53	10.03
	23.08	21.36	19.52	18.58	11.09-11.27/29	12.14-12.27/13
18	04.08	05.36	07.01	08.24	08.56	10.04
	23.05	21.33	19.49	18.61	11.09-11.28/29	12.14-12.27/13
19	04.11	05.39	07.04	08.27	08.59	10.05
	23.03	21.30	19.45	18.68	11.09-11.27/29	12.15-12.27/12
20	04.13	05.42	07.07	08.30	09.02	10.06
	23.00	21.26	19.42	18.75	11.08-11.28/30	12.16-12.27/11
21	04.16	05.44	07.09	08.32	09.05	10.06
	22.57	21.23	19.39	18.80	11.09-11.28/30	12.16-12.28/12
22	04.19	05.47	07.12	08.35	09.07	10.07
	22.55	21.20	19.35	18.87	11.09-11.29/30	12.16-12.28/12
23	04.21	05.50	07.15	08.38	09.10	10.07
	22.52	21.16	19.32	18.94	11.09-11.29/30	12.17-12.28/11
24	04.24	05.53	07.17	08.41	09.13	10.08
	22.49	21.13	19.28	18.99	11.00-11.29/29	12.17-12.29/12
25	04.27	05.56	07.20	08.44	09.16	10.08
	22.47	21.10	19.25	19.06	11.00-11.29/29	12.18-12.30/12
26	04.30	05.58	07.23	08.47	09.19	10.08
	22.44	21.06	19.22	19.13	11.00-11.29/29	12.17-12.31/14
27	04.33	06.01	07.26	08.50	09.22	10.08
	22.41	21.03	19.18	19.20	11.01-11.29/28	12.17-12.31/14
28	04.35	06.04	07.28	08.53	09.24	10.08
	22.38	21.00	19.15	19.27	11.01-11.29/28	11.32-11.34/2
29	04.38	06.07	07.31	08.56	09.27	10.08
	22.35	20.56	19.11	19.34	11.02-11.30/28	12.18-12.33/15
30	04.41	06.10	07.34	08.59	09.29	10.07
	22.32	20.53	19.08	19.41	11.03-11.30/27	11.31-11.36/5
31	04.44	06.12		09.02	09.32	10.07
	22.29	20.50		19.48	11.04-11.30/27	12.17-12.33/16
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

SHADOW - Calendar per WTG

Calculation: 16 x WTG : 2 x N175 + 14 x N163
 Assumptions for shadow calculations

WTG: K 12 - NORDEX N163/6.X-6800 6800 163.0 I-I hub: 150,5 m (TOT: 232,0 m) (154

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

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

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 I-! 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 15.04	09.05 16.25	07.39 17.50	06.55 20.18	05.16 21.44	03.49 23.12	03.33 23.37	04.33-04.49/16 22.26	06.15 20.46	07.36 19.05	08.05 16.24	09.32 15.08
2	10.05 15.05	09.03 16.28	07.36 17.53	06.52 20.21	05.12 21.47	03.46 23.14	03.34 23.35	04.35-04.50/15 22.23	06.18 20.43	07.39 19.01	08.08 16.21	09.35 15.06
3	10.04 15.07	09.00 16.32	07.33 17.56	06.48 20.23	05.09 21.50	03.44 23.16	03.36 23.34	04.36-04.49/13 22.20	06.21 20.40	07.42 18.58	08.11 16.18	09.37 15.04
4	10.04 15.09	08.57 16.35	07.29 17.59	06.45 20.26	05.06 21.53	03.42 23.18	03.37 23.33	04.37-04.49/12 22.17	06.23 20.36	07.45 18.55	08.14 16.15	09.39 15.03
5	10.02 15.11	08.54 16.38	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.21	03.39 23.32	04.38-04.48/10 22.14	06.26 20.33	07.47 18.51	08.17 16.12	09.42 15.01
6	10.01 15.13	08.51 16.41	07.23 18.05	06.38 20.32	05.00 21.59	03.39 23.23	03.41 23.30	04.40-04.49/9 22.11	06.29 20.29	07.50 18.48	08.20 16.09	09.44 15.00
7	10.00 15.15	08.48 16.44	07.19 18.07	06.35 20.35	04.57 22.02	03.37 23.25	03.43 23.28	04.41-04.48/7 22.08	06.32 20.26	07.53 18.45	08.23 16.06	09.46 14.59
8	09.59 15.18	08.45 16.47	07.16 18.10	06.32 20.37	04.53 22.05	03.36 23.26	03.45 23.27	04.43-04.48/5 22.05	06.34 20.23	07.56 18.41	08.26 16.04	09.48 14.58
9	09.57 15.20	08.42 16.50	07.13 18.13	06.28 20.40	04.50 22.08	03.34 23.28	03.47 23.25	04.44-04.46/2 22.02	06.37 20.19	07.58 18.38	08.29 16.01	09.50 14.56
10	09.56 15.22	08.39 16.53	07.09 18.16	06.25 20.43	04.47 22.11	03.33 23.30	03.49 23.23	04.30-04.44/14 21.59	06.40 20.16	08.01 18.35	08.32 15.58	09.52 14.55
11	09.54 15.25	08.36 16.56	07.06 18.19	06.21 20.46	04.44 22.14	03.31 23.31	03.40 23.21	04.45/15 21.56	06.42 20.13	08.04 18.31	08.35 15.55	09.54 14.55
12	09.52 15.27	08.33 16.59	07.03 18.22	06.18 20.49	04.41 22.17	03.30 23.33	03.40 23.19	04.29-04.45/16 21.52	06.45 20.09	08.07 18.28	08.38 15.52	09.56 14.54
13	09.51 15.30	08.30 17.02	06.59 18.25	06.15 20.52	04.38 22.19	03.29 23.34	03.40 23.17	04.28-04.45/17 21.49	06.48 20.06	08.10 18.25	08.41 15.50	09.57 14.53
14	09.49 15.33	08.27 17.05	06.56 18.27	06.11 20.54	04.35 22.22	03.28 23.36	03.40 23.15	04.28-04.46/18 21.46	06.51 20.02	08.12 18.22	08.44 15.47	09.59 14.52
15	09.47 15.35	08.24 17.08	06.53 18.30	06.08 20.57	04.32 22.25	03.28 23.37	03.40 23.12	04.27-04.46/19 21.43	06.53 19.59	08.15 18.18	08.47 15.44	10.00 14.52
16	09.45 15.38	08.21 17.11	06.49 18.33	06.05 21.00	04.30 22.28	03.27 23.38	03.40 23.10	04.27-04.47/20 21.39	06.56 19.56	08.18 18.15	08.50 15.41	10.01 14.52
17	09.43 15.41	08.18 17.15	06.46 18.36	06.01 21.03	04.27 22.31	03.26 23.39	03.26 23.08	04.27-04.47/20 21.39	06.53 19.52	08.21 18.12	08.53 15.39	10.03 14.52
18	09.41 15.44	08.15 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.26 23.39	03.26 23.05	04.27-04.48/21 21.33	06.36 19.49	07.01 18.08	08.24 15.36	10.04 14.51
19	09.38 15.46	08.11 17.21	06.39 18.41	05.55 21.09	04.21 22.37	03.26 23.40	03.26 23.03	04.27-04.48/21 21.30	06.39 19.45	07.04 18.05	08.27 15.34	10.05 14.51
20	09.36 15.49	08.08 17.24	06.36 18.44	05.51 21.12	04.18 22.40	03.25 23.40	03.25 23.00	04.27-04.48/21 21.26	06.42 19.42	07.07 18.02	08.30 15.31	10.06 14.52
21	09.34 15.52	08.05 17.27	06.32 18.47	05.48 21.15	04.15 22.43	03.25 23.41	03.25 22.57	04.27-04.48/21 21.23	06.44 19.39	07.09 17.59	08.32 15.29	10.06 14.52
22	09.31 15.55	08.02 17.29	06.29 18.50	05.45 21.17	04.13 22.45	03.26 23.41	03.26 22.55	04.27-04.48/21 21.20	06.47 19.35	07.12 17.56	08.35 15.27	10.07 14.52
23	09.29 15.58	07.59 17.32	06.26 18.53	05.41 21.20	04.10 22.48	03.26 23.41	03.26 22.52	04.28-04.49/21 21.16	06.48 19.32	07.15 17.52	08.38 15.24	10.07 14.53
24	09.27 16.01	07.55 17.35	06.22 18.55	05.38 21.23	04.07 22.51	03.26 23.41	03.26 22.49	04.28-04.49/21 21.13	06.49 19.28	07.17 17.49	08.41 15.22	10.08 14.54
25	09.24 16.04	07.52 17.38	06.19 18.58	05.35 21.26	04.05 22.54	03.27 23.41	03.27 22.47	04.29-04.49/20 21.10	06.56 19.25	07.20 17.46	07.44 15.20	10.08 14.54
26	09.22 16.07	07.49 17.41	06.16 19.01	05.32 21.29	04.02 22.56	03.27 23.40	03.27 22.44	04.29-04.49/20 21.06	06.59 19.22	07.23 17.47	07.47 15.18	10.08 14.55
27	09.19 16.10	07.46 17.44	06.12 19.04	05.28 21.32	04.00 22.59	03.28 23.40	03.28 22.41	04.30-04.49/19 21.03	06.01 19.18	07.26 17.40	07.50 15.16	10.08 14.56
28	09.16 16.13	07.42 17.47	06.09 19.07	05.25 21.35	03.58 23.02	03.29 23.39	03.29 22.38	04.31-04.50/19 21.00	06.04 19.15	07.28 17.37	07.53 15.14	10.08 14.57
29	09.14 16.16		07.05 20.09	05.22 21.38	03.55 23.04	03.30 23.38	03.30 22.35	04.31-04.49/18 20.56	06.07 19.12	07.31 17.34	07.56 15.12	10.08 14.59
30	09.11 16.19		07.02 20.12	05.19 21.41	03.53 23.07	03.31 23.38	03.31 22.32	04.32-04.49/17 20.53	06.10 19.08	07.34 17.30	07.59 15.10	10.07 15.00
31	09.08 16.22		06.59 20.15		03.51 23.09		04.44 22.29	06.12 20.50		08.02 16.27		10.07 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

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 I-! 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 15.04	09.06 14.46-15.08/22 16.25	07.39 17.50	06.55 20.18	05.16 21.44	03.48 23.12	03.33 23.37	04.47 22.27	06.15 20.46	07.37 19.05	08.05 16.24	09.32 15.08
2	10.05 15.05	09.03 14.47-15.08/21 16.29	07.36 17.53	06.52 20.21	05.12 21.47	03.46 23.14	03.34 23.36	04.50 22.24	06.18 20.43	07.39 19.01	08.08 16.21	09.35 15.06
3	10.05 15.07	09.00 14.49-15.08/19 16.32	07.33 17.56	06.48 20.23	05.09 21.50	03.44 23.16	03.36 23.34	04.53 22.21	06.21 20.40	07.42 18.58	08.11 16.18	09.37 15.04
4	10.04 15.09	08.57 14.49-15.07/18 16.35	07.29 17.59	06.45 20.26	05.06 21.53	03.42 23.18	03.37 23.33	04.56 22.17	06.23 20.36	07.45 18.55	08.14 14.25-14.32/7 16.15	09.39 15.03
5	10.03 15.11	08.54 14.51-15.07/16 16.38	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.21	03.39 23.32	04.59 22.14	06.26 20.33	07.47 18.51	08.17 14.22-14.35/13 16.12	09.42 15.01
6	10.01 15.13	08.51 14.52-15.04/12 16.41	07.23 18.05	06.38 20.32	05.00 21.59	03.39 23.23	03.41 23.30	05.01 22.11	06.29 20.30	07.50 18.48	08.20 14.20-14.36/16 16.09	09.44 15.00
7	10.00 15.15	08.48 14.56-15.02/6 16.44	07.19 18.07	06.35 20.35	04.57 22.02	03.37 23.25	03.43 23.28	05.04 22.08	06.32 20.26	07.53 18.45	08.23 14.20-14.38/18 16.06	09.46 14.59
8	09.59 15.18	08.45 16.47	07.16 18.10	06.32 20.37	04.53 22.05	03.36 23.27	03.45 23.27	05.07 22.05	06.34 20.23	07.56 18.41	08.26 14.18-14.38/20 16.04	09.48 14.58
9	09.57 15.20	08.42 16.50	07.13 18.13	06.28 20.40	04.50 22.08	03.34 23.28	03.47 23.25	05.10 22.02	06.37 20.19	07.59 18.38	08.29 14.18-14.39/21 16.01	09.50 14.56
10	09.56 15.22	08.39 16.53	07.09 18.16	06.25 20.43	04.47 22.11	03.33 23.30	03.49 23.23	05.13 21.59	06.40 20.16	08.01 18.35	08.32 14.18-14.40/22 15.58	09.52 14.55
11	09.54 15.25	08.36 16.56	07.06 18.19	06.21 20.46	04.44 22.14	03.31 23.32	03.51 23.21	05.16 21.56	06.42 20.13	08.04 18.31	08.35 14.17-14.40/23 15.55	09.54 14.54
12	09.52 15.27	08.33 16.59	07.03 18.22	06.18 20.49	04.41 22.17	03.30 23.33	03.53 23.19	05.19 21.52	06.45 20.09	08.07 18.28	08.38 14.18-14.40/22 15.52	09.56 14.54
13	09.51 15.30	08.30 17.02	06.59 18.25	06.15 20.52	04.38 22.20	03.29 23.34	03.56 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 14.18-14.41/23 15.50	09.57 14.53
14	09.49 15.33	08.27 17.05	06.56 18.27	06.11 20.55	04.35 22.22	03.28 23.36	03.58 23.15	05.25 21.46	06.51 20.02	08.13 18.22	08.44 14.17-14.40/23 15.47	09.59 14.52
15	09.47 15.35	08.24 17.08	06.53 18.30	06.08 20.57	04.32 22.25	03.28 23.37	04.00 23.12	05.27 21.43	06.53 19.59	08.15 18.18	08.47 14.18-14.41/23 15.44	10.00 14.52
16	09.45 15.38	08.21 17.12	06.49 18.33	06.05 21.00	04.30 22.28	03.27 23.38	04.03 23.10	05.30 21.39	06.56 19.56	08.18 18.15	08.50 14.19-14.41/22 15.42	10.02 14.52
17	09.43 15.41	08.18 17.15	06.46 18.36	06.01 21.03	04.27 22.31	03.26 23.39	04.05 23.08	05.33 21.36	06.59 19.52	08.21 18.12	08.53 14.20-14.41/21 15.39	10.03 14.51
18	09.41 15.44	08.15 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.26 23.39	04.08 23.05	05.36 21.33	07.01 19.49	08.24 18.09	08.56 14.20-14.41/21 15.36	10.04 14.51
19	09.38 15.46	08.12 17.21	06.39 18.41	05.55 21.09	04.21 22.37	03.26 23.40	04.11 23.03	05.39 21.30	07.04 19.45	08.27 18.05	08.59 14.20-14.38/18 15.34	10.05 14.51
20	09.36 15.49	14.48-14.52/4 17.24	08.08 18.44	05.51 21.12	04.18 22.40	03.25 23.40	04.13 23.00	05.42 21.26	07.07 19.42	08.30 18.02	09.02 14.21-14.35/14 15.31	10.06 14.52
21	09.34 15.52	14.48-14.56/8 17.27	08.05 18.47	05.48 21.15	04.15 22.43	03.25 23.41	04.16 22.58	05.44 21.23	07.09 19.39	08.33 17.59	09.05 14.23-14.31/8 15.29	10.06 14.52
22	09.32 15.55	14.46-15.00/14 17.30	08.02 18.50	05.45 21.18	04.13 22.45	03.26 23.41	04.19 22.55	05.47 21.20	07.12 19.35	08.35 17.56	09.08 14.24-14.28/4 15.27	10.07 14.52
23	09.29 15.58	14.46-15.04/18 17.32	07.59 18.53	05.42 21.20	04.10 22.48	03.26 23.41	04.21 22.52	05.50 21.16	07.15 19.32	08.38 17.52	09.10 15.24 15.24	10.07 14.53
24	09.27 16.01	14.46-15.07/21 17.35	07.56 18.55	05.38 21.23	04.07 22.51	03.26 23.41	04.24 22.50	05.53 21.13	07.18 19.28	08.41 17.49	09.13 15.22 15.22	10.08 14.54
25	09.24 16.04	14.46-15.07/21 17.38	07.52 18.58	05.35 21.26	04.05 22.54	03.27 23.41	04.27 22.47	05.56 21.10	07.20 19.25	07.44 16.46	09.16 15.20 15.20	10.08 14.54
26	09.22 16.07	14.46-15.08/22 17.41	07.49 19.01	05.32 21.29	04.02 22.56	03.27 23.40	04.30 22.44	05.59 21.07	07.23 19.22	07.47 16.43	09.19 15.18 15.18	10.08 14.55
27	09.19 16.10	14.45-15.08/23 17.44	07.46 19.04	05.28 21.32	04.00 22.59	03.28 23.40	04.33 22.41	06.01 21.03	07.26 19.18	07.50 16.40	09.22 15.16 15.16	10.08 14.56
28	09.16 16.13	14.46-15.08/22 17.47	07.43 19.07	05.25 21.35	03.58 23.02	03.29 23.39	04.35 22.38	06.04 21.00	07.28 19.15	07.53 16.37	09.24 15.14 15.14	10.08 14.57
29	09.14 16.16	14.46-15.09/23 17.50	07.41 19.09	05.22 21.38	03.55 23.04	03.30 23.39	04.38 22.35	06.07 20.56	07.31 19.12	07.56 16.34	09.27 15.12 15.12	10.08 14.59
30	09.11 16.19	14.46-15.09/23 17.53	07.38 19.12	05.19 21.41	03.53 23.07	03.31 23.38	04.41 22.32	06.10 20.53	07.34 19.08	07.59 16.30	09.30 15.10 15.10	10.07 15.00
31	09.08 16.22	14.47-15.09/22 17.56	07.35 19.15	05.16 21.44	03.51 23.09	04.44 22.30	06.12 20.50	06.12 20.50	08.02 16.27	08.02 16.27	09.27 15.07 15.07	10.07 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) Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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

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
	23.37	22.27	20.47	19.05	16.25	09.33
2	03.34	04.50	06.18	07.40	08.15-08.20/5	08.08
	23.36	22.24	20.43	19.02	16.22	15.06
3	03.36	04.53	06.21	07.42	08.11	09.37
	23.35	22.21	20.40	18.58	16.18	15.05
4	03.37	04.56	06.24	07.45	08.14	09.40
	23.34	22.18	20.37	18.55	16.15	15.03
5	03.39	04.59	06.26	07.48	08.17	09.42
	23.32	22.15	20.33	18.52	16.13	15.02
6	03.41	05.02	06.29	07.51	08.20	09.44
	23.31	22.12	20.30	18.48	16.10	15.00
7	03.43	05.05	06.32	07.53	08.23	09.47
	23.29	22.09	20.26	18.45	16.07	14.59
8	03.45	05.07	06.35	07.56	08.26	09.49
	23.27	22.05	20.23	18.42	16.04	14.58
9	03.47	05.10	06.37	07.59	08.29	09.51
	23.25	22.02	20.20	18.38	16.01	14.56
10	03.49	05.13	06.40	08.02	08.32	09.53
	23.23	21.59	20.16	18.35	15.58	14.55
11	03.51	05.16	06.43	08.04	08.35	09.54
	23.22	21.56	20.13	18.32	15.55	14.55
12	03.53	05.19	06.45	08.07	08.38	09.56
	23.19	21.53	20.10	18.28	15.52	14.54
13	03.56	05.22	06.48	08.10	08.41	09.58
	23.17	21.50	20.06	18.25	15.50	14.53
14	03.58	05.25	06.51	08.13	08.44	09.59
	23.15	21.46	20.03	18.22	15.47	14.53
15	04.00	05.28	06.54	08.16	08.47	10.01
	23.13	21.43	19.59	18.19	15.44	14.52
16	04.03	05.30	06.56	08.19	08.50	10.02
	23.11	21.40	19.56	18.15	15.42	14.52
17	04.06	05.33	06.59	08.21	08.53	10.03
	23.08	21.37	19.53	18.12	15.39	14.52
18	04.08	05.36	07.02	08.24	08.56	10.04
	23.06	21.33	19.49	18.09	15.37	14.51
19	04.11	05.39	07.04	08.27	08.59	10.05
	23.03	21.30	19.46	18.05	15.34	14.52
20	04.13	05.42	07.07	08.30	09.02	10.06
	23.01	21.27	19.42	18.02	15.32	14.52
21	04.16	05.45	07.10	08.33	09.05	10.07
	22.58	21.23	19.39	17.59	15.29	14.52
22	04.19	05.48	07.12	08.36	09.08	10.07
	22.55	21.20	19.36	17.56	15.27	14.52
23	04.22	05.50	07.15	08.39	09.11	10.08
	22.53	21.17	19.32	17.53	15.24	14.53
24	04.24	05.53	07.18	08.42	09.14	10.08
	22.50	21.14	19.29	17.49	15.22	14.54
25	04.27	05.56	07.21	08.45	09.16	10.09
	22.47	21.10	19.25	17.46	15.20	14.54
26	04.30	05.59	07.23	08.47	09.19	10.09
	22.44	21.07	19.22	17.43	15.18	14.55
27	04.33	06.02	07.26	08.50	09.22	10.09
	22.42	21.04	19.19	17.40	15.16	14.56
28	04.36	06.04	07.29	08.53	09.25	10.09
	22.39	21.00	19.15	17.37	15.14	14.57
29	04.38	06.07	07.31	08.56	09.27	10.08
	22.36	20.57	19.12	17.34	15.12	14.59
30	04.41	06.10	07.34	08.59	09.30	10.08
	22.33	20.53	19.08	17.31	15.10	15.00
31	04.44	06.13		08.02		10.07
	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

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

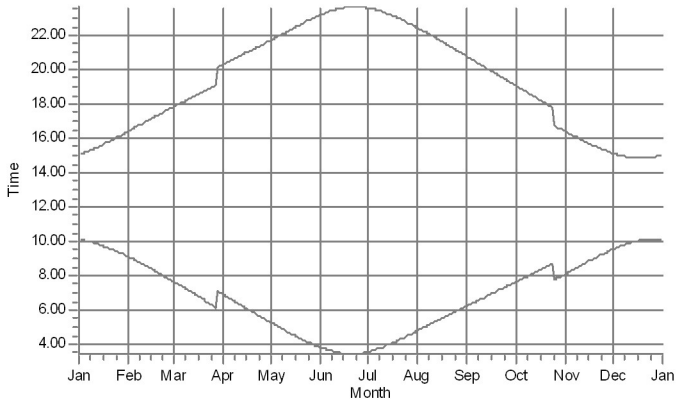
Table layout: For each day in each month the following matrix apply

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

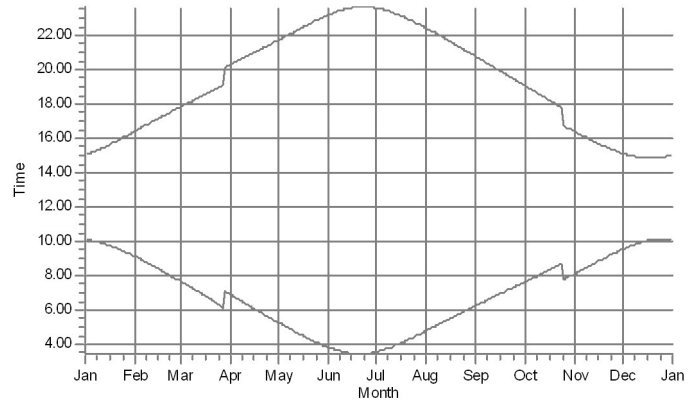
SHADOW - Calendar, graphical

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

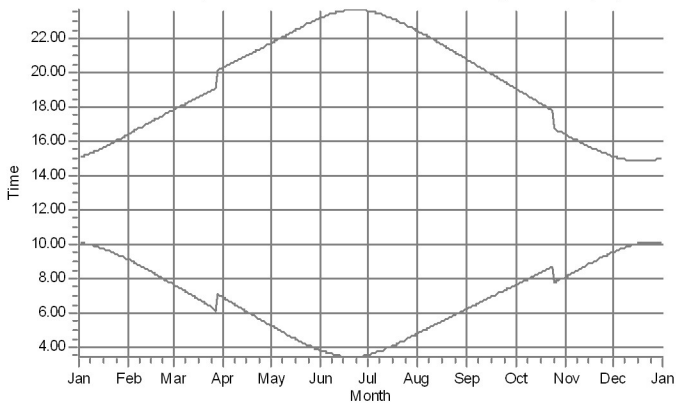
A: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (93)



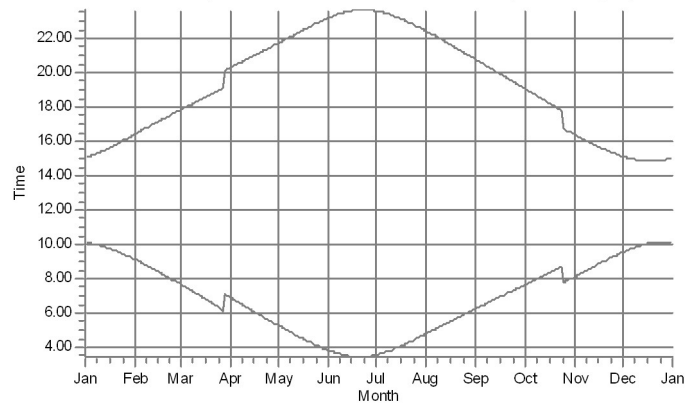
B: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (92)



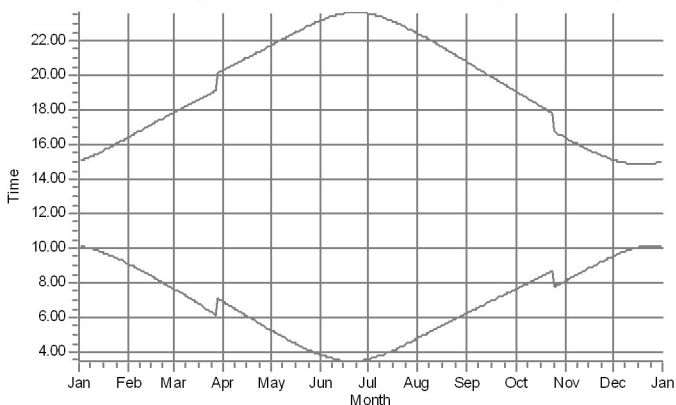
C: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (91)



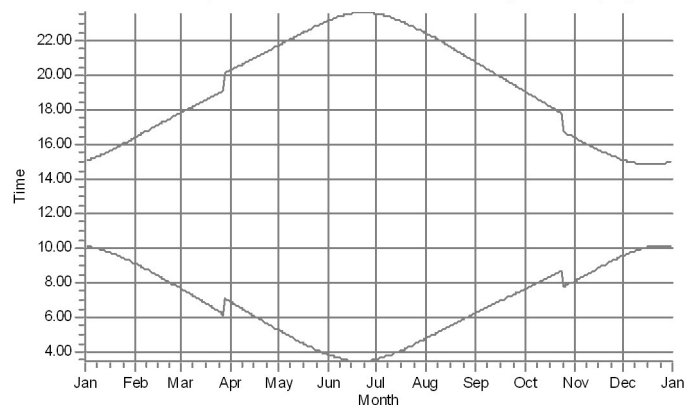
D: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (90)



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)

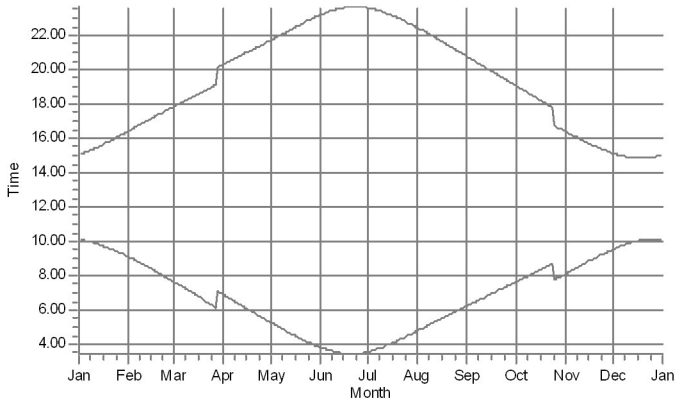


WTGs

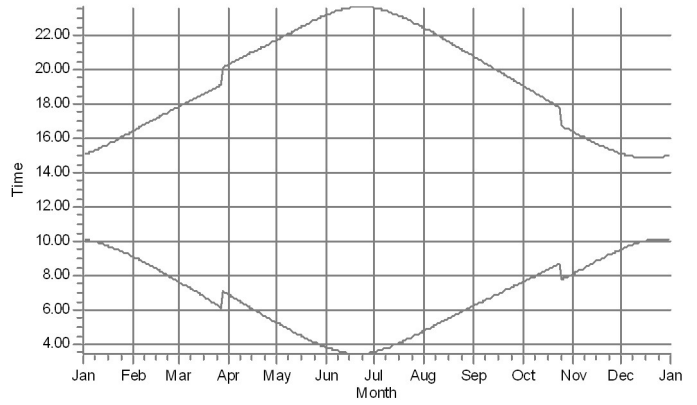
SHADOW - Calendar, graphical

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

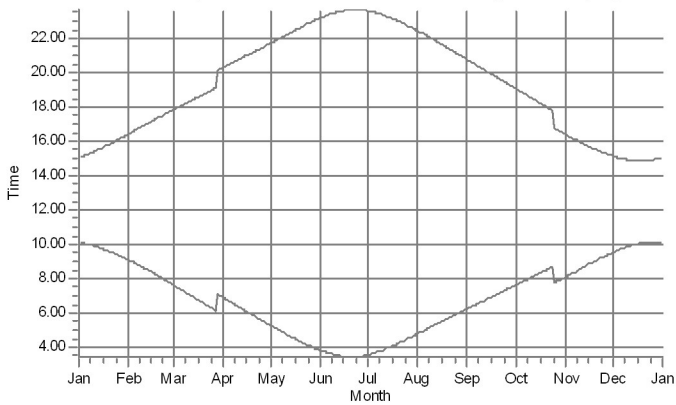
G: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (87)



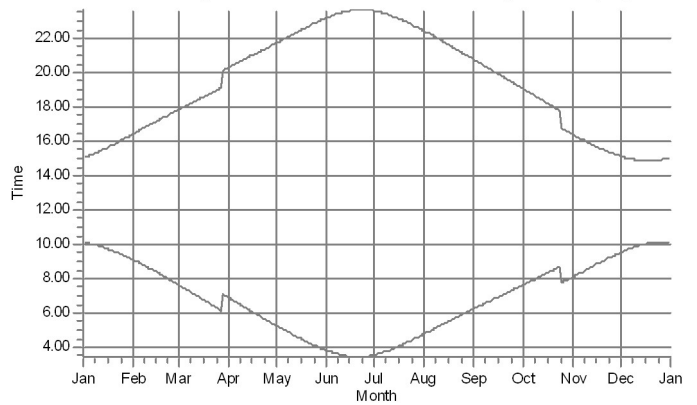
H: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (86)



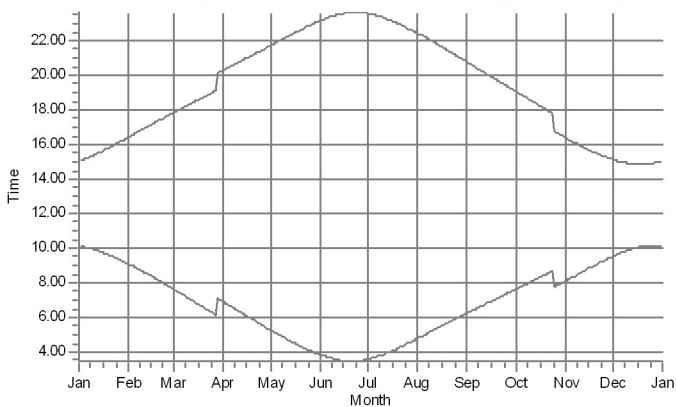
I: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (85)



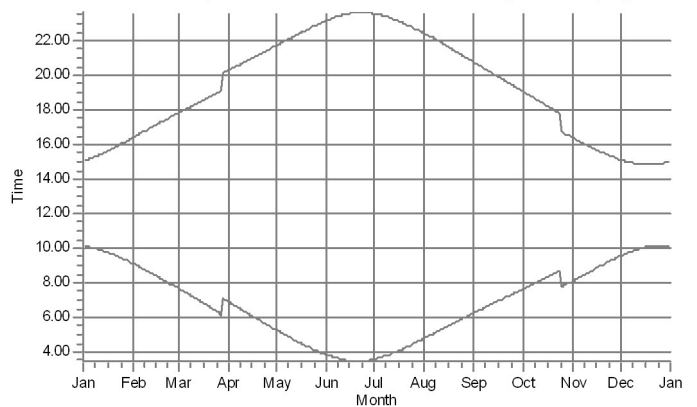
J: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (84)



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)

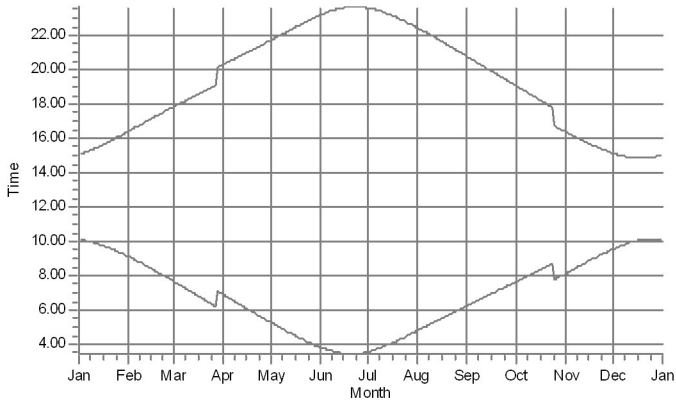


WTGs

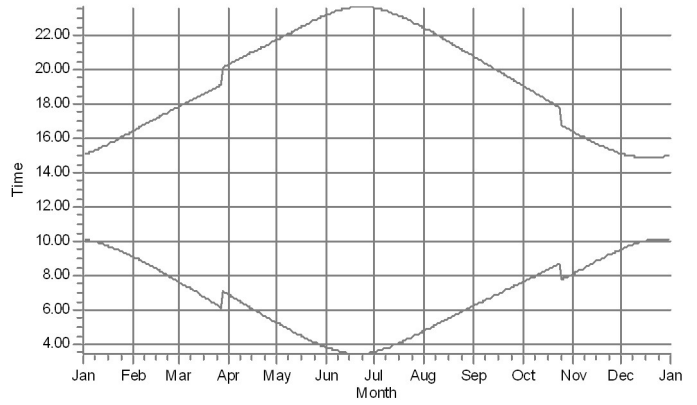
SHADOW - Calendar, graphical

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

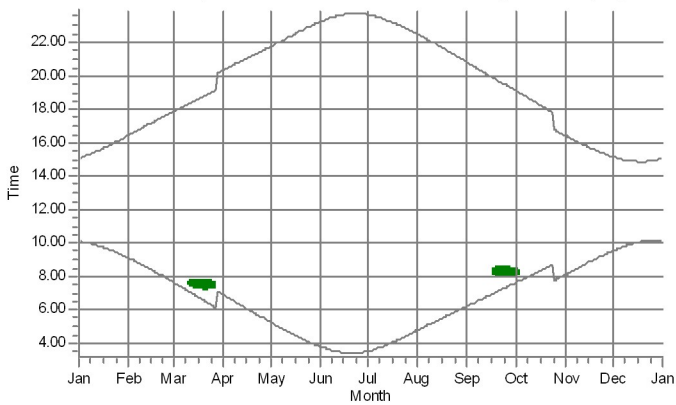
M: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (81)



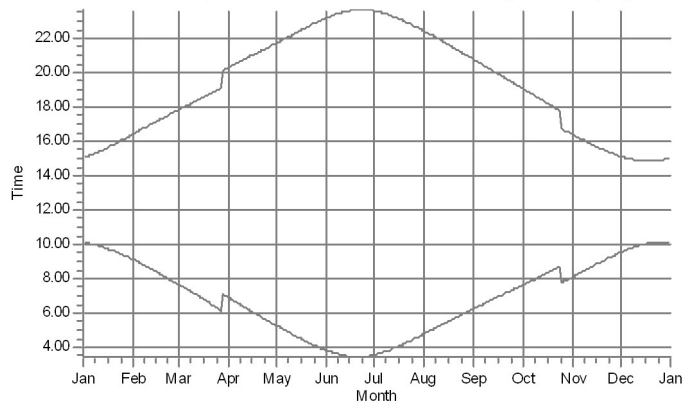
N: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80)



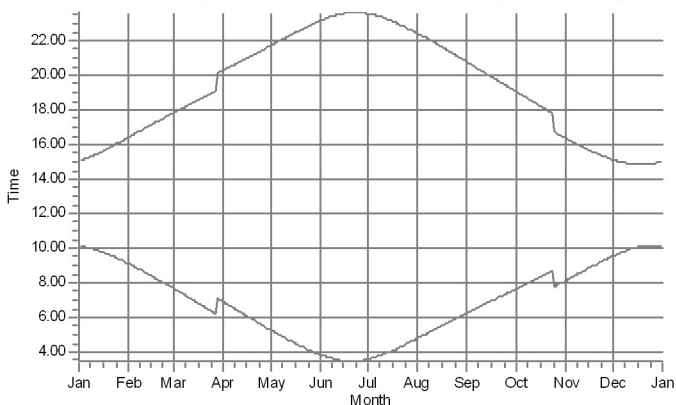
O: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)



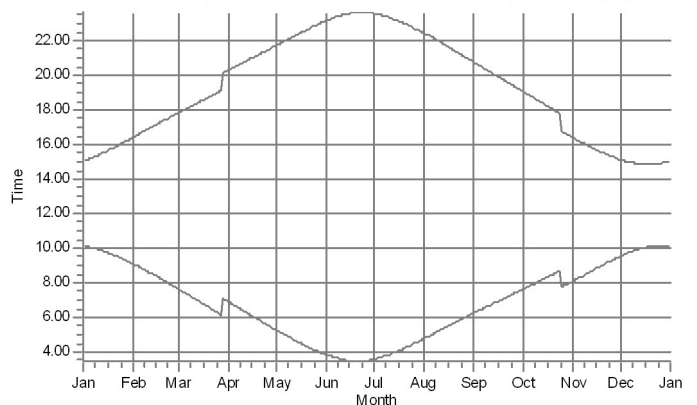
P: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (78)



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)



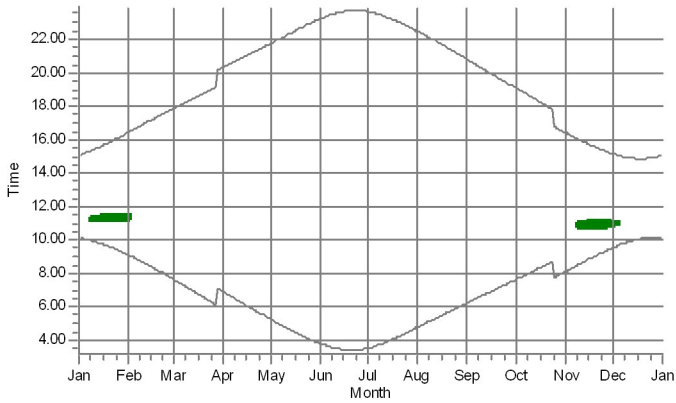
WTGs

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

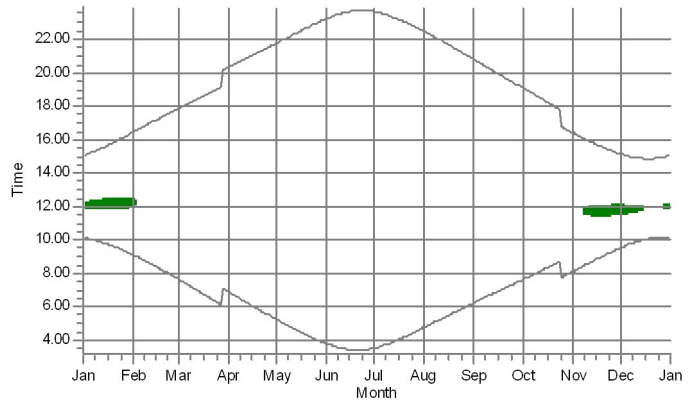
SHADOW - Calendar, graphical

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

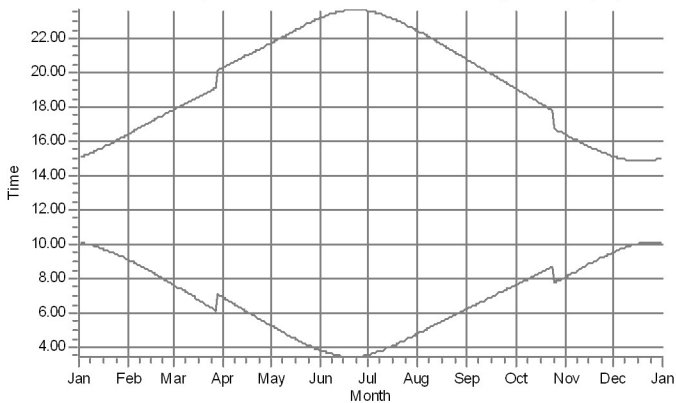
S: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)



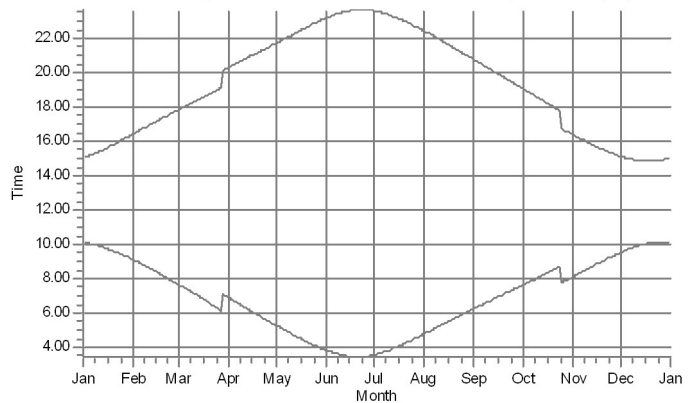
T: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)



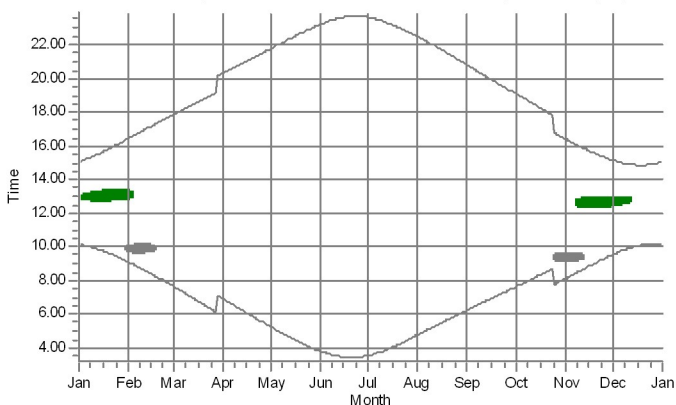
U: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (73)



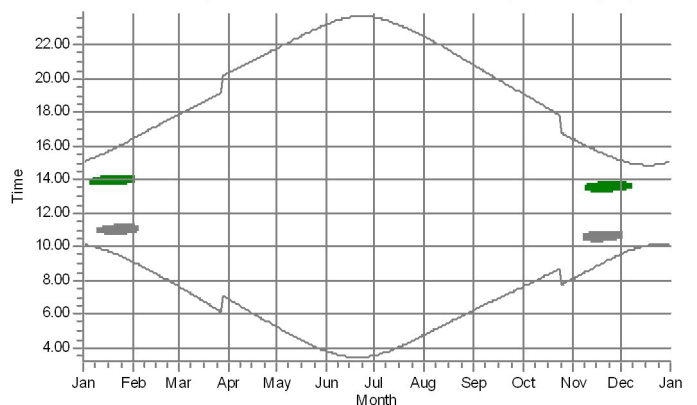
V: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (72)




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

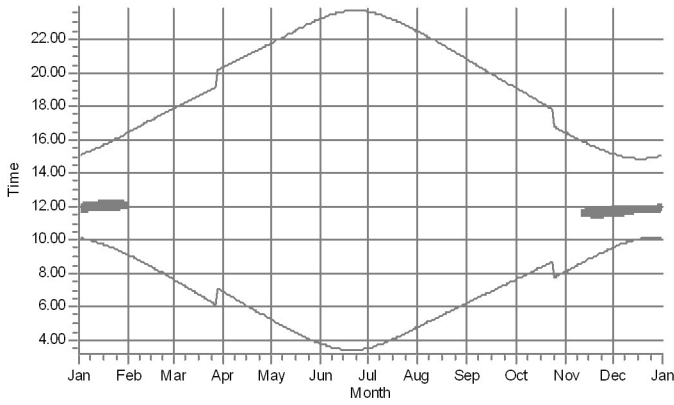
 WTG 01: NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

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

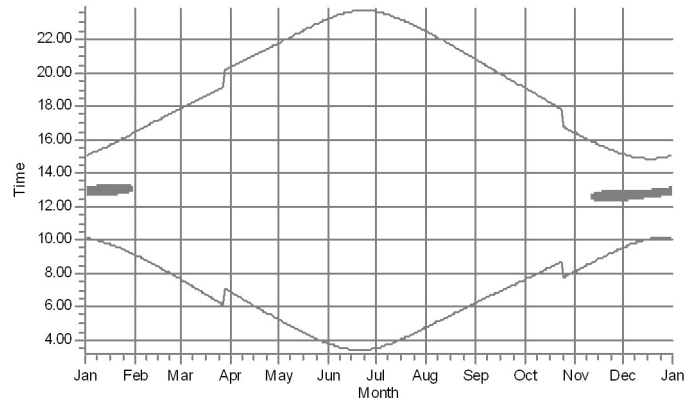
SHADOW - Calendar, graphical

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

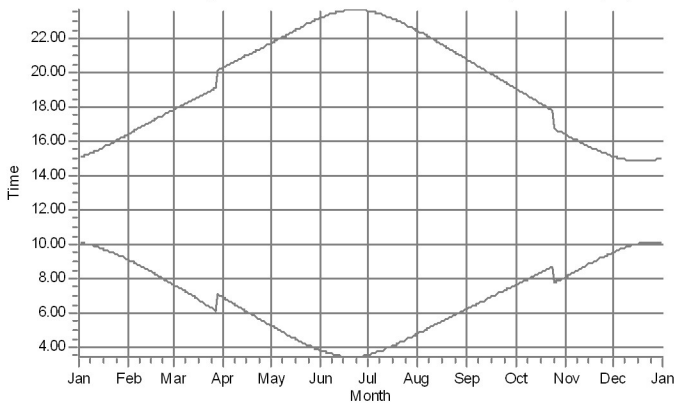
Y: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)



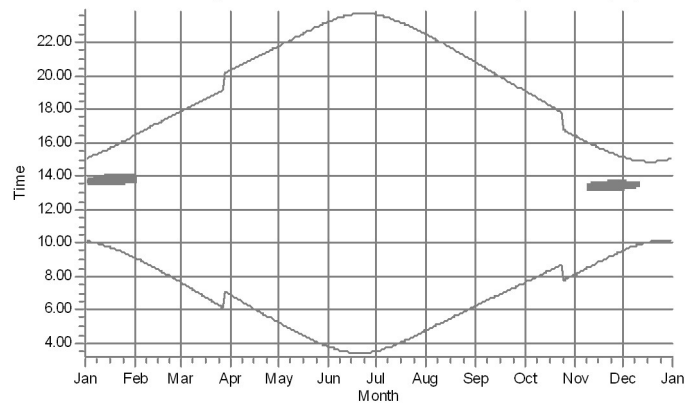
Z: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)



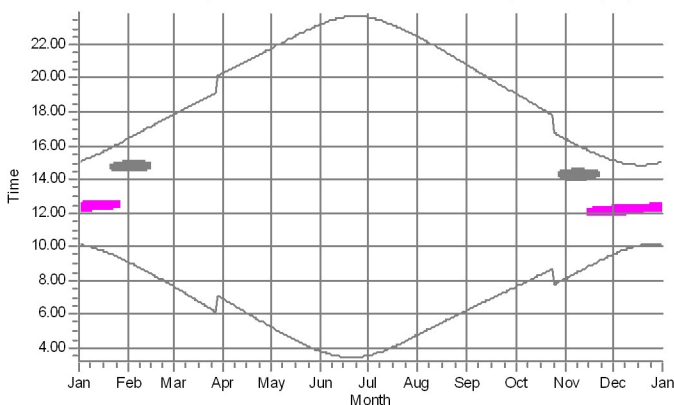
AA: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (67)



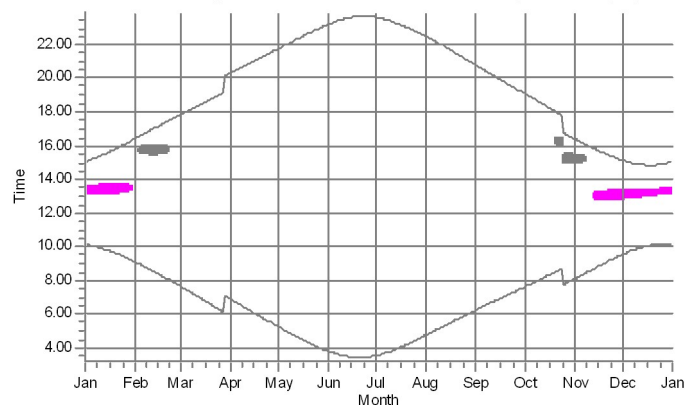
AB: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)



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

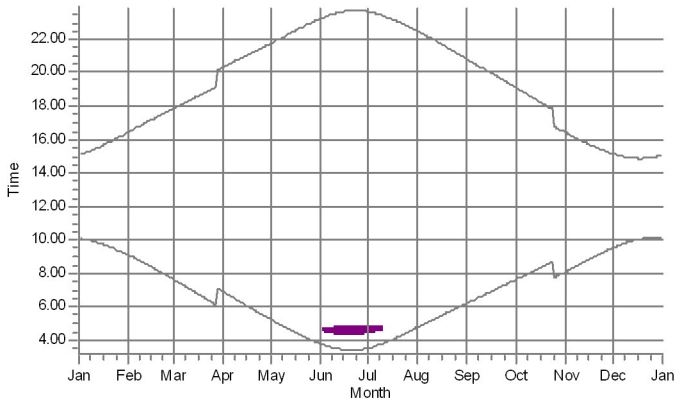
 K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

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

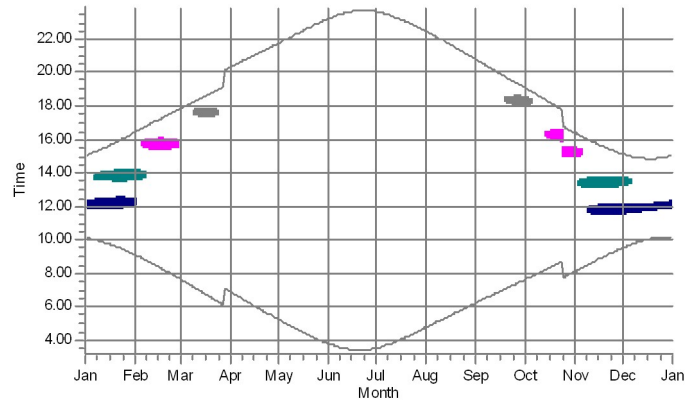
SHADOW - Calendar, graphical

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

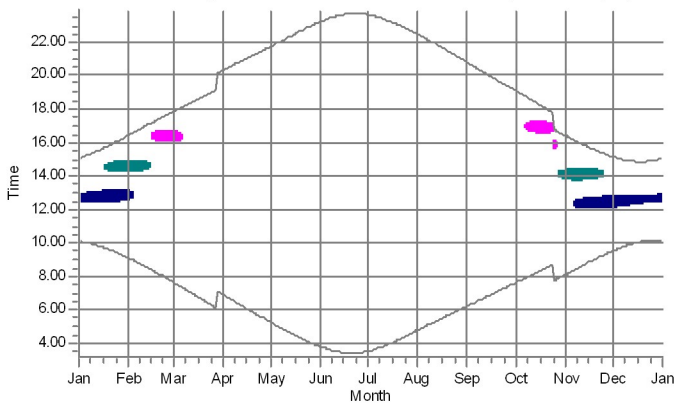
AE: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)



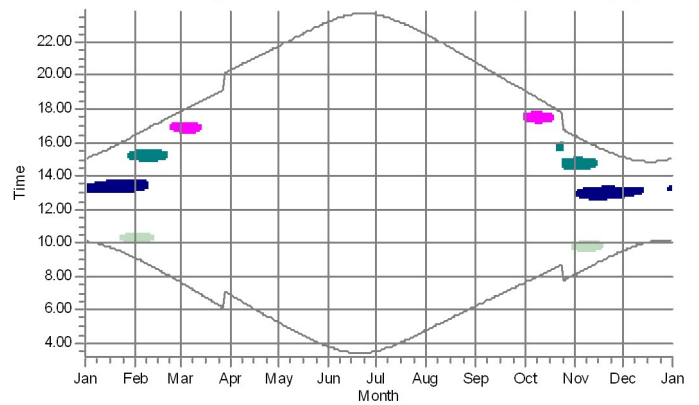
AF: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)



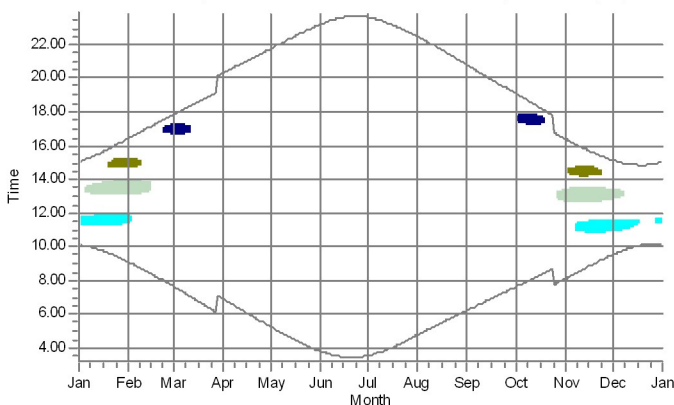
AG: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)



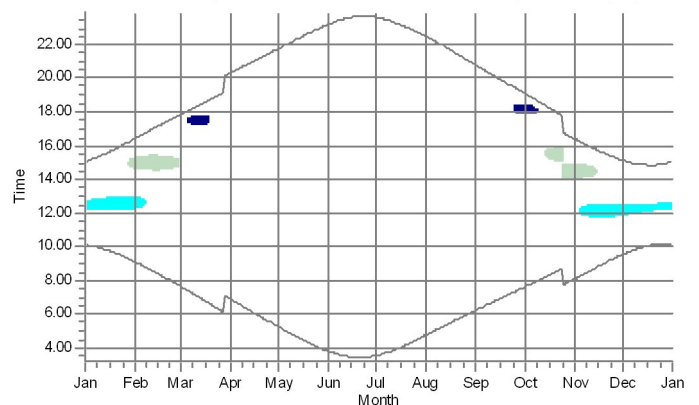
AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)




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)



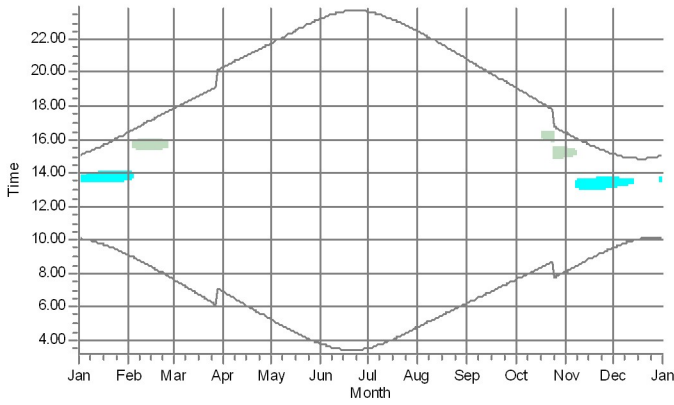
WTGs

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

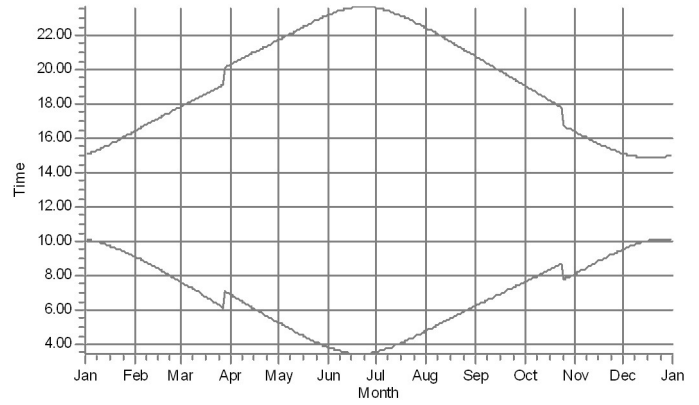
SHADOW - Calendar, graphical

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

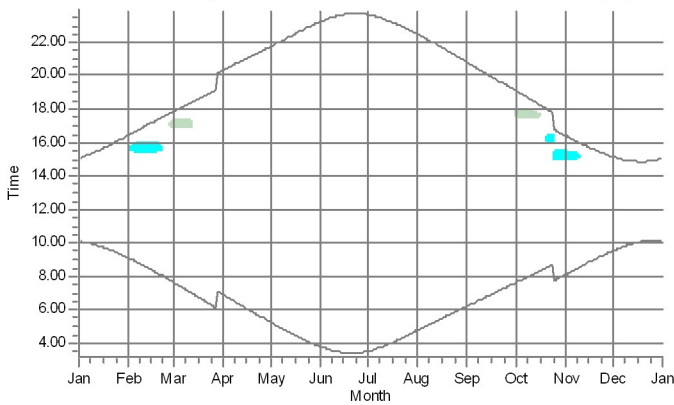
AK: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)



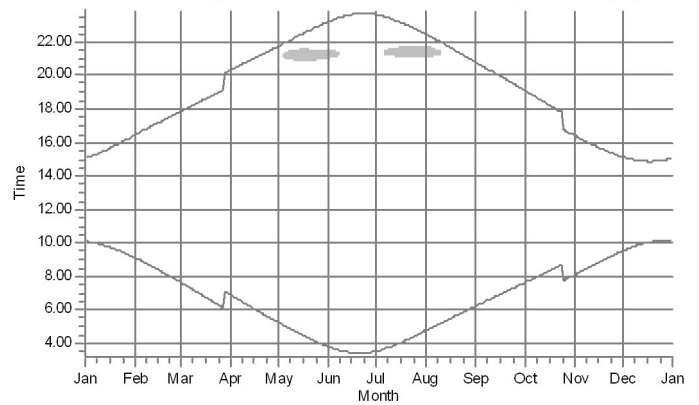
AL: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (56)



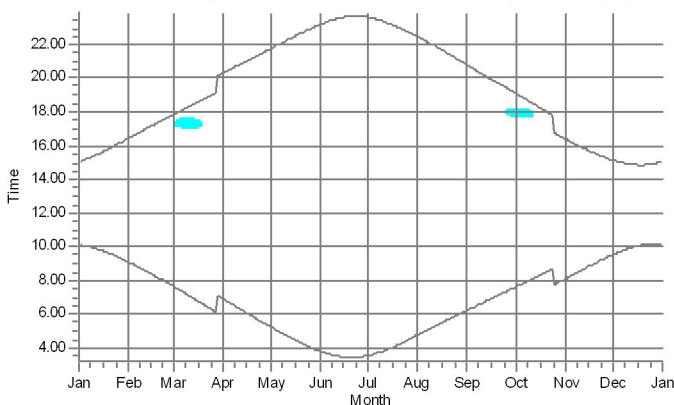
AM: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)



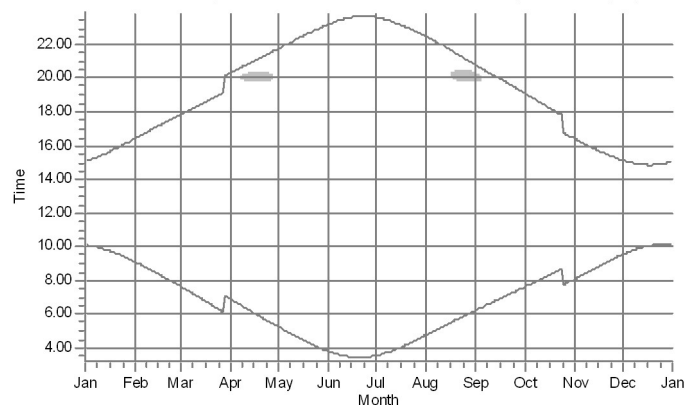
AN: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)



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)



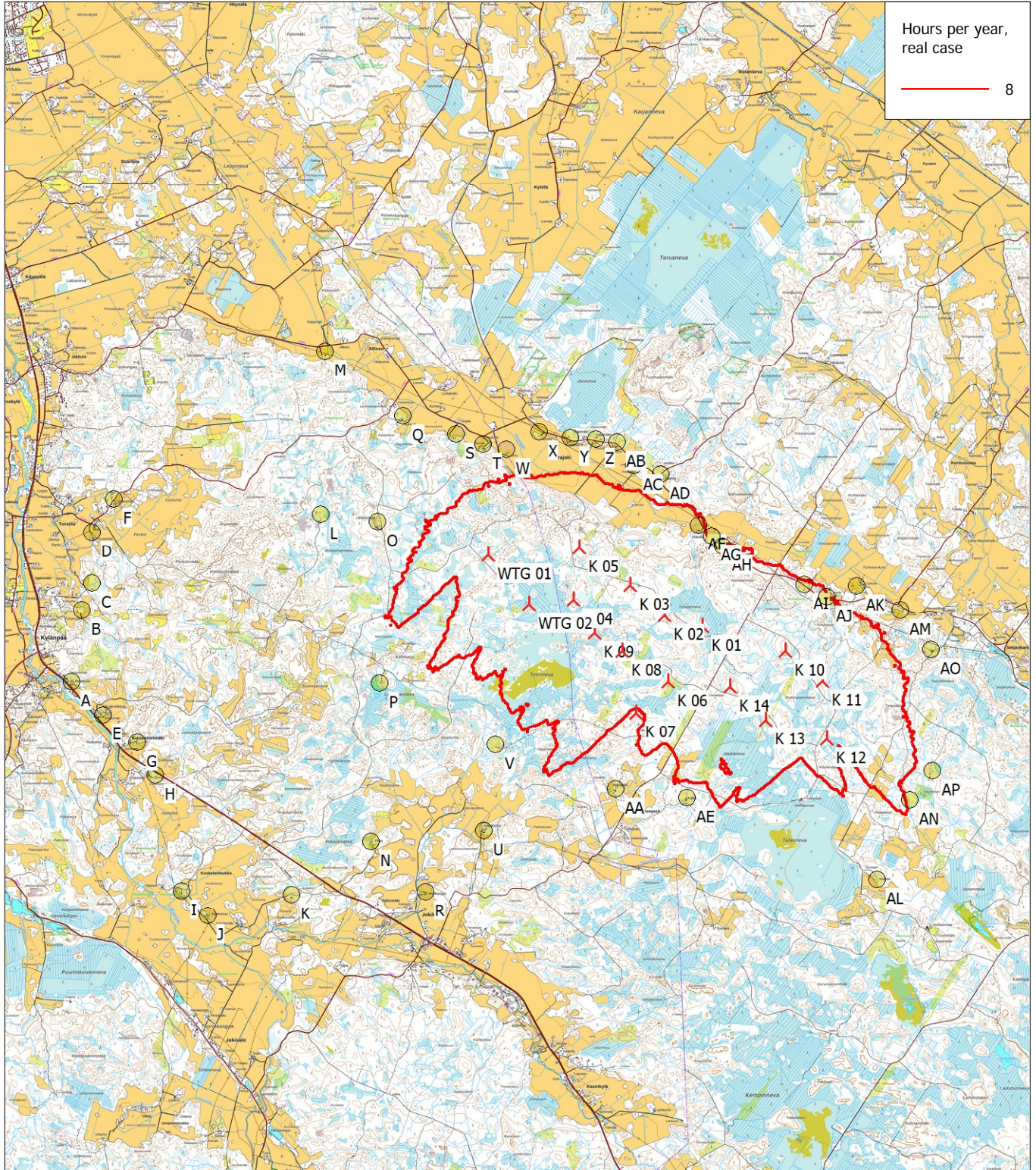
WTGs

- K 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)

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

SHADOW - Map

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



Hours per year,
real case
8

0 1 2 3 4 km

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

Project:

20220502 Kattiharju extension

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 - 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

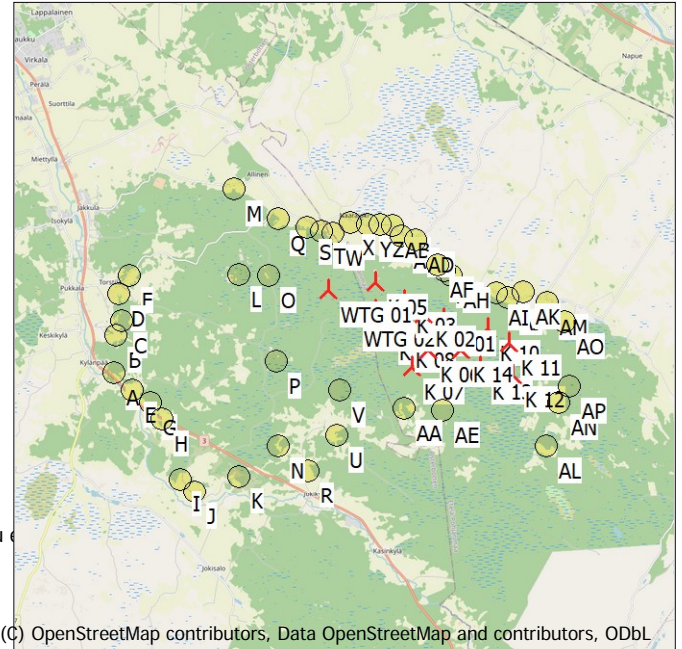
Area object(s) used in calculation:

Luke 2021

Receptor grid resolution: 1,0 m

All coordinates are in

Finish TM ETRS-TM35FIN-ETRS89



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

Scale 1:200 000

New WTG

Shadow receptor

WTGs

	East	North	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
			[m]									
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

To be continued on next page...

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]	[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

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]
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

To be continued on next page...

SHADOW - Main Result

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

...continued from previous page

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]
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.

Project:

20220502 Kattiharju extension

Licensed user:

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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:** 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	05.17	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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: B - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (92) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations 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	1020	1265	1030	811	627	615	8527

[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	05.17	03.51		04.45	06.13		08.03		10.08
	16.23		20.16	21.30			22.30	20.51		16.28		15.02

Potential sun hours

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

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
Assumptions for shadow calculations

Shadow receptor: D - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (90)
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	05.17	03.51		04.45	06.13	08.03			10.08
	16.23		20.16	21.40	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)		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)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Assumptions for shadow calculations

Shadow receptor: E - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (89) 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

Table with 13 columns (Months) and 33 rows (Days 1-31). Columns: January, February, March, April, May, June, July, August, September, October, November, December. Rows: Day numbers 1-31. Bottom row: Potential sun hours, 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

Matrix with 4 columns: 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).



SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
Assumptions for shadow calculations

Shadow receptor: F - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (88)
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 15.04	09.06 16.26	07.40 17.51	06.56 20.18	05.16 21.45	03.49 23.13	03.33 23.38	04.48 22.27	06.16 20.47	07.37 19.06	08.06 16.25	09.33 15.08
2	10.06 15.06	09.04 16.29	07.37 17.54	06.53 20.21	05.13 21.48	03.47 23.15	03.34 23.37	04.50 22.24	06.19 20.44	07.40 19.02	08.09 16.22	09.36 15.07
3	10.05 15.08	09.01 16.32	07.33 17.57	06.49 20.24	05.10 21.51	03.45 23.17	03.36 23.35	04.53 22.21	06.21 20.40	07.43 18.59	08.12 16.19	09.38 15.05
4	10.05 15.10	08.58 16.35	07.30 17.59	06.46 20.27	05.07 21.54	03.43 23.19	03.38 23.34	04.56 22.18	06.24 20.37	07.45 18.55	08.15 16.16	09.40 15.03
5	10.03 15.12	08.55 16.38	07.27 18.02	06.42 20.30	05.03 21.57	03.41 23.22	03.39 23.33	04.59 22.15	06.27 20.34	07.48 18.52	08.18 16.13	09.43 15.02
6	10.02 15.14	08.52 16.41	07.24 18.05	06.39 20.33	05.00 22.00	03.39 23.24	03.41 23.31	05.02 22.12	06.30 20.30	07.51 18.49	08.21 16.10	09.45 15.00
7	10.01 15.16	08.49 16.45	07.20 18.08	06.36 20.35	04.57 22.03	03.38 23.26	03.43 23.29	05.05 22.09	06.32 20.27	07.54 18.45	08.24 16.07	09.47 14.59
8	10.00 15.18	08.46 16.48	07.17 18.11	06.32 20.38	04.54 22.06	03.36 23.28	03.45 23.28	05.08 22.06	06.35 20.24	07.56 18.42	08.27 16.04	09.49 14.58
9	09.58 15.20	08.43 16.51	07.14 18.14	06.29 20.41	04.51 22.09	03.34 23.29	03.47 23.26	05.11 22.03	06.38 20.20	07.59 18.39	08.30 16.01	09.51 14.57
10	09.57 15.23	08.40 16.54	07.10 18.17	06.25 20.44	04.48 22.12	03.33 23.31	03.49 23.24	05.14 22.00	06.40 20.17	08.02 18.35	08.33 15.58	09.53 14.56
11	09.55 15.25	08.37 16.57	07.07 18.20	06.22 20.47	04.45 22.14	03.32 23.33	03.51 23.22	05.16 21.56	06.43 20.13	08.05 18.32	08.36 15.56	09.55 14.55
12	09.53 15.28	08.34 17.00	07.03 18.22	06.19 20.50	04.42 22.17	03.31 23.34	03.54 23.20	05.19 21.53	06.46 20.10	08.08 18.29	08.39 15.53	09.57 14.54
13	09.51 15.30	08.31 17.03	07.00 18.25	06.15 20.52	04.39 22.20	03.30 23.35	03.56 23.18	05.22 21.50	06.49 20.07	08.10 18.26	08.42 15.50	09.58 14.53
14	09.50 15.33	08.28 17.06	06.57 18.28	06.12 20.55	04.36 22.23	03.29 23.37	03.58 23.16	05.25 21.47	06.51 20.03	08.13 18.22	08.45 15.47	10.00 14.53
15	09.48 15.36	08.25 17.09	06.53 18.31	06.09 20.58	04.33 22.26	03.28 23.38	04.01 23.13	05.28 21.44	06.54 20.00	08.16 18.19	08.48 15.45	10.01 14.52
16	09.46 15.38	08.22 17.12	06.50 18.34	06.05 21.01	04.30 22.29	03.27 23.39	04.03 23.11	05.31 21.40	06.57 19.56	08.19 18.16	08.51 15.42	10.03 14.52
17	09.44 15.41	08.19 17.15	06.47 18.37	06.02 21.04	04.27 22.32	03.27 23.40	04.06 23.09	05.34 21.37	06.59 19.53	08.22 18.12	08.54 15.39	10.04 14.52
18	09.41 15.44	08.15 17.18	06.43 18.39	05.59 21.07	04.24 22.35	03.26 23.40	04.08 23.06	05.37 21.34	07.02 19.50	08.25 18.09	08.57 15.37	10.05 14.52
19	09.39 15.47	08.12 17.21	06.40 18.42	05.55 21.10	04.21 22.38	03.26 23.41	04.11 23.04	05.39 21.30	07.05 19.46	08.27 18.06	09.00 15.34	10.06 14.52
20	09.37 15.50	08.09 17.24	06.37 18.45	05.52 21.13	04.19 22.41	03.26 23.41	04.14 23.01	05.42 21.27	07.07 19.43	08.30 18.03	09.03 15.32	10.07 14.52
21	09.35 15.53	08.06 17.27	06.33 18.48	05.49 21.15	04.16 22.44	03.26 23.42	04.16 22.58	05.45 21.24	07.10 19.39	08.33 17.59	09.06 15.29	10.07 14.52
22	09.32 15.56	08.03 17.30	06.30 18.51	05.45 21.18	04.13 22.46	03.26 23.42	04.19 22.56	05.48 21.21	07.13 19.36	08.36 17.56	09.08 15.27	10.08 14.53
23	09.30 15.59	08.00 17.33	06.26 18.53	05.42 21.21	04.11 22.49	03.26 23.42	04.22 22.53	05.51 21.17	07.16 19.33	08.39 17.53	09.11 15.25	10.08 14.53
24	09.27 16.02	07.56 17.36	06.23 18.56	05.39 21.24	04.08 22.52	03.27 23.42	04.25 22.50	05.54 21.14	07.18 19.29	08.42 17.50	09.14 15.23	10.09 14.54
25	09.25 16.05	07.53 17.39	06.20 18.59	05.36 21.27	04.05 22.55	03.27 23.42	04.28 22.48	05.56 21.11	07.21 19.26	07.45 16.47	09.17 15.20	10.09 14.55
26	09.22 16.08	07.50 17.42	06.16 19.02	05.32 21.30	04.03 22.57	03.28 23.41	04.30 22.45	05.59 21.07	07.24 19.22	07.48 16.44	09.20 15.18	10.09 14.56
27	09.20 16.11	07.47 17.45	06.13 19.04	05.29 21.33	04.00 23.00	03.29 23.41	04.33 22.42	06.02 21.04	07.26 19.19	07.51 16.40	09.22 15.16	10.09 14.57
28	09.17 16.14	07.43 17.48	06.09 19.07	05.26 21.36	03.58 23.03	03.29 23.40	04.36 22.39	06.05 21.01	07.29 19.16	07.54 16.37	09.25 15.14	10.09 14.58
29	09.15 16.17		07.06 20.10	05.23 21.39	03.56 23.05	03.31 23.40	04.39 22.36	06.08 20.57	07.32 19.12	07.57 16.34	09.28 15.12	10.09 14.59
30	09.12 16.20		07.03 20.13	05.19 21.42	03.53 23.08	03.32 23.39	04.42 22.33	06.10 20.54	07.35 19.09	08.00 16.31	09.30 15.10	10.08 15.01
31	09.09 16.23		06.59 20.16	03.51 23.10			04.45 22.30	06.13 20.51		08.03 16.28		10.08 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
Assumptions for shadow calculations

Shadow receptor: H - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (86)
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	05.12	03.52		04.45	06.13		08.02		10.07
	16.23		20.16	21.42	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)		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)

Project:

20220502 Kattiharju extension

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
Assumptions for shadow calculations

Shadow receptor: I - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (85) 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 15.05	09.06 16.26	07.40 17.51	06.56 20.18	05.16 21.44	03.50 23.12	03.34 23.37	04.48 22.27	06.16 20.47	07.37 19.05	08.05 16.25	09.32 15.09
2	10.06 15.06	09.03 16.29	07.37 17.54	06.53 20.21	05.13 21.47	03.47 23.14	03.35 23.36	04.51 22.24	06.19 20.44	07.40 19.02	08.08 16.22	09.35 15.07
3	10.05 15.08	09.00 16.32	07.33 17.57	06.49 20.24	05.10 21.50	03.45 23.16	03.37 23.34	04.54 22.21	06.21 20.40	07.43 18.59	08.11 16.19	09.37 15.05
4	10.04 15.10	08.57 16.35	07.30 17.59	06.46 20.27	05.07 21.53	03.43 23.19	03.38 23.33	04.56 22.18	06.24 20.37	07.45 18.55	08.14 16.16	09.40 15.04
5	10.03 15.12	08.55 16.39	07.27 18.02	06.42 20.30	05.04 21.56	03.42 23.21	03.40 23.32	04.59 22.15	06.27 20.33	07.48 18.52	08.17 16.13	09.42 15.02
6	10.02 15.14	08.52 16.42	07.23 18.05	06.39 20.32	05.01 21.59	03.40 23.23	03.42 23.30	05.02 22.12	06.30 20.30	07.51 18.49	08.20 16.10	09.44 15.01
7	10.00 15.16	08.49 16.45	07.20 18.08	06.36 20.35	04.57 22.02	03.38 23.25	03.44 23.29	05.05 22.09	06.32 20.27	07.54 18.45	08.23 16.07	09.46 15.00
8	09.59 15.19	08.46 16.48	07.17 18.11	06.32 20.38	04.54 22.05	03.37 23.27	03.46 23.27	05.08 22.05	06.35 20.23	07.56 18.42	08.26 16.04	09.48 14.58
9	09.57 15.21	08.43 16.51	07.13 18.14	06.29 20.41	04.51 22.08	03.35 23.28	03.48 23.25	05.11 22.02	06.38 20.20	07.59 18.39	08.29 16.01	09.50 14.57
10	09.56 15.23	08.40 16.54	07.10 18.17	06.26 20.44	04.48 22.11	03.34 23.30	03.50 23.23	05.14 21.59	06.40 20.17	08.02 18.35	08.32 15.59	09.52 14.56
11	09.54 15.26	08.37 16.57	07.07 18.19	06.22 20.46	04.45 22.14	03.33 23.32	03.52 23.21	05.17 21.56	06.43 20.13	08.05 18.32	08.35 15.56	09.54 14.55
12	09.53 15.28	08.34 17.00	07.03 18.22	06.19 20.49	04.42 22.17	03.31 23.33	03.54 23.19	05.20 21.53	06.46 20.10	08.07 18.29	08.38 15.53	09.56 14.55
13	09.51 15.31	08.31 17.03	07.00 18.25	06.15 20.52	04.39 22.20	03.30 23.34	03.57 23.17	05.22 21.50	06.49 20.06	08.10 18.26	08.41 15.50	09.58 14.54
14	09.49 15.33	08.28 17.06	06.57 18.28	06.12 20.55	04.36 22.23	03.29 23.36	03.59 23.15	05.25 21.46	06.51 20.03	08.13 18.22	08.44 15.48	09.59 14.53
15	09.47 15.36	08.25 17.09	06.53 18.31	06.09 20.58	04.33 22.26	03.29 23.37	04.01 23.13	05.28 21.43	06.54 20.00	08.16 18.19	08.47 15.45	10.00 14.53
16	09.45 15.39	08.21 17.12	06.50 18.34	06.05 21.01	04.30 22.29	03.28 23.38	04.04 23.10	05.31 21.40	06.57 19.56	08.19 18.16	08.50 15.42	10.02 14.53
17	09.43 15.42	08.18 17.15	06.47 18.36	06.02 21.04	04.28 22.31	03.27 23.39	04.06 23.08	05.34 21.37	06.59 19.53	08.22 18.12	08.53 15.40	10.03 14.52
18	09.41 15.44	08.15 17.18	06.43 18.39	05.59 21.06	04.25 22.34	03.27 23.39	04.09 23.05	05.37 21.33	07.02 19.49	08.24 18.09	08.56 15.37	10.04 14.52
19	09.39 15.47	08.12 17.21	06.40 18.42	05.55 21.09	04.22 22.37	03.27 23.40	04.12 23.03	05.40 21.30	07.05 19.46	08.27 18.06	08.59 15.35	10.05 14.52
20	09.36 15.50	08.09 17.24	06.36 18.45	05.52 21.12	04.19 22.40	03.27 23.40	04.14 23.00	05.42 21.27	07.07 19.43	08.30 18.03	09.02 15.32	10.06 14.53
21	09.34 15.53	08.06 17.27	06.33 18.48	05.49 21.15	04.16 22.43	03.27 23.41	04.17 22.58	05.45 21.24	07.10 19.39	08.33 18.00	09.05 15.30	10.07 14.53
22	09.32 15.56	08.02 17.30	06.30 18.50	05.46 21.18	04.14 22.46	03.27 23.41	04.20 22.55	05.48 21.20	07.13 19.36	08.36 17.56	09.08 15.27	10.07 14.53
23	09.29 15.59	07.59 17.33	06.26 18.53	05.42 21.21	04.11 22.48	03.27 23.41	04.22 22.53	05.51 21.17	07.15 19.32	08.39 17.53	09.11 15.25	10.08 14.54
24	09.27 16.02	07.56 17.36	06.23 18.56	05.39 21.24	04.08 22.51	03.27 23.41	04.25 22.50	05.54 21.14	07.18 19.29	08.42 17.50	09.14 15.23	10.08 14.55
25	09.24 16.05	07.53 17.39	06.20 18.59	05.36 21.27	04.06 22.54	03.28 23.41	04.28 22.47	05.56 21.10	07.21 19.26	07.45 16.47	09.16 15.21	10.08 14.55
26	09.22 16.08	07.50 17.42	06.16 19.02	05.32 21.30	04.03 22.57	03.29 23.40	04.31 22.44	05.59 21.07	07.24 19.22	07.48 16.44	09.19 15.19	10.08 14.56
27	09.19 16.11	07.46 17.45	06.13 19.04	05.29 21.33	04.01 22.59	03.29 23.40	04.34 22.41	06.02 21.04	07.26 19.19	07.50 16.40	09.22 15.16	10.08 14.57
28	09.17 16.14	07.43 17.48	06.09 19.07	05.26 21.36	03.59 23.02	03.30 23.39	04.36 22.39	06.05 21.00	07.29 19.16	07.53 16.37	09.25 15.14	10.08 14.58
29	09.14 16.17		07.06 20.10	05.23 21.38	03.56 23.04	03.31 23.39	04.39 22.36	06.08 20.57	07.32 19.12	07.56 16.34	09.27 15.12	10.08 15.00
30	09.11 16.20		07.03 20.13	05.20 21.41	03.54 23.07	03.32 23.38	04.42 22.33	06.10 20.54	07.34 19.09	07.59 16.31	09.30 15.11	10.08 15.01
31	09.09 16.23		06.59 20.15	03.52 23.09			04.45 22.30	06.13 20.50		08.02 16.28		10.07 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20220502 Kattiharju extension

Licensed user:

PROKON Regenerative Energien eG

Kirchhoffstraße 3

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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 x 5,0 Azimuth: 0,0° Slope: 90,0° (84) 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	05.52	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20220502 Kattiharju extension

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: K - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (83) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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	05.52	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
Assumptions for shadow calculations

Shadow receptor: L - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (82)
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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20220502 Kattiharju extension

Licensed user:

PROKON Regenerative Energien eG

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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 x 5,0 Azimuth: 0,0° Slope: 90,0° (81) 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	05.17	03.51		04.44	06.13		08.03		10.08
	16.23		20.15	21.30	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
 Assumptions for shadow calculations

Shadow receptor: N - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80°)
 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	05.17	03.51		04.45	06.13		08.02		10.07
	16.23		20.15	21.39	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: O - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (79) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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	05.17	03.51		04.44	06.13		08.02		10.08
	16.23		20.15	21.40	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
Assumptions for shadow calculations

Shadow receptor: P - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (78)
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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

20220502 Kattiharju extension

Licensed user:

PROKON Regenerative Energien eG

Kirchhoffstraße 3

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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: Q - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (77) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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	05.17	03.51		04.44	06.13		08.02		15.08
	16.22		20.15	21.40	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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Assumptions for shadow calculations

Shadow receptor: R - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (76) 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 15.04	09.06 16.26	07.40 17.51	06.56 20.18	05.16 21.44	03.49 23.12	03.33 23.37	04.48 22.27	06.16 20.47	07.37 19.05	08.05 16.25	09.32 15.08
2	10.05 15.06	09.03 16.29	07.36 17.53	06.52 20.21	05.13 21.47	03.47 23.14	03.35 23.35	04.50 22.24	06.18 20.43	07.40 19.02	08.08 16.22	09.35 15.07
3	10.05 15.08	09.00 16.32	07.33 17.56	06.49 20.24	05.10 21.50	03.45 23.16	03.36 23.34	04.53 22.21	06.21 20.40	07.42 18.58	08.11 16.19	09.37 15.05
4	10.04 15.10	08.57 16.35	07.30 17.59	06.45 20.26	05.06 21.53	03.43 23.18	03.38 23.33	04.56 22.18	06.24 20.37	07.45 18.55	08.14 16.16	09.39 15.04
5	10.02 15.12	08.54 16.38	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.20	03.40 23.31	04.59 22.14	06.27 20.33	07.48 18.52	08.17 16.13	09.42 15.02
6	10.01 15.14	08.51 16.41	07.23 18.05	06.39 20.32	05.00 21.59	03.40 23.23	03.41 23.30	05.02 22.11	06.29 20.30	07.51 18.48	08.20 16.10	09.44 15.01
7	10.00 15.16	08.48 16.44	07.20 18.08	06.35 20.35	04.57 22.02	03.38 23.25	03.43 23.28	05.05 22.08	06.32 20.26	07.53 18.45	08.23 16.07	09.46 14.59
8	09.59 15.18	08.46 16.48	07.16 18.11	06.32 20.38	04.54 22.05	03.36 23.26	03.45 23.27	05.08 22.05	06.35 20.23	07.56 18.42	08.26 16.04	09.48 14.58
9	09.57 15.21	08.43 16.51	07.13 18.14	06.29 20.41	04.51 22.08	03.35 23.28	03.47 23.25	05.11 22.02	06.37 20.20	07.59 18.38	08.29 16.01	09.50 14.57
10	09.56 15.23	08.40 16.54	07.10 18.16	06.25 20.43	04.48 22.11	03.34 23.30	03.49 23.23	05.14 21.59	06.40 20.16	08.02 18.35	08.32 15.58	09.52 14.56
11	09.54 15.25	08.37 16.57	07.06 18.19	06.22 20.46	04.45 22.14	03.32 23.31	03.52 23.21	05.16 21.56	06.43 20.13	08.04 18.32	08.35 15.56	09.54 14.55
12	09.52 15.28	08.34 17.00	07.03 18.22	06.19 20.49	04.42 22.17	03.31 23.33	03.54 23.19	05.19 21.53	06.46 20.09	08.07 18.29	08.38 15.53	09.56 14.54
13	09.51 15.31	08.30 17.03	07.00 18.25	06.15 20.52	04.39 22.20	03.30 23.34	03.56 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.50	09.57 14.54
14	09.49 15.33	08.27 17.06	06.56 18.28	06.12 20.55	04.36 22.23	03.29 23.35	03.59 23.15	05.25 21.46	06.51 20.03	08.13 18.22	08.44 15.47	09.59 14.53
15	09.47 15.36	08.24 17.09	06.53 18.31	06.08 20.58	04.33 22.25	03.28 23.37	04.01 23.12	05.28 21.43	06.54 19.59	08.16 18.19	08.47 15.45	10.00 14.53
16	09.45 15.39	08.21 17.12	06.50 18.33	06.05 21.00	04.30 22.28	03.28 23.38	04.04 23.10	05.31 21.40	06.56 19.56	08.18 18.15	08.50 15.42	10.02 14.52
17	09.43 15.41	08.18 17.15	06.46 18.36	06.02 21.03	04.27 22.31	03.27 23.38	04.06 23.08	05.34 21.36	06.59 19.53	08.21 18.12	08.53 15.39	10.03 14.52
18	09.41 15.44	08.15 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.27 23.39	04.09 23.05	05.36 21.33	07.02 19.49	08.24 18.09	08.56 15.37	10.04 14.52
19	09.38 15.47	08.12 17.21	06.40 18.42	05.55 21.09	04.22 22.37	03.26 23.40	04.11 23.03	05.39 21.30	07.04 19.46	08.27 18.06	08.59 15.34	10.05 14.52
20	09.36 15.50	08.09 17.24	06.36 18.45	05.52 21.12	04.19 22.40	03.26 23.40	04.14 23.00	05.42 21.27	07.07 19.42	08.30 18.02	09.02 15.32	10.06 14.52
21	09.34 15.53	08.05 17.27	06.33 18.47	05.49 21.15	04.16 22.43	03.26 23.41	04.17 22.58	05.45 21.23	07.10 19.39	08.33 17.59	09.05 15.30	10.06 14.53
22	09.32 15.56	08.02 17.30	06.29 18.50	05.45 21.18	04.13 22.45	03.26 23.41	04.19 22.55	05.48 21.20	07.12 19.36	08.36 17.56	09.08 15.27	10.07 14.53
23	09.29 15.59	07.59 17.33	06.26 18.53	05.42 21.21	04.11 22.48	03.27 23.41	04.22 22.52	05.51 21.17	07.15 19.32	08.39 17.53	09.10 15.25	10.07 14.54
24	09.27 16.02	07.56 17.36	06.23 18.56	05.39 21.24	04.08 22.51	03.27 23.41	04.25 22.50	05.53 21.13	07.18 19.29	08.41 17.50	09.13 15.23	10.08 14.54
25	09.24 16.05	07.53 17.39	06.19 18.58	05.35 21.26	04.06 22.54	03.28 23.41	04.28 22.47	05.56 21.10	07.21 19.25	07.44 16.47	09.16 15.20	10.08 14.55
26	09.22 16.08	07.49 17.42	06.16 19.01	05.32 21.29	04.03 22.56	03.28 23.40	04.30 22.44	05.59 21.07	07.23 19.22	07.47 16.43	09.19 15.18	10.08 14.56
27	09.19 16.11	07.46 17.45	06.13 19.04	05.29 21.32	04.01 22.59	03.29 23.40	04.33 22.41	06.02 21.03	07.26 19.19	07.50 16.40	09.22 15.16	10.08 14.57
28	09.17 16.14	07.43 17.48	06.09 19.07	05.26 21.35	03.58 23.02	03.30 23.39	04.36 22.38	06.05 21.00	07.29 19.15	07.53 16.37	09.24 15.14	10.08 14.58
29	09.14 16.17		07.06 20.10	05.22 21.38	03.56 23.04	03.31 23.38	04.39 22.35	06.07 20.57	07.31 19.12	07.56 16.34	09.27 15.12	10.08 14.59
30	09.11 16.20		07.02 20.12	05.19 21.41	03.54 23.07	03.32 23.37	04.42 22.33	06.10 20.53	07.34 19.09	07.59 16.31	09.30 15.10	10.07 15.01
31	09.08 16.23		06.59 20.15	03.51 23.09	03.51 23.09		04.45 22.30	06.13 20.50		08.02 16.28		10.07 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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

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 1020 1265 1030 811 627 615 8527

	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	05.15	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** T - Shadow Receptor: 5,0 x 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

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

Assumptions for shadow calculations

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

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	1020	1265	1030	811	627	615	8527

	July	August	September	October	November		December
1	03.32	04.47	06.15	07.37	08.05		09.33
	23.37	22.27	20.47	19.05	16.24		15.08
2	03.34	04.50	06.18	07.40	08.08		09.35
	23.36	22.24	20.43	19.02	16.21		15.06
3	03.35	04.53	06.21	07.42	08.11		09.38
	23.35	22.21	20.40	18.58	16.18		15.04
4	03.37	04.56	06.24	07.45	08.14		09.40
	23.34	22.18	20.37	18.55	16.15		15.03
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	03.40	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		09.49
	23.27	22.06	20.23	18.42	16.04		14.57
9	03.46	05.10	06.37	07.59	08.29		09.51
	23.26	22.02	20.20	18.38	16.01	9	11.40 (WTG 01)
10	03.49	05.13	06.40	08.02	08.32		11.49 (WTG 01)
	23.24	21.59	20.16	18.35	15.58	15	11.37 (WTG 01)
11	03.51	05.16	06.43	08.04	08.35		09.53
	23.22	21.56	20.13	18.32	15.55	18	11.52 (WTG 01)
12	03.53	05.19	06.45	08.07	08.38		09.55
	23.20	21.53	20.10	18.28	15.52	20	11.35 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41		14.54
	23.18	21.50	20.06	18.25	15.50	23	11.55 (WTG 01)
14	03.58	05.25	06.51	08.13	08.44		09.58
	23.15	21.46	20.03	18.22	15.47	24	11.33 (WTG 01)
15	04.00	05.28	06.54	08.16	08.47		14.53
	23.13	21.43	19.59	18.19	15.44	25	11.57 (WTG 01)
16	04.03	05.30	06.56	08.19	08.50		10.01
	23.11	21.40	19.56	18.15	15.42	26	11.33 (WTG 01)
17	04.05	05.33	06.59	08.21	08.53		14.52
	23.08	21.37	19.53	18.12	15.39	27	11.59 (WTG 01)
18	04.08	05.36	07.02	08.24	08.56		10.03
	23.06	21.33	19.49	18.09	15.36	27	11.32 (WTG 01)
19	04.11	05.39	07.04	08.27	08.59		14.51
	23.03	21.30	19.46	18.05	15.34	28	11.59 (WTG 01)
20	04.13	05.42	07.07	08.30	09.02		10.05
	23.01	21.27	19.42	18.02	15.31	28	11.33 (WTG 01)
21	04.16	05.45	07.10	08.33	09.05		14.52
	22.58	21.24	19.39	17.59	15.29	28	11.33 (WTG 01)
22	04.19	05.47	07.12	08.36	09.08		10.07
	22.56	21.20	19.36	17.56	15.27	28	12.00 (WTG 01)
23	04.21	05.50	07.15	08.39	09.11		14.52
	22.53	21.17	19.32	17.53	15.24	28	11.33 (WTG 01)
24	04.24	05.53	07.18	08.42	09.14		14.53
	22.50	21.14	19.29	17.49	15.22	28	12.01 (WTG 01)
25	04.27	05.56	07.21	07.45	09.17		10.09
	22.47	21.10	19.25	16.46	15.20	27	11.34 (WTG 01)
26	04.30	05.59	07.23	07.47	09.19		14.54
	22.45	21.07	19.22	16.43	15.18	27	12.01 (WTG 01)
27	04.33	06.02	07.26	07.50	09.22		10.09
	22.42	21.04	19.19	16.40	15.16	27	11.35 (WTG 01)
28	04.36	06.04	07.29	07.53	09.25		14.56
	22.39	21.00	19.15	16.37	15.14	26	12.02 (WTG 01)
29	04.38	06.07	07.31	07.56	09.28		10.09
	22.36	20.57	19.12	16.34	15.12	25	11.36 (WTG 01)
30	04.41	06.10	07.34	07.59	09.30		14.59
	22.33	20.54	19.08	16.31	15.10	24	12.01 (WTG 01)
31	04.44	06.13		08.02			10.08
	22.30	20.50		16.28			15.00
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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
 Assumptions for shadow calculations

Shadow receptor: U - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (73)
 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 15.04	09.06 16.26	07.39 17.50	06.56 20.18	05.16 21.44	03.49 23.12	03.33 23.37	04.47 22.27	06.16 20.47	07.37 19.05	08.05 16.25	09.32 15.08
2	10.05 15.06	09.03 16.29	07.36 17.53	06.52 20.21	05.13 21.47	03.47 23.14	03.35 23.35	04.50 22.24	06.18 20.43	07.40 19.02	08.08 16.22	09.35 15.07
3	10.05 15.08	09.00 16.32	07.33 17.56	06.49 20.24	05.10 21.50	03.45 23.16	03.36 23.34	04.53 22.21	06.21 20.40	07.42 18.58	08.11 16.19	09.37 15.05
4	10.04 15.10	08.57 16.35	07.30 17.59	06.45 20.26	05.06 21.53	03.43 23.18	03.38 23.33	04.56 22.18	06.24 20.37	07.45 18.55	08.14 16.16	09.39 15.03
5	10.03 15.12	08.54 16.38	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.21	03.39 23.32	04.59 22.14	06.26 20.33	07.48 18.52	08.17 16.13	09.42 15.02
6	10.01 15.14	08.51 16.41	07.23 18.05	06.39 20.32	05.00 21.59	03.39 23.23	03.41 23.30	05.02 22.11	06.29 20.30	07.50 18.48	08.20 16.10	09.44 15.01
7	10.00 15.16	08.48 16.44	07.20 18.08	06.35 20.35	04.57 22.02	03.38 23.25	03.43 23.28	05.05 22.08	06.32 20.26	07.53 18.45	08.23 16.07	09.46 14.59
8	09.59 15.18	08.46 16.47	07.16 18.11	06.32 20.38	04.54 22.05	03.36 23.26	03.45 23.27	05.08 22.05	06.35 20.23	07.56 18.42	08.26 16.04	09.48 14.58
9	09.57 15.20	08.43 16.50	07.13 18.13	06.29 20.40	04.51 22.08	03.35 23.28	03.47 23.25	05.11 22.02	06.37 20.20	07.59 18.38	08.29 16.01	09.50 14.57
10	09.56 15.23	08.40 16.54	07.10 18.16	06.25 20.43	04.48 22.11	03.33 23.30	03.49 23.23	05.13 21.59	06.40 20.16	08.02 18.35	08.32 15.58	09.52 14.56
11	09.54 15.25	08.37 16.57	07.06 18.19	06.22 20.46	04.45 22.14	03.32 23.31	03.52 23.21	05.16 21.56	06.43 20.13	08.04 18.32	08.35 15.55	09.54 14.55
12	09.52 15.28	08.33 17.00	07.03 18.22	06.18 20.49	04.42 22.17	03.31 23.33	03.54 23.19	05.19 21.53	06.45 20.09	08.07 18.28	08.38 15.53	09.56 14.54
13	09.51 15.30	08.30 17.03	07.00 18.25	06.15 20.52	04.39 22.20	03.30 23.34	03.56 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.50	09.57 14.54
14	09.49 15.33	08.27 17.06	06.56 18.28	06.12 20.55	04.36 22.23	03.29 23.36	03.58 23.15	05.25 21.46	06.51 20.03	08.13 18.22	08.44 15.47	09.59 14.53
15	09.47 15.36	08.24 17.09	06.53 18.30	06.08 20.58	04.33 22.25	03.28 23.37	04.01 23.12	05.28 21.43	06.54 19.59	08.16 18.19	08.47 15.45	10.00 14.53
16	09.45 15.38	08.21 17.12	06.50 18.33	06.05 21.00	04.30 22.28	03.27 23.38	04.03 23.10	05.31 21.40	06.56 19.56	08.18 18.15	08.50 15.42	10.02 14.52
17	09.43 15.41	08.18 17.15	06.46 18.36	06.02 21.03	04.27 22.31	03.27 23.39	04.06 23.08	05.34 21.36	06.59 19.52	08.21 18.12	08.53 15.39	10.03 14.52
18	09.41 15.44	08.15 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.26 23.39	04.09 23.05	05.36 21.33	07.02 19.49	08.24 18.09	08.56 15.37	10.04 14.52
19	09.38 15.47	08.12 17.21	06.39 18.42	05.55 21.09	04.21 22.37	03.26 23.40	04.11 23.03	05.39 21.30	07.04 19.46	08.27 18.06	08.59 15.34	10.05 14.52
20	09.36 15.50	08.09 17.24	06.36 18.44	05.52 21.12	04.19 22.40	03.26 23.00	04.14 23.00	05.42 21.27	07.07 19.42	08.30 18.02	09.02 15.32	10.06 14.52
21	09.34 15.53	08.05 17.27	06.33 18.47	05.48 21.15	04.16 22.43	03.26 23.41	04.16 22.58	05.45 21.23	07.10 19.39	08.33 17.59	09.05 15.29	10.06 14.52
22	09.32 15.56	08.02 17.30	06.29 18.50	05.45 21.18	04.13 22.46	03.26 23.41	04.19 22.55	05.48 21.20	07.12 19.36	08.36 17.56	09.08 15.27	10.07 14.53
23	09.29 15.58	07.59 17.33	06.26 18.53	05.42 21.21	04.11 22.48	03.26 23.41	04.22 22.52	05.50 21.17	07.15 19.32	08.38 17.53	09.10 15.25	10.07 14.53
24	09.27 16.01	07.56 17.36	06.23 18.56	05.39 21.24	04.08 22.51	03.27 23.41	04.25 22.50	05.53 21.13	07.18 19.29	08.41 17.50	09.13 15.22	10.08 14.54
25	09.24 16.04	07.53 17.39	06.19 18.58	05.35 21.26	04.05 22.54	03.27 23.41	04.27 22.47	05.56 21.10	07.21 19.25	07.44 16.46	09.16 15.20	10.08 14.55
26	09.22 16.07	07.49 17.42	06.16 19.01	05.32 21.29	04.03 22.56	03.28 23.40	04.30 22.44	05.59 21.07	07.23 19.22	07.47 16.43	09.19 15.18	10.08 14.56
27	09.19 16.11	07.46 17.45	06.12 19.04	05.29 21.32	04.00 22.59	03.29 23.40	04.33 22.41	06.02 21.03	07.26 19.19	07.50 16.40	09.22 15.16	10.08 14.57
28	09.17 16.14	07.43 17.48	06.09 19.07	05.26 21.35	03.58 23.02	03.30 23.39	04.36 22.38	06.04 21.00	07.29 19.15	07.53 16.37	09.24 15.14	10.08 14.58
29	09.14 16.17		07.06 20.10	05.22 21.38	03.56 23.04	03.31 23.38	04.39 22.35	06.07 20.57	07.31 19.12	07.56 16.34	09.27 15.12	10.08 14.59
30	09.11 16.20		07.02 20.12	05.19 21.41	03.53 23.07	03.32 23.38	04.42 22.33	06.10 20.53	07.34 19.08	07.59 16.31	09.30 15.10	10.07 15.01
31	09.08 16.23		06.59 20.15	05.19 21.41	03.51 23.09	03.32 23.38	04.45 22.30	06.13 20.50	08.02 16.28		10.07 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: V - Shadow Receptor: 5,0 x 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

Table with 12 columns for months (January to December) and 31 rows of data. Each cell contains two values representing sunrise and sunset times in hh:mm format. Summary rows at the bottom include: Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and Total, real.

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

Matrix with 2 rows and 4 columns: 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)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest **Shadow receptor:** W - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (71)
Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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

Project:

20220502 Kattiharju extension

Licensed user:

PROKON Regenerative Energien eG
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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 12.39 (WTG 01)
	23.20	21.53	20.10	18.28	15.52 24	12.50 (WTG 01) 14.54 12.40 (WTG 01)
13	03.55	05.22	06.48	08.10	08.41	12.25 (WTG 01) 09.58 12.41 (WTG 01)
	23.17	21.50	20.06	18.25	15.50 25	12.50 (WTG 01) 14.53 12.42 (WTG 01)
14	03.58	05.25	06.51	08.13	08.44	12.25 (WTG 01) 09.59 12.40 (WTG 01)
	23.15	21.46	20.03	18.22	15.47 26	12.51 (WTG 01) 14.52 12.41 (WTG 01)
15	04.00	05.28	06.54	08.16	08.47	12.25 (WTG 01) 10.01 12.41 (WTG 01)
	23.13	21.43	19.59	18.18	15.44 27	12.52 (WTG 01) 14.52 12.42 (WTG 01)
16	04.03	05.30	06.56	08.19	08.50	12.24 (WTG 01) 10.02 12.42 (WTG 01)
	23.11	21.40	19.56	18.15	15.42 28	12.52 (WTG 01) 14.52 12.43 (WTG 01)
17	04.05	05.33	06.59	08.21	08.53	12.24 (WTG 01) 10.03 12.43 (WTG 01)
	23.08	21.37	19.53	18.12	15.39 29	12.53 (WTG 01) 14.51 12.44 (WTG 01)
18	04.08	05.36	07.02	08.24	08.56	12.24 (WTG 01) 10.05 12.44 (WTG 01)
	23.06	21.33	19.49	18.09	15.36 29	12.53 (WTG 01) 14.51 12.45 (WTG 01)
19	04.11	05.39	07.04	08.27	08.59	12.25 (WTG 01) 10.05 12.45 (WTG 01)
	23.03	21.30	19.46	18.05	15.34 29	12.54 (WTG 01) 14.51 12.46 (WTG 01)
20	04.13	05.42	07.07	08.30	09.02	12.25 (WTG 01) 10.06 12.46 (WTG 01)
	23.01	21.27	19.42	18.02	15.31 29	12.54 (WTG 01) 14.51 12.47 (WTG 01)
21	04.16	05.45	07.10	08.33	09.05	12.26 (WTG 01) 10.07 12.47 (WTG 01)
	22.58	21.24	19.39	17.59	15.29 29	12.55 (WTG 01) 14.52 12.48 (WTG 01)
22	04.19	05.47	07.12	08.36	09.08	12.25 (WTG 01) 10.08 12.48 (WTG 01)
	22.56	21.20	19.36	17.56	15.27 29	12.54 (WTG 01) 14.52 12.49 (WTG 01)
23	04.21	05.50	07.15	08.39	09.11	12.26 (WTG 01) 10.08 12.49 (WTG 01)
	22.53	21.17	19.32	17.53	15.24 28	12.54 (WTG 01) 14.53 12.50 (WTG 01)
24	04.24	05.53	07.18	08.42	09.14	12.26 (WTG 01) 10.08 12.50 (WTG 01)
	22.50	21.14	19.29	17.49	15.22 29	12.55 (WTG 01) 14.53 12.51 (WTG 01)
25	04.27	05.56	07.21	07.45	09.17	12.27 (WTG 01) 10.09 12.51 (WTG 01)
	22.47	21.10	19.25	16.46	8 09.30 (K 05) 15.20 28 12.55 (WTG 01) 14.54 12.52 (WTG 01)	
26	04.30	05.59	07.23	07.47	09.19 (K 05) 09.19	12.28 (WTG 01) 10.09 12.52 (WTG 01)
	22.45	21.07	19.22	16.43	13 09.32 (K 05) 15.18 27 12.55 (WTG 01) 14.55 12.53 (WTG 01)	
27	04.33	06.01	07.26	07.50	09.17 (K 05) 09.22	12.28 (WTG 01) 10.09 12.53 (WTG 01)
	22.42	21.04	19.19	16.40	16 09.33 (K 05) 15.16 27 12.55 (WTG 01) 14.56 12.54 (WTG 01)	
28	04.35	06.04	07.29	07.53	09.15 (K 05) 09.25	12.28 (WTG 01) 10.09 12.54 (WTG 01)
	22.39	21.00	19.15	16.37	19 09.34 (K 05) 15.13 26 12.54 (WTG 01) 14.57 12.55 (WTG 01)	
29	04.38	06.07	07.31	07.56	09.15 (K 05) 09.28	12.29 (WTG 01) 10.08 12.55 (WTG 01)
	22.36	20.57	19.12	16.34	21 09.36 (K 05) 15.12 25 12.54 (WTG 01) 14.59 12.56 (WTG 01)	
30	04.41	06.10	07.34	07.59	09.14 (K 05) 09.30	12.30 (WTG 01) 10.08 12.56 (WTG 01)
	22.33	20.54	19.08	16.31	22 09.36 (K 05) 15.10 24 12.54 (WTG 01) 15.00 12.57 (WTG 01)	
31	04.44	06.13	07.38	08.02	09.14 (K 05) 10.08 12.57 (WTG 01)	
	22.30	20.50	19.05	16.28	23 09.37 (K 05) 15.01 12.58 (WTG 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)



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°)
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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: X - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (70)
Assumptions for shadow calculations Sunshine probability S (Average daily sunshine hours) []

Table with 12 columns (Jan-Dec) and 1 row of data showing sunshine probabilities.

Operational time

Table with 13 columns (N to Sum) and 1 row of data showing operational times for various directions.

Main data table with columns for months (July-December) and rows for each day of the year, including sun rise/set times, potential sun hours, and various reduction factors.

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

Summary table with 4 columns: Day in month, Sun rise/set, Minutes with flicker, and Last time with flicker, with corresponding (WTG causing flicker) times.

Project:

20220502 Kattiharju extension

Licensed user:

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

Table with columns for months (January to December) and rows for days (1 to 31), showing sunshine hours and reduction percentages. Summary rows at the bottom include Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, and 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)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AC - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (65) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest
Assumptions for shadow calculations

Shadow receptor: AD - Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (64)
 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
		15.03	17 13.29 (K 03)	16.25		17.50	20.18
2		10.06	13.12 (K 03)	09.03		07.36	06.52
		15.05	18 13.30 (K 03)	16.28		17.53	20.21
3		10.05	13.12 (K 03)	09.00		07.33	06.49
		15.07	19 13.31 (K 03)	16.32	2	15.45 (K 05)	17.56
4		10.04	13.12 (K 03)	08.57		07.30	06.45
		15.09	20 13.32 (K 03)	16.35	11	15.49 (K 05)	17.59
5		10.03	13.12 (K 03)	08.54		07.26	06.42
		15.11	20 13.32 (K 03)	16.38	16	15.52 (K 05)	18.02
6		10.02	13.12 (K 03)	08.52		07.23	06.38
		15.13	21 13.33 (K 03)	16.41	18	15.54 (K 05)	18.05
7		10.00	13.13 (K 03)	08.49		07.20	06.35
		15.15	21 13.34 (K 03)	16.44	21	15.55 (K 05)	18.08
8		09.59	13.13 (K 03)	08.46		07.16	06.32
		15.17	22 13.35 (K 03)	16.47	22	15.56 (K 05)	18.10
9		09.58	13.13 (K 03)	08.43		07.13	06.28
		15.20	23 13.36 (K 03)	16.50	23	15.56 (K 05)	18.13
10		09.56	13.13 (K 03)	08.40		07.10	06.25
		15.22	23 13.36 (K 03)	16.53	24	15.57 (K 05)	18.16
11		09.54	13.13 (K 03)	08.37		07.06	06.21
		15.25	24 13.37 (K 03)	16.56	25	15.57 (K 05)	18.19
12		09.53	13.13 (K 03)	08.34		07.03	06.18
		15.27	25 13.38 (K 03)	16.59	26	15.58 (K 05)	18.22
13		09.51	13.14 (K 03)	08.31		07.00	06.15
		15.30	24 13.38 (K 03)	17.02	26	15.57 (K 05)	18.25
14		09.49	13.14 (K 03)	08.27		06.56	06.11
		15.32	25 13.39 (K 03)	17.05	25	15.57 (K 05)	18.27
15		09.47	13.13 (K 03)	08.24		06.53	06.08
		15.35	25 13.38 (K 03)	17.08	25	15.58 (K 05)	18.30
16		09.45	13.14 (K 03)	08.21		06.49	06.05
		15.38	25 13.39 (K 03)	17.11	24	15.57 (K 05)	18.33
17		09.43	13.14 (K 03)	08.18		06.46	06.01
		15.41	26 13.40 (K 03)	17.15	22	15.56 (K 05)	18.36
18		09.41	13.15 (K 03)	08.15		06.43	05.58
		15.43	25 13.40 (K 03)	17.18	21	15.55 (K 05)	18.39
19		09.39	13.15 (K 03)	08.12		06.39	05.55
		15.46	25 13.40 (K 03)	17.21	18	15.54 (K 05)	18.42
20		09.37	13.15 (K 03)	08.09		06.36	05.51
		15.49	25 13.40 (K 03)	17.24	15	15.52 (K 05)	18.44
21		09.34	13.16 (K 03)	08.05		06.33	05.48
		15.52	24 13.40 (K 03)	17.27	10	15.50 (K 05)	18.47
22		09.32	13.17 (K 03)	08.02		06.29	05.45
		15.55	24 13.41 (K 03)	17.30		18.50	21.18
23		09.29	13.17 (K 03)	07.59		06.26	05.41
		15.58	23 13.40 (K 03)	17.32		18.53	21.21
24		09.27	13.19 (K 03)	07.56		06.22	05.38
		16.01	21 13.40 (K 03)	17.35		18.56	21.24
25		09.24	13.20 (K 03)	07.52		06.19	05.35
		16.04	20 13.40 (K 03)	17.38		18.58	21.27
26		09.22	13.20 (K 03)	07.49		06.16	05.32
		16.07	19 13.39 (K 03)	17.41		19.01	21.29
27		09.19	13.22 (K 03)	07.46		06.12	05.28
		16.10	16 13.38 (K 03)	17.44		19.04	21.32
28		09.17	13.24 (K 03)	07.43		06.09	05.25
		16.13	12 13.36 (K 03)	17.47		19.07	21.35
29		09.14	13.28 (K 03)			07.05	05.22
		16.16	5 13.33 (K 03)			20.09	21.38
30		09.11				07.02	05.19
		16.19				20.12	21.41
31		09.09				06.59	05.50
		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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

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

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AE - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (63) Sunshine probability S (Average daily sunshine hours) []

Table with 12 columns (Jan-Dec) and 2 rows of sunshine probability values.

Operational time

Table with 13 columns (N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum) and 2 rows of operational time values.

Main data table with columns for months (January-December) and rows for days 1-31, including summary rows at the bottom.

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

Matrix with 4 columns: Day in month, Sun rise/set, Minutes with flicker, First/Last time with flicker.



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) 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
	15.03	16.25	26 14.07 (K 02)	17.50	20.18	21.44
2	10.06	09.03	13.41 (K 02)	07.36	06.52	05.12
	15.05	16.28	25 14.06 (K 02)	17.53	20.21	21.47
3	10.05	09.00	13.43 (K 02)	07.33	06.48	05.09
	15.07	16.32	22 14.05 (K 02)	17.56	20.23	21.50
4	10.04	08.57	13.43 (K 02)	07.29	06.45	05.06
	15.09	16.35	21 14.04 (K 02)	17.59	20.26	21.53
5	10.03	08.54	13.46 (K 02)	07.26	06.42	05.03
	15.11	16.38	17 14.03 (K 02)	18.02	20.29	21.56
6	10.02	08.51	13.49 (K 02)	07.23	06.38	05.00
	15.13	16.41	22 15.50 (K 03)	18.05	20.32	21.59
7	10.00	13.43 (K 02)	08.49	15.37 (K 03)	07.20	06.35
	15.15	4 13.47 (K 02)	16.44	16 15.53 (K 03)	18.07	20.35
8	09.59	13.42 (K 02)	08.46	15.36 (K 03)	07.16	06.32
	15.17	9 13.51 (K 02)	16.47	19 15.55 (K 03)	18.10	20.38
9	09.58	13.40 (K 02)	08.43	15.34 (K 03)	07.13	06.28
	15.20	13 13.53 (K 02)	16.50	22 15.56 (K 03)	18.13	20.40
10	09.56	13.39 (K 02)	08.40	15.33 (K 03)	07.10	06.25
	15.22	16 13.55 (K 02)	16.53	25 15.58 (K 03)	18.16	20.43
11	09.54	13.39 (K 02)	08.37	15.32 (K 03)	07.06	06.21
	15.25	17 13.56 (K 02)	16.56	26 15.58 (K 03)	18.19	20.46
12	09.53	13.38 (K 02)	08.33	15.32 (K 03)	07.03	06.18
	15.27	20 13.58 (K 02)	16.59	28 16.00 (K 03)	18.22	20.49
13	09.51	13.38 (K 02)	08.30	15.31 (K 03)	06.59	06.15
	15.30	21 13.59 (K 02)	17.02	29 16.00 (K 03)	18.25	20.52
14	09.49	13.37 (K 02)	08.27	15.31 (K 03)	06.56	06.11
	15.32	22 13.59 (K 02)	17.05	29 16.00 (K 03)	18.27	20.55
15	09.47	13.37 (K 02)	08.24	15.30 (K 03)	06.53	06.08
	15.35	23 14.00 (K 02)	17.08	30 16.00 (K 03)	18.30	20.57
16	09.45	13.37 (K 02)	08.21	15.30 (K 03)	06.49	06.05
	15.38	25 14.02 (K 02)	17.11	31 16.01 (K 03)	18.33	21.00
17	09.43	13.37 (K 02)	08.18	15.30 (K 03)	06.46	06.01
	15.41	26 14.03 (K 02)	17.14	31 16.01 (K 03)	18.36	21.03
18	09.41	13.37 (K 02)	08.15	15.30 (K 03)	06.43	05.58
	15.43	27 14.04 (K 02)	17.18	30 16.00 (K 03)	18.39	21.06
19	09.39	13.36 (K 02)	08.12	15.31 (K 03)	06.39	05.55
	15.46	28 14.04 (K 02)	17.21	29 16.00 (K 03)	18.41	21.09
20	09.36	13.36 (K 02)	08.08	15.30 (K 03)	06.36	05.51
	15.49	29 14.05 (K 02)	17.24	29 15.59 (K 03)	18.44	21.12
21	09.34	13.37 (K 02)	08.05	15.31 (K 03)	06.33	05.48
	15.52	29 14.06 (K 02)	17.27	28 15.59 (K 03)	18.47	21.15
22	09.32	13.36 (K 02)	08.02	15.32 (K 03)	06.29	05.45
	15.55	29 14.05 (K 02)	17.29	26 15.58 (K 03)	18.50	21.18
23	09.29	13.36 (K 02)	07.59	15.33 (K 03)	06.26	05.41
	15.58	30 14.06 (K 02)	17.32	24 15.57 (K 03)	18.53	21.21
24	09.27	13.37 (K 02)	07.56	15.34 (K 03)	06.22	05.38
	16.01	30 14.07 (K 02)	17.35	21 15.55 (K 03)	18.55	21.24
25	09.24	13.36 (K 02)	07.52	15.36 (K 03)	06.19	05.35
	16.04	31 14.07 (K 02)	17.38	18 15.54 (K 03)	18.58	21.26
26	09.22	13.37 (K 02)	07.49	15.38 (K 03)	06.16	05.32
	16.07	30 14.07 (K 02)	17.41	13 15.51 (K 03)	19.01	21.29
27	09.19	13.38 (K 02)	07.46		06.12	05.28
	16.10	30 14.08 (K 02)	17.44		19.04	21.32
28	09.17	13.38 (K 02)	07.43		06.09	05.25
	16.13	29 14.07 (K 02)	17.47		19.07	21.35
29	09.14	13.38 (K 02)			07.05	05.22
	16.16	29 14.07 (K 02)			20.09	21.38
30	09.11	13.38 (K 02)			07.02	05.19
	16.19	29 14.07 (K 02)			20.12	21.41
31	09.09	13.39 (K 02)			06.59	05.00
	16.22	28 14.07 (K 02)			20.15	21.10
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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

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	07.34	08.02	15.01 (K 03) 09.30	13.20 (K 02) 10.08
	22.30	20.50	19.05	16.27	26 15.27 (K 03) 15.07	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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

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)
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		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		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		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		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		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		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		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		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		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		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		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		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		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			05.10				
	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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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) 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
	23.37	22.27	20.47	19.05	16.24	15.08
2	03.34	04.50	06.18	07.39	08.08	09.35
	23.36	22.24	20.43	19.02	16.21	15.06
3	03.35	04.53	06.21	07.42	08.11	09.37
	23.35	22.21	20.40	18.58	16.18	15.04
4	03.37	04.56	06.23	07.45	08.14	09.40
	23.33	22.18	20.36	18.55	16.15	15.03
5	03.39	04.58	06.26	07.48	08.17	09.42
	23.32	22.15	20.33	18.51	16.12	15.01
6	03.40	05.01	06.29	07.50	08.20	09.44
	23.30	22.11	20.30	18.48	16.09	15.00
7	03.42	05.04	06.32	07.53	08.23	09.46
	23.29	22.08	20.26	18.45	16.57 (K 03)	15.06
8	03.44	05.07	06.34	07.56	08.26	09.49
	23.27	22.05	20.23	18.41	16.51 (K 03)	15.06
9	03.46	05.10	06.37	07.59	08.29	09.51
	23.25	22.02	20.19	18.38	16.48 (K 03)	15.03
10	03.48	05.13	06.40	08.01	08.32	09.52
	23.23	21.59	20.16	18.35	16.46 (K 03)	15.02
11	03.51	05.16	06.42	08.04	08.35	09.54
	23.21	21.56	20.13	18.31	16.43 (K 03)	15.01
12	03.53	05.19	06.45	08.07	08.38	09.56
	23.19	21.53	20.09	18.28	16.44 (K 03)	15.00
13	03.55	05.22	06.48	08.10	08.41	09.58
	23.17	21.49	20.06	18.25	16.41 (K 03)	14.99
14	03.58	05.24	06.51	08.13	08.44	09.59
	23.15	21.46	20.02	18.22	16.42 (K 03)	14.98
15	04.00	05.27	06.53	08.15	08.47	10.01
	23.13	21.43	19.59	18.18	16.41 (K 03)	14.97
16	04.03	05.30	06.56	08.18	08.50	10.02
	23.10	21.40	19.56	18.15	16.41 (K 03)	14.96
17	04.05	05.33	06.59	08.21	08.53	10.03
	23.08	21.36	19.52	18.12	16.41 (K 03)	14.95
18	04.08	05.36	07.01	08.24	08.56	10.04
	23.05	21.33	19.49	18.08	16.41 (K 03)	14.94
19	04.10	05.39	07.04	08.27	08.59	10.05
	23.03	21.30	19.45	18.05	16.41 (K 03)	14.93
20	04.13	05.42	07.07	08.30	09.02	10.06
	23.00	21.27	19.42	18.02	16.41 (K 03)	14.92
21	04.16	05.44	07.09	08.33	09.05	10.07
	22.58	21.23	19.39	17.59	16.41 (K 03)	14.91
22	04.19	05.47	07.12	08.35	09.08	10.07
	22.55	21.20	19.35	17.56	16.42 (K 03)	14.90
23	04.21	05.50	07.15	08.38	09.11	10.08
	22.52	21.17	19.32	17.52	16.43 (K 03)	14.89
24	04.24	05.53	07.18	08.41	09.13	10.08
	22.50	21.13	19.29	17.49	16.44 (K 03)	14.88
25	04.27	05.56	07.20	07.44	09.16	10.08
	22.47	21.10	19.25	17.46	16.43 (K 03)	14.87
26	04.30	05.59	07.23	07.47	09.19	10.08
	22.44	21.07	19.22	17.43	16.41 (K 03)	14.86
27	04.32	06.01	07.26	07.50	09.22	10.08
	22.41	21.03	19.18	17.40	16.41 (K 03)	14.85
28	04.35	06.04	07.28	07.53	09.25	10.08
	22.38	21.00	19.15	17.37	16.41 (K 03)	14.84
29	04.38	06.07	07.31	07.56	09.27	10.08
	22.36	20.57	19.12	17.33	16.41 (K 03)	14.83
30	04.41	06.10	07.34	07.59	09.30	10.08
	22.33	20.53	19.08	17.30	16.41 (K 03)	14.82
31	04.44	06.12	07.37	08.02	09.33	10.07
	22.30	20.50	19.05	17.27	16.41 (K 03)	14.81
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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AH - Shadow Receptor: 5,0 x 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)
2	15.03	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)
3	15.05	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)
4	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 12.53 (K 01)	09.37	24 13.15 (K 01)
5	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)
6	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 12.47 (K 01)	09.42	22 12.53 (K 01)
7	15.13	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)
8	15.15	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 12.44 (K 01)	09.46	19 12.55 (K 01)
9	15.17	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)
10	15.20	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)
11	15.22	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)
12	15.25	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)
13	15.27	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)
14	15.30	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)
15	15.32	13.37 (K 01)	17.05		18.28	20.55	22.23	23.36	23.15	21.46	20.02	18.22	15.47	34 13.15 (K 01)	14.52	
16	15.35	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	
17	15.38	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	
18	15.41	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	
19	15.43	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	
20	15.46	13.41 (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	
21	15.49	13.42 (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	
22	15.52	13.43 (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	
23	15.55	13.44 (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	
24	15.58	13.45 (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	
25	16.01	13.46 (K 01)	17.35		18.56	21.24	22.51	23.41	22.50	21.13	19.29	17.49	15.22	33 13.17 (K 01)	14.53	
26	16.04	13.47 (K 01)	17.38		18.58	21.26	22.54	23.41	22.47	21.10	19.25	17.46	15.20	32 13.17 (K 01)	14.54	
27	16.07	13.48 (K 01)	17.41		19.01	21.29	22.57	23.41	22.44	21.07	19.22	17.43	15.17	32 13.16 (K 01)	14.55	
28	16.10	13.49 (K 01)	17.44		19.04	21.32	22.59	23.40	22.41	21.03	19.18	17.40	15.15	31 13.16 (K 01)	14.56	
29	16.13	13.50 (K 01)	17.47		19.07	21.35	23.02	23.40	22.38	21.00	19.15	17.37	15.13	30 13.16 (K 01)	14.57	
30	16.16	13.51 (K 01)			19.10	21.38	23.05	23.39	22.36	20.57	19.12	17.34	15.11	29 13.16 (K 01)	14.58	
31	16.19	13.52 (K 01)			19.13	21.41	23.08	23.38	22.33	20.53	19.08	17.30	15.09	28 13.16 (K 01)	15.00	3 13.16 (K 01)
Potential sun hours	16.22	13.53 (K 01)			19.16	21.44	23.11	23.37	22.30	20.50	19.04	17.26	15.07	27 13.16 (K 01)	15.01	8 13.19 (K 01)
Total, worst case	882	243	180		364	446	557	601	591	501	391	308	208		154	240
Sum 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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)		240
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)		

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AI - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (59)
 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	05.50	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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AJ - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (58) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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)				
2	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)			
3	10.05 21	12.38 (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)				
4	15.07 28	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)				
5	10.04 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)			
6	10.03 15.11 24	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	09.42	12.02 (K 11)				
7	10.01 15.13 25	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)	
8	10.00 15.15 25	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	09.44	12.03 (K 11)				
9	09.59 15.17 27	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)	
10	09.57 15.20 28	12.17 (K 11) 08.48	12.35 (K 11) 07.29	06.35 05.06	03.37 03.42	05.04 06.32	07.53 08.23	09.46	12.04 (K 11)				
11	09.56 15.22 29	12.43 (K 11) 16.47	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)			
12	09.54 15.25 29	12.16 (K 11) 08.42	12.34 (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)				
13	09.52 15.27 30	12.44 (K 11) 16.50	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)			
14	09.51 15.30 31	12.16 (K 11) 08.39	12.33 (K 11) 07.26	06.42 05.03	03.40 03.39	04.58 06.26	07.47 08.17	09.42	12.02 (K 11)				
15	09.49 15.32 32	12.45 (K 11) 16.53	12.51 (K 11) 18.06	20.24 21.51	23.15 23.32	22.15 20.34	18.50 16.11	15.05	27	12.27 (K 11)			
16	09.47 15.35 32	12.16 (K 11) 08.36	12.35 (K 11) 07.27	06.41 05.02	03.39 03.38	04.59 06.27	07.49 08.19	09.43	12.03 (K 11)				
17	09.45 15.38 33	12.46 (K 11) 16.59	12.52 (K 11) 18.09	20.25 21.52	23.16 23.33	22.16 20.35	18.51 16.12	15.06	28	12.28 (K 11)			
18	09.43 15.40 34	12.17 (K 11) 08.30	12.37 (K 11) 07.28	06.46 05.07	03.41 03.40	05.02 06.30	07.54 08.24	09.47	12.05 (K 11)				
19	09.41 15.43 33	12.47 (K 11) 17.02	12.53 (K 11) 18.11	20.26 21.53	23.17 23.34	22.17 20.36	18.55 16.15	15.03	26	12.27 (K 11)			
20	09.39 15.46 34	12.18 (K 11) 08.27	12.38 (K 11) 07.29	06.47 05.08	03.42 03.41	05.03 06.31	07.55 08.25	09.48	12.06 (K 11)				
21	09.36 15.49 35	12.48 (K 11) 17.05	12.54 (K 11) 18.13	20.27 21.54	23.18 23.35	22.18 20.37	18.52 16.13	15.07	27	12.28 (K 11)			
22	09.34 15.52 34	12.19 (K 11) 08.20	12.39 (K 11) 07.30	06.48 05.09	03.43 03.42	05.04 06.32	07.56 08.26	09.50	12.07 (K 11)				
23	09.32 15.55 34	12.50 (K 11) 17.17	12.56 (K 11) 18.21	20.28 21.55	23.20 23.37	22.19 20.38	18.53 16.14	15.08	28	12.28 (K 11)			
24	09.29 15.58 35	12.17 (K 11) 08.11	12.40 (K 11) 07.31	06.49 05.10	03.44 03.43	05.05 06.33	07.57 08.27	09.51	12.08 (K 11)				
25	09.27 16.01 34	12.51 (K 11) 17.20	12.57 (K 11) 18.25	20.29 21.56	23.21 23.38	22.20 20.39	18.54 16.15	15.09	29	12.29 (K 11)			
26	09.24 16.04 34	12.18 (K 11) 08.15	12.41 (K 11) 07.32	06.50 05.11	03.45 03.44	05.06 06.34	07.59 08.29	09.54	12.09 (K 11)				
27	09.22 16.07 34	12.52 (K 11) 17.29	12.58 (K 11) 18.31	20.30 21.57	23.22 23.39	22.21 20.40	18.55 16.16	15.10	30	12.30 (K 11)			
28	09.19 16.10 33	12.19 (K 11) 08.08	12.43 (K 11) 07.33	06.51 05.12	03.46 03.45	05.07 06.35	07.61 08.31	09.55	12.10 (K 11)				
29	09.17 16.13 33	12.53 (K 11) 17.32	12.59 (K 11) 18.35	20.31 21.58	23.23 23.40	22.22 20.41	18.56 16.17	15.11	31	12.31 (K 11)			
30	09.14 16.16 32	12.17 (K 11) 08.02	12.44 (K 11) 07.34	06.52 05.13	03.47 03.46	05.08 06.36	07.63 08.33	09.57	12.11 (K 11)				
31	09.11 16.19 31	12.54 (K 11) 17.35	12.60 (K 11) 18.39	20.32 21.59	23.24 23.41	22.23 20.42	18.57 16.18	15.12	32	12.32 (K 11)			
Potential sun hours	185	243	364	446	557	601	591	501	391	308	208	154	555
Total, worst case	927	110											0.11
Sun reduction	0.16	0.29											0.97
Oper. time red.	0.97	0.69											0.69
Wind dir. red.	0.69	0.20											0.07
Total reduction	0.11												0.07
Total, real	101	22											41

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)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AK - Shadow Receptor: 5,0 x 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	15.39 (K 10)	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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SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AK - Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (57) 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 13.27 (K 11)
	23.17	21.49	20.06	18.25	15.49	25 13.33 (K 11) 14.53 13.28 (K 11)
14	03.58	05.24	06.50	08.12	08.44	13.07 (K 11) 09.59 13.29 (K 11)
	23.15	21.46	20.02	18.21	15.47	26 13.33 (K 11) 14.52 13.30 (K 11)
15	04.00	05.27	06.53	08.15	08.47	13.07 (K 11) 10.00 13.31 (K 11)
	23.12	21.43	19.59	18.18	15.44	27 13.34 (K 11) 14.52 13.32 (K 11)
16	04.03	05.30	06.56	08.18	08.50	13.07 (K 11) 10.02 13.33 (K 11)
	23.10	21.39	19.56	18.15	15.41	28 13.35 (K 11) 14.51 13.34 (K 11)
17	04.05	05.33	06.59	08.21	08.53	13.07 (K 11) 10.03 13.35 (K 11)
	23.08	21.36	19.52	18.12	15.39	29 13.36 (K 11) 14.51 13.36 (K 11)
18	04.08	05.36	07.01	08.24	16.08 (K 10)	08.56 13.07 (K 11) 10.04 13.37 (K 11)
	23.05	21.33	19.49	18.08	13 16.21 (K 10) 15.36 28 13.35 (K 11) 14.51 13.38 (K 11)	
19	04.10	05.39	07.04	08.27	16.05 (K 10)	08.59 13.07 (K 11) 10.05 13.39 (K 11)
	23.03	21.30	19.45	18.05	18 16.23 (K 10) 15.34 29 13.36 (K 11) 14.51 13.40 (K 11)	
20	04.13	05.41	07.07	08.30	16.03 (K 10)	09.02 13.07 (K 11) 10.06 13.41 (K 11)
	23.00	21.26	19.42	18.02	21 16.24 (K 10) 15.31 29 13.36 (K 11) 14.51 13.42 (K 11)	
21	04.16	05.44	07.09	08.32	16.02 (K 10)	09.05 13.08 (K 11) 10.06 13.43 (K 11)
	22.58	21.23	19.39	17.59	23 16.25 (K 10) 15.29 29 13.37 (K 11) 14.52 13.44 (K 11)	
22	04.18	05.47	07.12	08.35	16.00 (K 10)	09.08 13.08 (K 11) 10.07 13.45 (K 11)
	22.55	21.20	19.35	17.55	26 16.26 (K 10) 15.26 29 13.37 (K 11) 14.52 13.46 (K 11)	
23	04.21	05.50	07.15	08.38	16.00 (K 10)	09.10 13.09 (K 11) 10.08 13.47 (K 11)
	22.52	21.16	19.32	17.52	27 16.27 (K 10) 15.24 28 13.37 (K 11) 14.53 13.48 (K 11)	
24	04.24	05.53	07.17	08.41	15.59 (K 10)	09.13 13.08 (K 11) 10.08 13.49 (K 11)
	22.50	21.13	19.28	17.49	28 16.27 (K 10) 15.22 29 13.37 (K 11) 14.53 13.50 (K 11)	
25	04.27	05.56	07.20	07.44	14.58 (K 10)	09.16 13.09 (K 11) 10.08 13.51 (K 11)
	22.47	21.10	19.25	16.46	29 15.27 (K 10) 15.20 28 13.37 (K 11) 14.54 13.52 (K 11)	
26	04.30	05.58	07.23	07.47	14.58 (K 10)	09.19 13.10 (K 11) 10.08 13.53 (K 11)
	22.44	21.06	19.22	16.43	29 15.27 (K 10) 15.17 27 13.37 (K 11) 14.55 13.54 (K 11)	
27	04.32	06.01	07.26	07.50	14.58 (K 10)	09.22 13.10 (K 11) 10.08 13.55 (K 11)
	22.41	21.03	19.18	16.40	30 15.28 (K 10) 15.15 27 13.37 (K 11) 14.56 13.56 (K 11)	
28	04.35	06.04	07.28	07.53	14.58 (K 10)	09.24 13.11 (K 11) 10.08 13.57 (K 11)
	22.38	21.00	19.15	16.36	29 15.27 (K 10) 15.13 26 13.37 (K 11) 14.57 13.58 (K 11)	
29	04.38	06.07	07.31	07.56	14.58 (K 10)	09.27 13.12 (K 11) 10.08 13.59 (K 11)
	22.35	20.56	19.11	16.33	29 15.27 (K 10) 15.11 26 13.38 (K 11) 14.58 13.60 (K 11)	
30	04.41	06.09	07.34	07.59	14.59 (K 10)	09.30 13.12 (K 11) 10.07 13.61 (K 11)
	22.32	20.53	19.08	16.30	28 15.27 (K 10) 15.09 25 13.37 (K 11) 15.00 13.62 (K 11)	
31	04.44	06.12	07.37	08.02	14.59 (K 10)	09.33 13.13 (K 11) 10.07 13.63 (K 11)
	22.30	20.50	19.05	16.27	27 15.26 (K 10) 15.07 24 13.38 (K 11) 15.01 13.64 (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)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Calculation: 16 x WTG : 2 x N175 + 14 x N163 + Forest Shadow receptor: AN - Shadow Receptor: 5,0 x 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]

Table with 13 columns (Month) and 31 rows (Day) containing hourly shadow data. Includes summary rows for Potential sun hours, Total, worst case, Sun reduction, Oper. time red., Wind dir. red., Total reduction, Total, real.

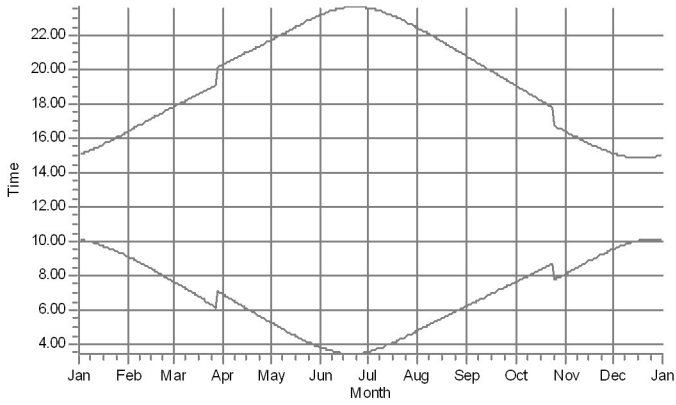
Table layout: For each day in each month the following matrix apply

Matrix layout with 4 columns: 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)

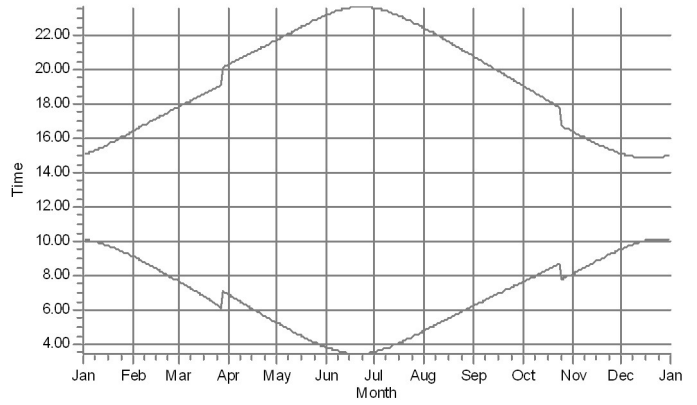
SHADOW - Calendar, graphical

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

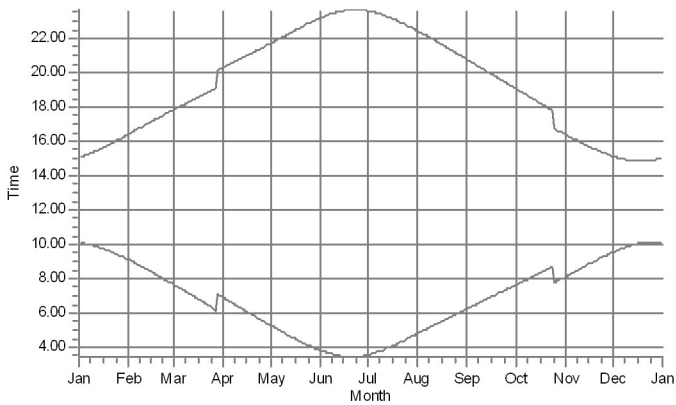
A: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (93)



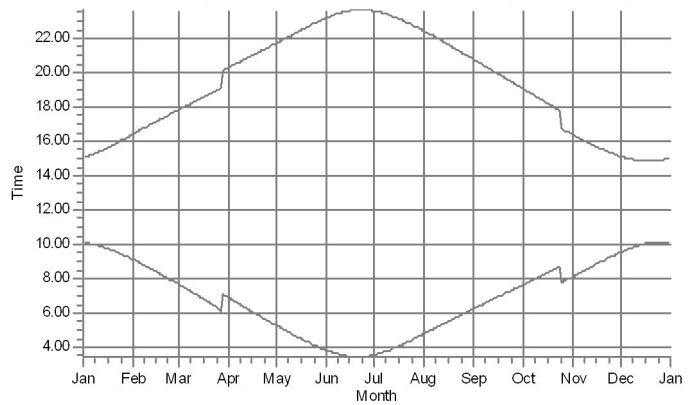
B: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (92)



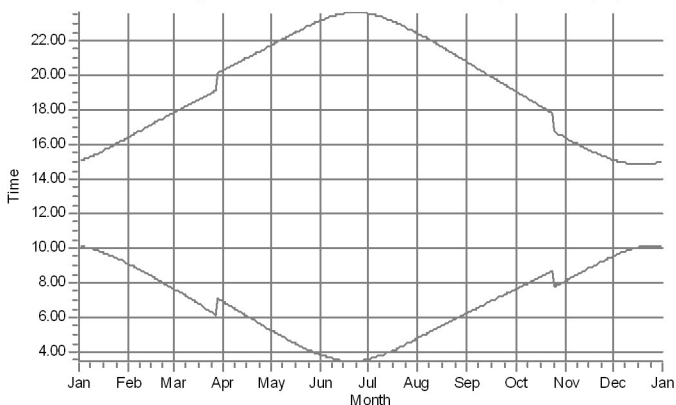
C: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (91)



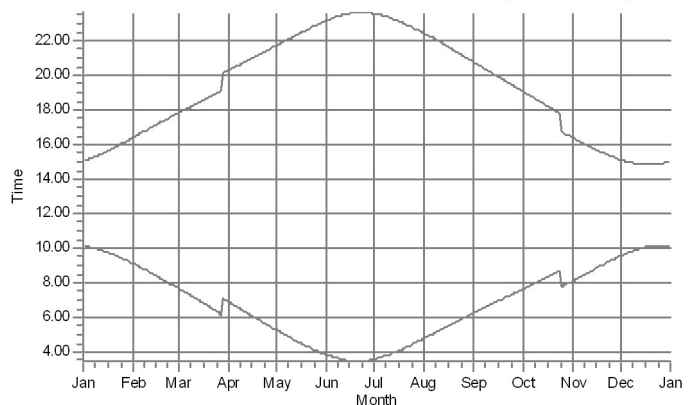
D: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (90)



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)

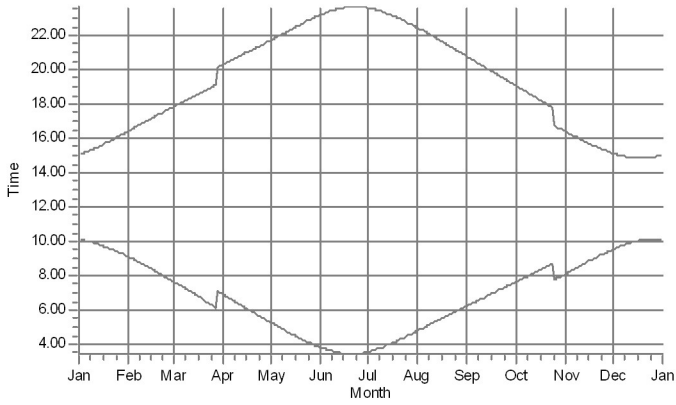


WTGs

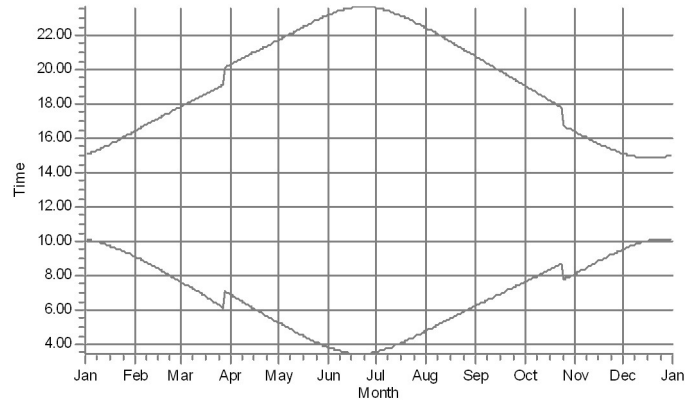
SHADOW - Calendar, graphical

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

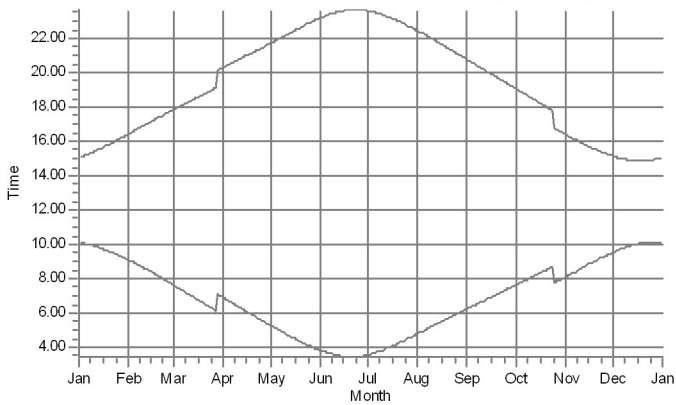
G: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (87)



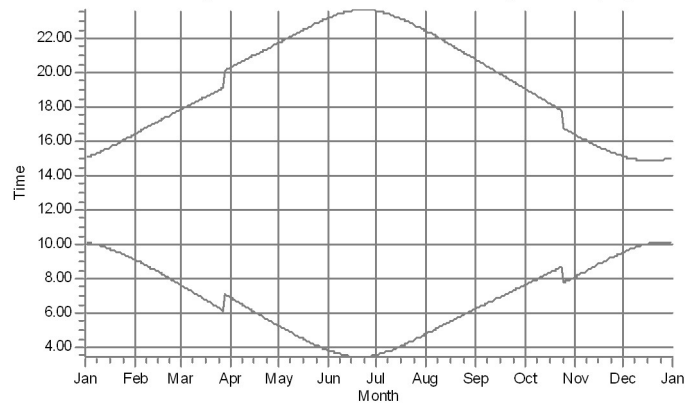
H: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (86)



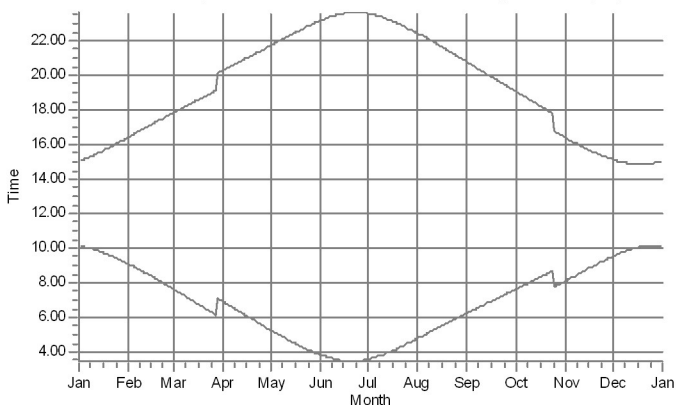
I: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (85)



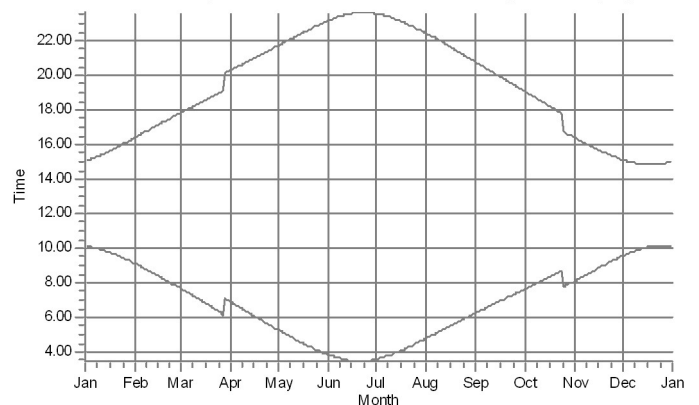
J: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (84)



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)

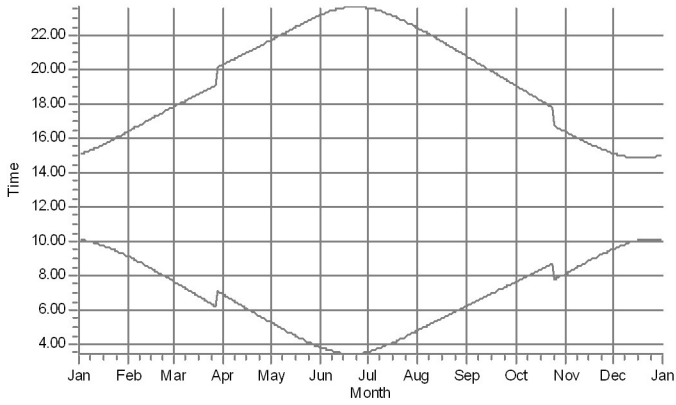


WTGs

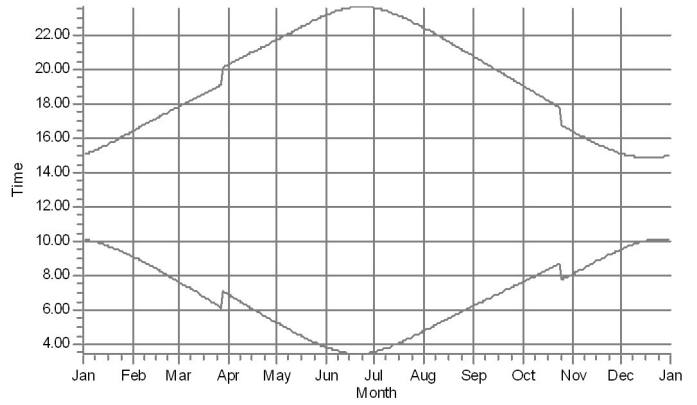
SHADOW - Calendar, graphical

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

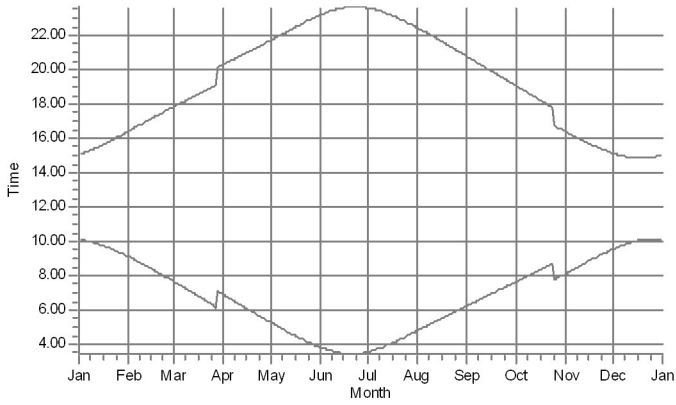
M: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (81)



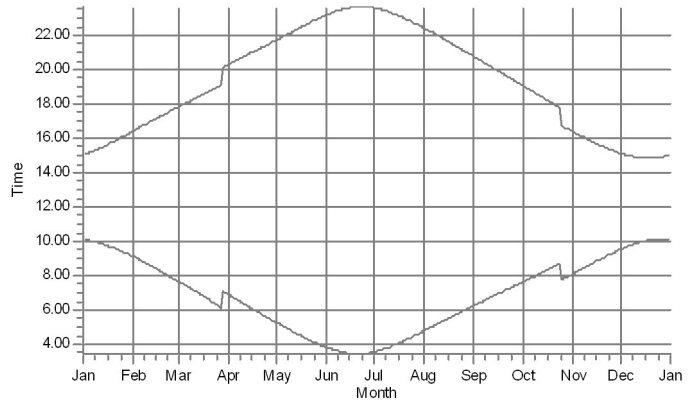
N: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (80)



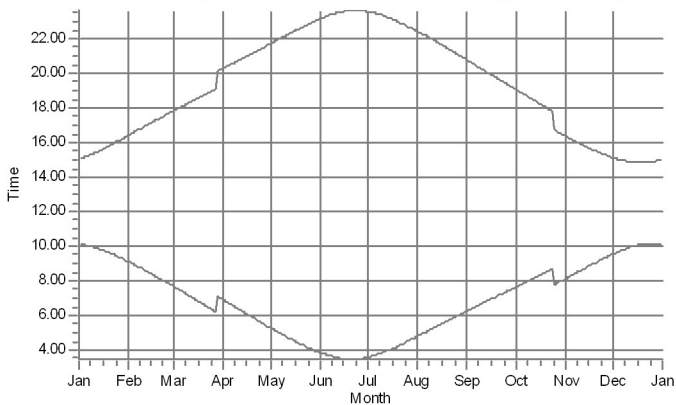
O: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (79)



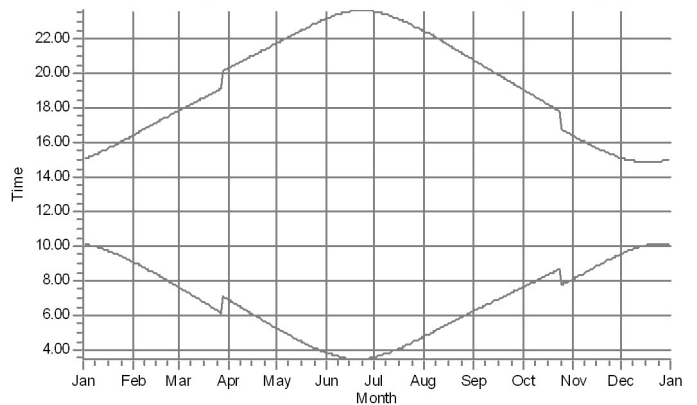
P: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (78)



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)

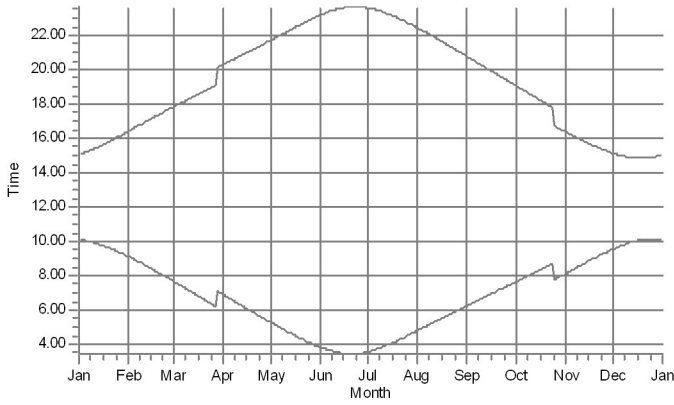


WTGs

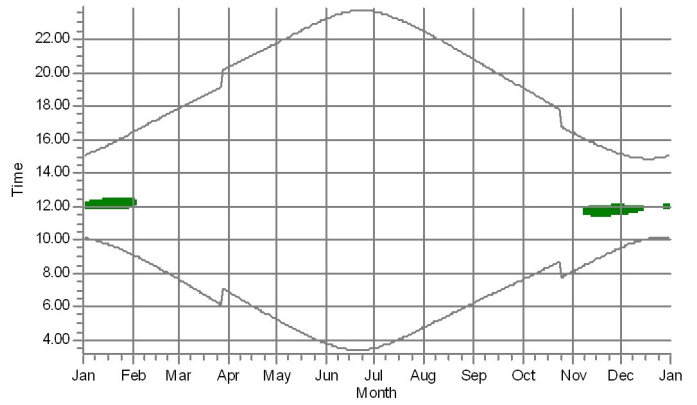
SHADOW - Calendar, graphical

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

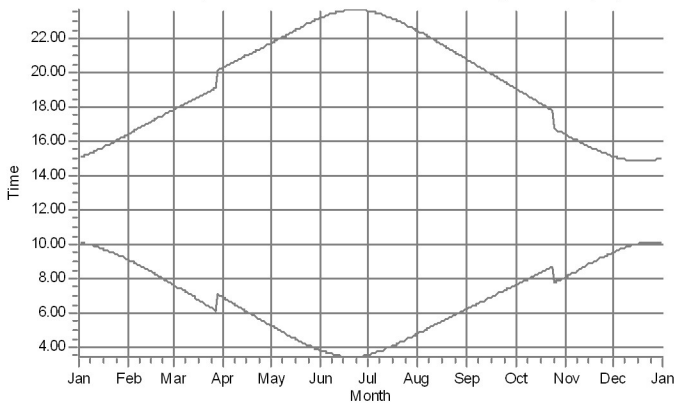
S: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (75)



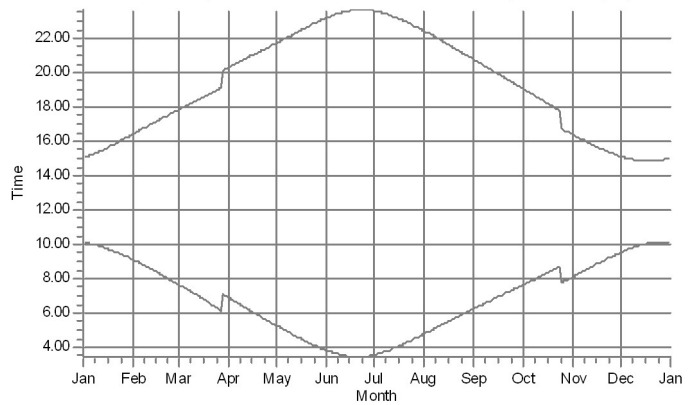
T: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (74)



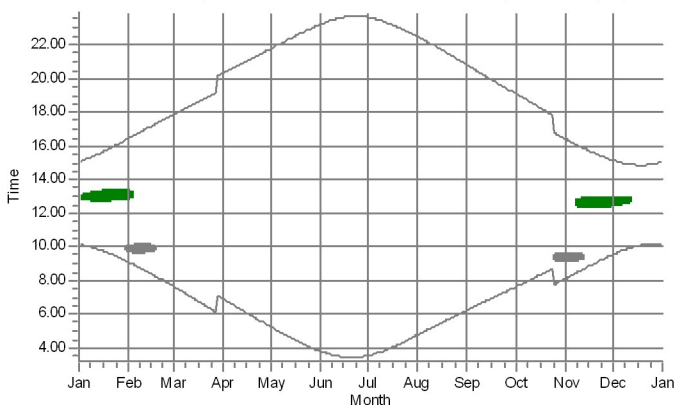
U: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (73)



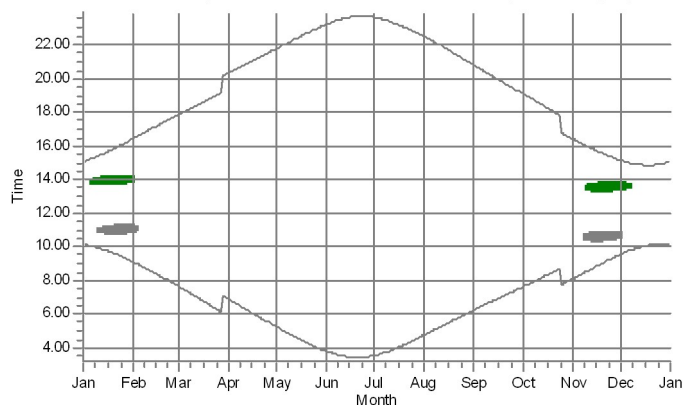
V: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (72)




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

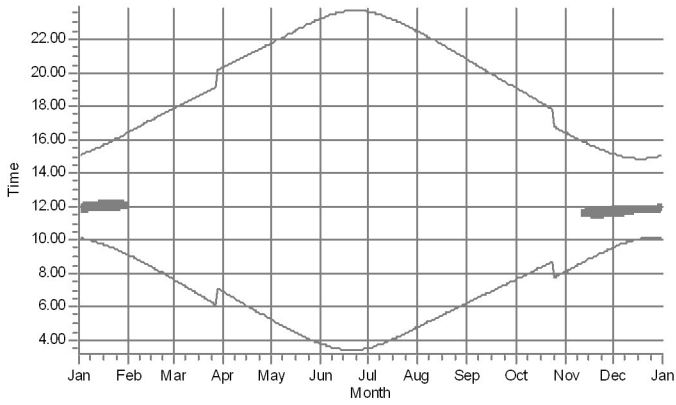
 WTG 01: NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)

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

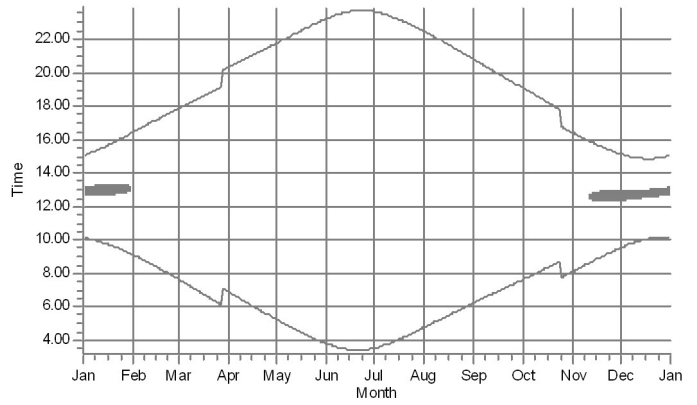
SHADOW - Calendar, graphical

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

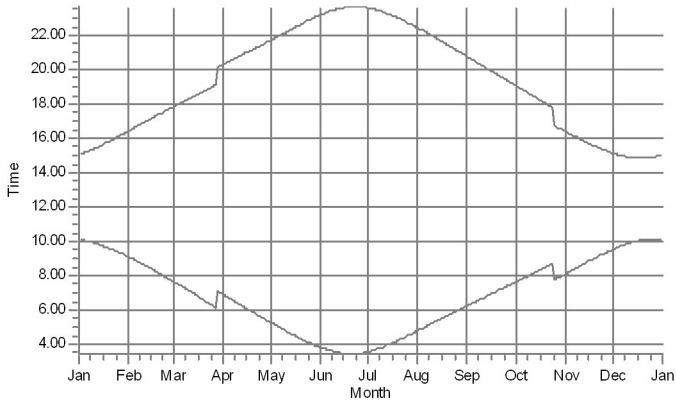
Y: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (69)



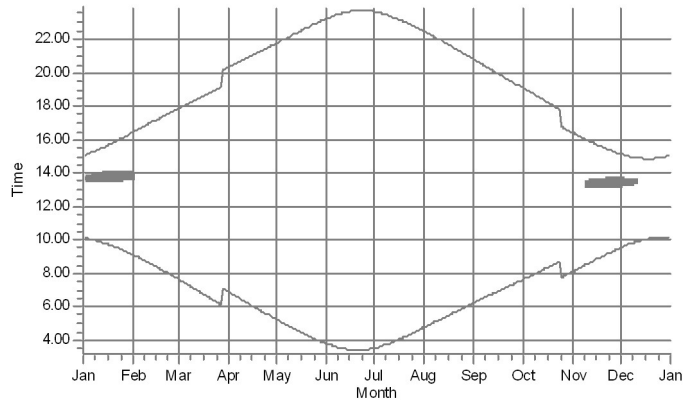
Z: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (68)



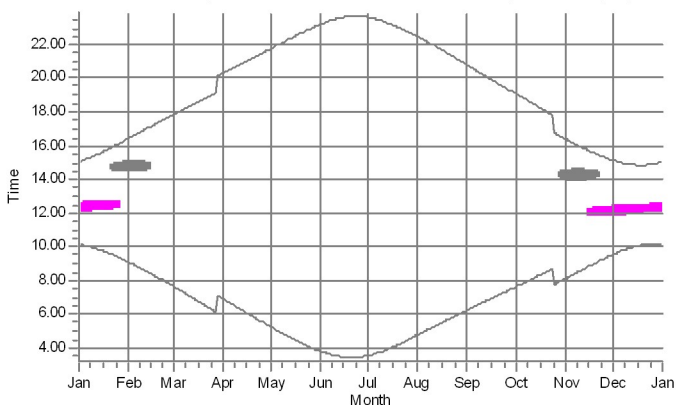
AA: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (67)



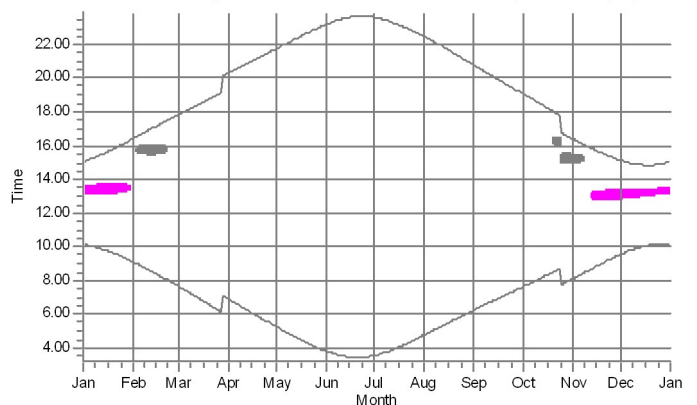
AB: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (66)



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

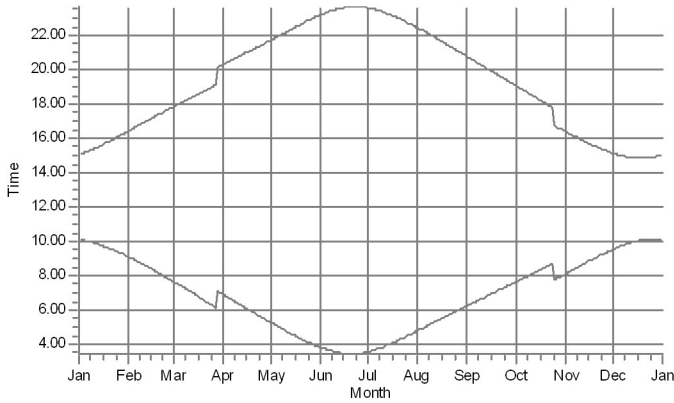
 K 05: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (146)

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

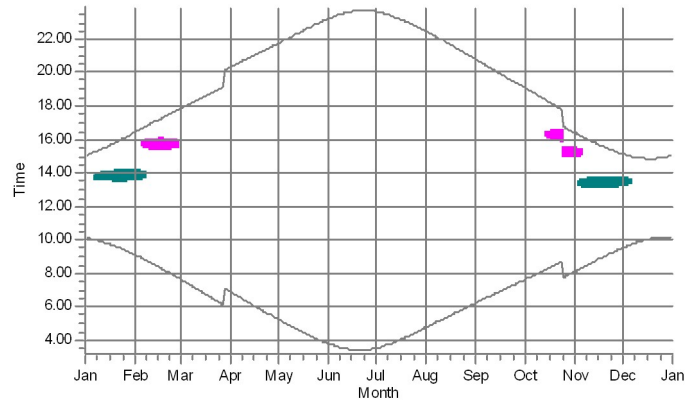
SHADOW - Calendar, graphical

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

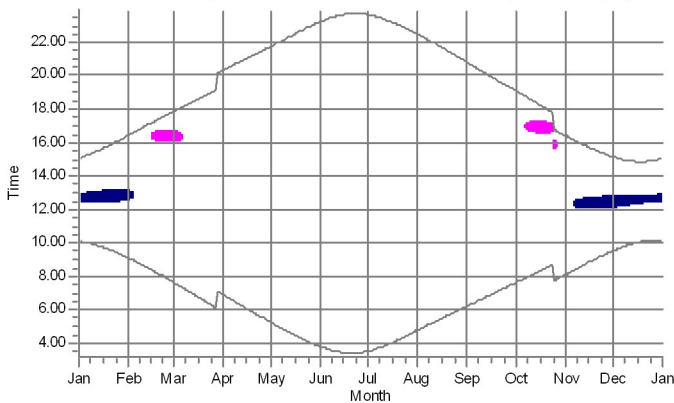
AE: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (63)



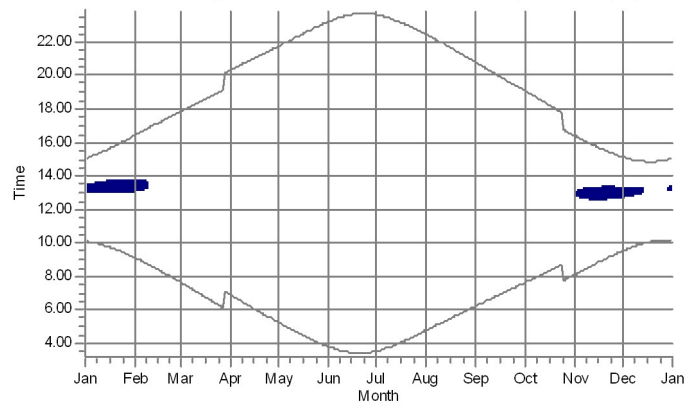
AF: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (61)



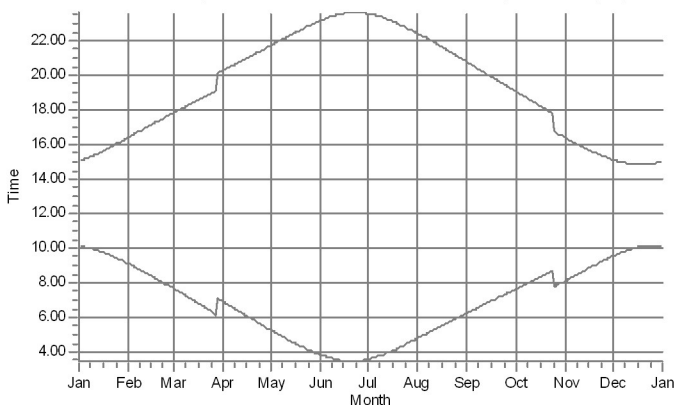
AG: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (62)



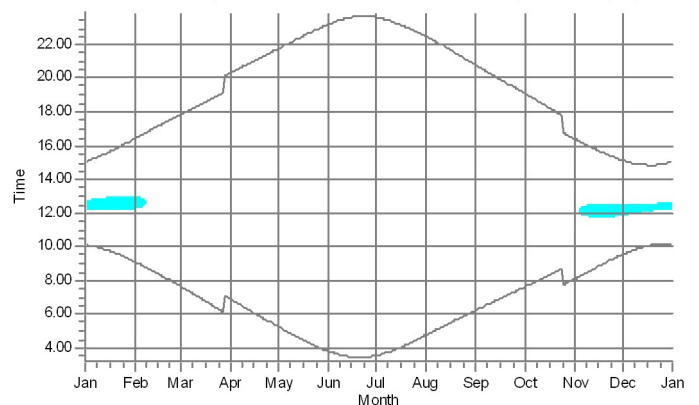
AH: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (60)



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

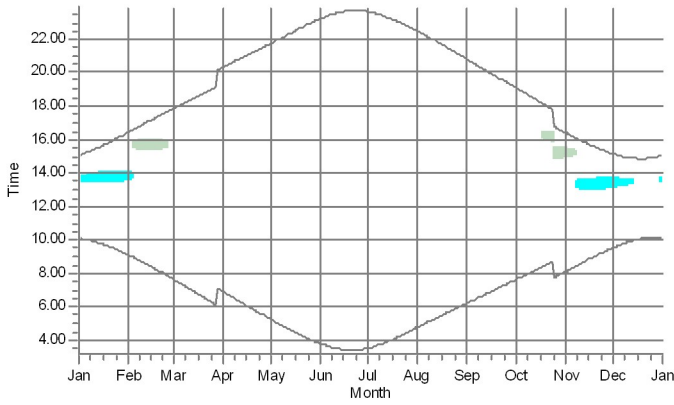
- K 03: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 150,5 m (TOT: 232,0 m) (147)
- K 02: NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)

- 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)

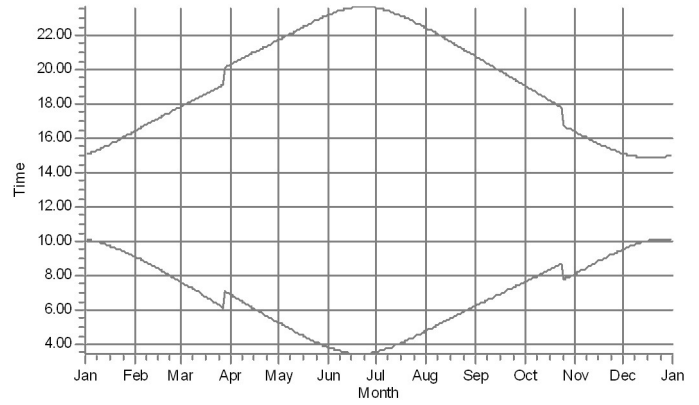
SHADOW - Calendar, graphical

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

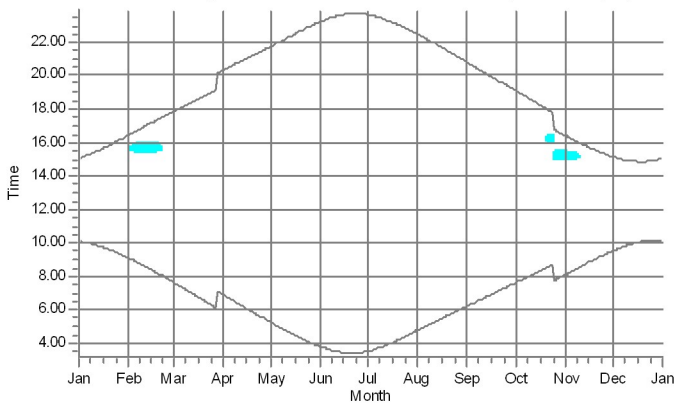
AK: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (57)



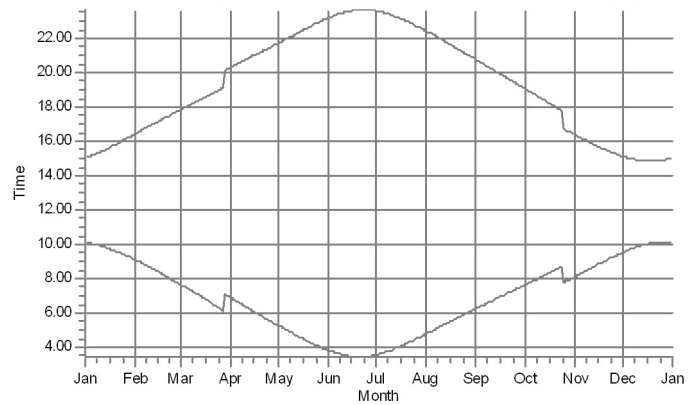
AL: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (56)



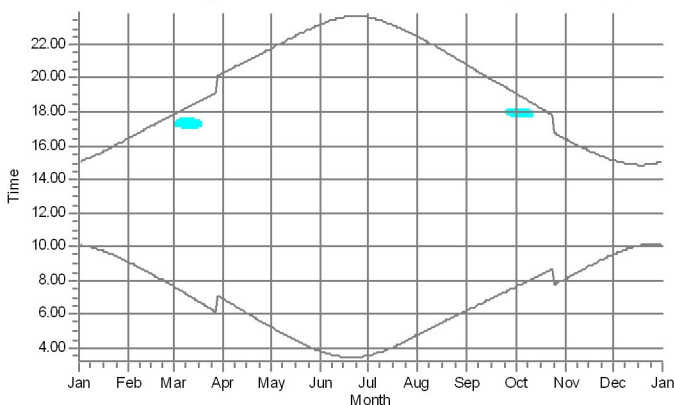
AM: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (55)



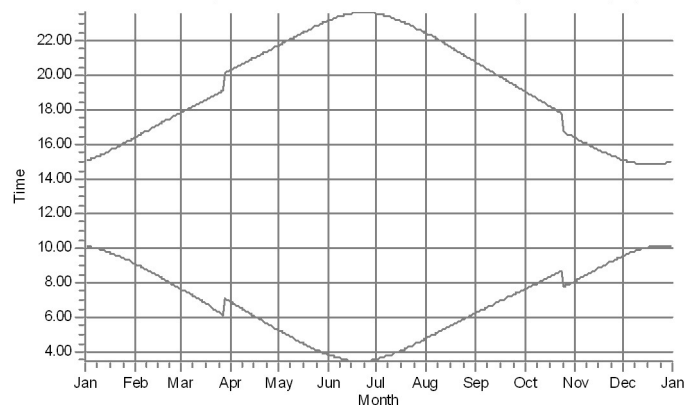
AN: Shadow Receptor: 5,0 × 5,0 Azimuth: 0,0° Slope: 90,0° (54)



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)

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 !-I 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

Table with columns for months (January to December) and rows for each day (1 to 31), containing sun rise/set times and shadow data.

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

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

Project:

20220502 Kattiharju extension

Licensed user:

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DE-25524 Itzehoe
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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 02 - NORDEX N163/6.X-6800 6800 163.0 !-! hub: 149,5 m (TOT: 231,0 m) (148)
Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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

Table with 12 columns for months and multiple rows for days, showing sun rise and set times and minutes with flicker. Includes summary rows for Potential sun hours and Sum of minutes with flicker.

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



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 !-I hub: 150,5 m (TOT: 232,0 m) (147

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) []

Table with 12 columns: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. Values: 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

Table with 13 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values: 655, 459, 397, 401, 441, 806, 1020, 1265, 1030, 811, 627, 615, 8527

Main shadow calculation table with columns for months (January to June) and rows for each day (1 to 31). Columns show start/end times and potential sun hours. Includes a summary row for 'Potential sun hours' and 'Sum of minutes with flicker'.

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

Matrix table with 2 rows and 3 columns: Day in month, Sun rise (hh:mm), First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker.

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 23.37	04.47 22.27	06.15 20.47	07.37 19.05	08.05 16.24	15.03-15.27/24	09.32 15.08	11.57-12.22/25 12.55-13.19/24
2	03.34 23.36	04.50 22.24	06.18 20.43	07.39 19.02	08.08 16.21	15.03-15.25/22	09.35 15.06	11.58-12.22/24 12.56-13.20/24
3	03.35 23.35	04.53 22.21	06.21 20.40	07.42 18.58	08.11 16.18	15.05-15.25/20	09.37 15.04	11.58-12.22/24 12.56-13.19/23
4	03.37 23.33	04.56 22.18	06.24 20.36	07.45 18.55	08.14 16.15	15.07-15.22/15	09.40 15.03	11.59-12.22/23 12.57-13.19/22
5	03.39 23.32	04.59 22.15	06.26 20.33	07.48 18.52	08.17 16.12	15.10-15.19/9	09.42 15.01	12.00-12.23/23 12.58-13.20/22
6	03.41 23.30	05.01 22.12	06.29 20.30	07.50 18.48	08.20 16.09		09.44 15.00	12.00-12.22/22 12.58-13.19/21
7	03.42 23.29	05.04 22.08	06.32 20.26	07.53 18.45	08.23 16.07	16.57-16.59/2	09.46 14.59	12.01-12.23/22 12.59-13.20/21
8	03.44 23.27	05.07 22.05	06.34 20.23	07.56 18.42	08.26 16.04	16.51-17.04/13	09.48 14.57	12.01-12.23/22 13.00-13.19/19
9	03.47 23.25	05.10 22.02	06.37 20.20	07.59 18.38	08.29 16.01	16.48-17.06/18	09.51 14.56	12.02-12.24/22 13.01-13.20/19
10	03.49 23.23	05.13 21.59	06.40 20.16	08.01 18.35	08.32 15.58	16.46-17.08/22	09.52 14.55	12.02-12.24/22 13.02-13.20/18
11	03.51 23.21	05.16 21.56	06.43 20.13	08.04 18.32	08.35 15.55	16.45-17.09/24	09.54 14.54	12.03-12.24/21 13.02-13.20/18
12	03.53 23.19	05.19 21.53	06.45 20.09	08.07 18.28	08.38 15.52	16.44-17.09/25	09.56 14.54	12.04-12.24/20 13.03-13.20/17
13	03.56 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.50	16.43-17.10/27	09.58 14.53	12.04-12.24/20 13.04-13.20/16
14	03.58 23.15	05.25 21.46	06.51 20.03	08.13 18.22	08.44 15.47	16.42-17.10/28	09.59 14.52	12.05-12.25/20 13.04-13.19/15
15	04.00 23.13	05.27 21.43	06.53 19.59	08.16 18.18	08.47 15.44	16.41-17.10/29	10.01 14.52	12.06-12.24/18 13.06-13.20/14
16	04.03 23.10	05.30 21.40	06.56 19.56	08.18 18.15	08.50 15.42	16.41-17.10/29	10.02 14.52	12.06-12.24/18 13.06-13.20/14
17	04.05 23.08	05.33 21.36	06.59 19.52	08.21 18.12	08.53 15.39	16.41-17.10/29	10.03 14.51	12.07-12.25/18 13.07-13.20/13
18	04.08 23.05	05.36 21.33	07.01 19.49	08.24 18.09	08.56 15.36	16.41-17.09/28	10.04 14.51	12.07-12.25/18 13.08-13.20/12
19	04.11 23.03	05.39 21.30	07.04 19.46	08.27 18.05	08.59 15.34	16.41-17.09/28	10.05 14.51	12.08-12.26/18 13.08-13.20/12
20	04.13 23.00	05.42 21.27	07.07 19.42	08.30 18.02	09.02 15.31	16.41-17.08/27	10.06 14.52	12.09-12.26/17 13.09-13.21/12
21	04.16 22.58	05.45 21.23	07.10 19.39	08.33 17.59	09.05 15.29	16.41-17.07/26	10.07 14.52	12.09-12.27/18 13.09-13.20/11
22	04.19 22.55	05.47 21.20	07.12 19.35	08.36 17.56	09.08 15.27	16.42-17.06/24	10.07 14.52	12.09-12.27/18 13.10-13.21/11
23	04.21 22.53	05.50 21.17	07.15 19.32	08.38 17.52	09.11 15.24	16.43-17.05/22	10.08 14.53	12.10-12.27/17 13.10-13.21/11
24	04.24 22.50	05.53 21.13	07.18 19.29	08.41 17.49	09.13 15.22	16.44-17.03/19	10.08 14.53	12.10-12.28/18 13.11-13.23/12
25	04.27 22.47	05.56 21.10	07.20 19.25	07.44 16.46	09.16 15.20	15.46-16.01/15	10.08 14.54	12.11-12.29/18 13.11-13.24/13
26	04.30 22.44	05.59 21.07	07.23 19.22	07.47 16.43	09.19 15.18	15.50-15.58/8	10.08 14.55	12.11-12.29/18 13.11-13.24/13
27	04.33 22.41	06.01 21.03	07.26 19.18	07.50 16.40	09.22 15.16	15.00-15.30/30	10.08 14.56	12.11-12.30/19 13.12-13.25/13
28	04.35 22.39	06.04 21.00	07.28 19.15	07.53 16.37	09.25 15.14	15.00-15.30/30	10.08 14.57	12.12-12.31/19 13.12-13.26/14
29	04.38 22.36	06.07 20.57	07.31 19.12	07.56 16.34	09.27 15.12	15.01-15.30/29	10.08 14.59	12.12-12.31/19 13.12-13.26/14
30	04.41 22.33	06.10 20.53	07.34 19.08	07.59 16.31	09.30 15.10	15.01-15.29/28	10.08 15.00	12.13-12.32/19 13.11-13.27/16
31	04.44 22.30	06.13 20.50		08.02 16.27		15.01-15.27/26	10.07 15.02	12.13-12.33/20 13.12-13.29/17
Potential sun hours	591	501	391	308	208	786	154	1121
Sum of minutes with flicker	0	0	0	880	786			

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

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

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 15.04 12.44-13.03/19	09.06 09.49-10.01/12 13.46-13.56/10 16.25 10.56-11.13/17 14.32-15.01/29	07.39 17.50	06.55 20.18	05.16 21.44	03.48 23.12
2	10.06 11.48-12.05/17 13.38-13.43/5 15.05 12.45-13.04/19	09.03 09.47-10.03/16 14.32-15.01/29 16.29 10.58-11.12/14	07.36 17.53	06.52 20.21	05.12 21.47	03.46 23.14
3	10.05 11.47-12.06/19 13.36-13.45/9 15.07 12.44-13.05/21	09.00 09.46-10.04/18 14.32-15.01/29 16.32 11.00-11.09/9 15.43-15.45/2	07.33 17.56	06.49 20.24	05.09 21.50	03.44 23.17
4	10.04 11.48-12.07/19 13.36-13.47/11 15.09 12.45-13.06/21	08.57 09.45-10.05/20 15.38-15.49/11 16.35 14.33-15.02/29	07.30 17.59	06.45 20.26	05.06 21.53	03.42 23.19
5	10.03 11.47-12.08/21 13.35-13.48/13 15.11 12.44-13.06/22	08.54 09.44-10.05/21 15.36-15.52/16 16.38 14.33-15.01/28	07.26 18.02	06.42 20.29	05.03 21.56	03.41 23.21
6	10.02 11.48-12.09/21 13.35-13.50/15 15.13 12.45-13.08/23	08.52 09.44-10.06/22 15.36-15.54/18 16.41 14.33-15.01/28	07.23 18.05	06.38 20.32	05.00 21.59	03.39 23.23
7	10.00 11.48-12.10/22 13.35-13.51/16 15.15 12.45-13.08/23	08.49 09.44-10.06/22 15.34-15.55/21 16.44 14.34-15.00/26	07.20 18.08	06.35 20.35	04.57 22.02	03.37 23.25
8	09.59 11.48-12.10/22 13.34-13.52/18 15.18 12.45-13.09/24	08.46 09.44-10.07/23 15.34-15.56/22 16.47 14.35-15.00/25	07.16 18.10	06.32 20.38	04.54 22.05	03.35 23.27
9	09.58 11.48-12.11/23 13.34-13.53/19 15.20 12.45-13.10/25	08.43 09.43-10.07/24 15.33-15.56/23 16.50 14.35-14.59/24	07.13 18.13	06.28 20.41	04.50 22.08	03.34 23.29
10	09.56 11.48-12.12/24 13.34-13.54/20 15.22 12.45-13.10/25	08.40 09.44-10.07/23 15.33-15.57/24 16.53 14.37-14.59/22	07.10 18.16	06.25 20.43	04.47 22.11	03.33 23.30
11	09.54 10.58-11.02/4 12.45-13.11/26 15.25 11.48-12.12/24 13.34-13.55/21	08.37 09.45-10.07/22 15.32-15.57/25 16.56 14.38-14.57/19	07.06 18.19	06.22 20.46	04.44 22.14	03.31 23.32
12	09.53 10.55-11.04/9 12.46-13.11/25 15.27 11.48-12.13/25 13.34-13.56/22	08.34 09.45-10.06/21 15.32-15.58/26 16.59 14.40-14.55/15	07.03 18.22	06.18 20.49	04.41 22.17	03.30 23.34
13	09.51 10.53-11.06/13 12.46-13.12/26 15.30 11.48-12.14/26 13.34-13.57/23	08.31 09.46-10.06/20 15.31-15.57/26 17.02 14.44-14.53/9	07.00 18.25	06.15 20.52	04.38 22.20	03.29 23.35
14	09.49 10.53-11.08/15 12.46-13.13/27 15.33 11.49-12.15/26 13.34-13.58/24	08.27 09.46-10.05/19 17.06 15.32-15.57/25	06.56 18.28	06.12 20.55	04.35 22.23	03.28 23.36
15	09.47 10.52-11.09/17 12.47-13.13/26 15.35 11.49-12.15/26 13.34-13.58/24	08.24 09.48-10.04/16 17.09 15.33-15.58/25	06.53 18.30	06.08 20.58	04.32 22.26	03.27 23.37
16	09.45 10.51-11.09/18 12.46-13.13/27 15.38 11.48-12.15/27 13.33-13.58/25	08.21 09.49-10.01/12 17.12 15.33-15.57/24	06.50 18.33	06.05 21.00	04.30 22.29	03.27 23.38
17	09.43 10.51-11.10/19 12.47-13.14/27 15.41 11.49-12.15/26 13.34-13.59/25	08.18 09.53-09.58/5 17.15 15.34-15.56/22	06.46 18.36	06.02 21.03	04.27 22.32	03.26 23.39
18	09.41 10.51-11.12/21 12.47-13.14/27 15.44 11.50-12.16/26 13.34-14.00/26	08.15 15.34-15.55/21 17.18	06.43 18.39	05.58 21.06	04.24 22.34	03.26 23.40
19	09.39 10.51-11.13/22 12.48-13.15/27 15.46 11.50-12.17/27 13.35-14.01/26	08.12 15.36-15.54/18 17.21	06.39 18.42	05.55 21.09	04.21 22.37	03.25 23.40
20	09.37 10.50-11.13/23 12.48-13.14/26 15.49 11.50-12.16/26 13.34-14.00/26	08.09 15.37-15.52/15 17.24	06.36 18.44	05.52 21.12	04.18 22.40	03.25 23.41
21	09.34 10.51-11.14/23 12.49-13.15/26 14.39-14.48/9 15.52 11.51-12.17/26 13.35-14.01/26	08.05 15.40-15.50/10 17.27	06.33 18.47	05.48 21.15	04.15 22.43	03.25 23.41
22	09.32 10.51-11.14/23 12.50-13.15/25 14.37-14.51/14 15.55 11.52-12.17/25 13.35-14.01/26	08.02 17.30	06.29 18.50	05.45 21.18	04.13 22.46	03.25 23.41
23	09.29 10.50-11.14/24 12.50-13.14/24 14.35-14.53/18 15.58 11.51-12.16/25 13.35-14.01/26	07.59 17.33	06.26 18.53	05.42 21.21	04.10 22.49	03.26 23.41
24	09.27 10.51-11.15/24 12.51-13.14/23 14.35-14.55/20 16.01 11.52-12.17/25 13.36-14.01/25	07.56 17.36	06.23 18.56	05.38 21.24	04.07 22.51	03.26 23.41
25	09.24 10.52-11.15/23 12.52-13.14/22 14.34-14.56/22 16.04 11.54-12.17/23 13.37-14.02/25	07.53 17.39	06.19 18.58	05.35 21.27	04.05 22.54	03.27 23.41
26	09.22 10.51-11.15/24 12.53-13.13/20 14.33-14.57/24 16.07 11.54-12.16/22 13.37-14.01/24	07.49 17.41	06.16 19.01	05.32 21.30	04.02 22.57	03.27 23.41
27	09.19 10.52-11.15/23 12.54-13.12/18 14.33-14.58/25 16.10 11.55-12.15/20 13.38-14.01/23	07.46 17.44	06.12 19.04	05.29 21.32	04.00 22.59	03.28 23.40
28	09.17 10.53-11.16/23 12.56-13.12/16 14.32-14.58/26 16.13 11.57-12.15/18 13.38-14.00/22	07.43 17.47	06.09 19.07	05.25 21.35	03.58 23.02	03.29 23.40
29	09.14 10.53-11.15/22 12.58-13.09/11 14.32-14.59/27 16.16 11.58-12.13/15 13.40-14.00/20	07.40 17.47	06.06 20.10	05.22 21.38	03.55 23.05	03.30 23.39
30	09.11 10.54-11.15/21 13.42-13.59/17 16.19 12.01-12.11/10 14.33-15.00/27	07.37 17.47	06.03 20.12	05.19 21.41	03.53 23.07	03.31 23.38
31	09.09 09.52-09.58/6 13.43-13.57/14 16.22 10.55-11.14/19 14.32-15.00/28	07.34 17.47	06.59 20.15	03.51 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

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 23.37	04.47 22.27	06.15 20.47	07.37 19.05	08.05 16.24	09.32 15.08
2	03.34 23.36	04.50 22.24	06.18 20.43	07.39 19.02	08.08 16.21	09.35 15.06
3	03.35 23.35	04.53 22.21	06.21 20.40	07.42 18.58	08.11 16.18	09.37 15.04
4	03.37 23.33	04.56 22.18	06.24 20.37	07.45 18.55	08.14 16.15	09.40 15.03
5	03.39 23.32	04.59 22.15	06.26 20.33	07.48 18.52	08.17 16.12	09.42 15.01
6	03.41 23.31	05.01 22.12	06.29 20.30	07.50 18.48	08.20 16.09	09.44 15.00
7	03.42 23.29	05.04 22.08	06.32 20.26	07.53 18.45	08.23 16.07	09.47 14.59
8	03.44 23.27	05.07 22.05	06.34 20.23	07.56 18.42	08.26 16.04	09.49 14.57
9	03.47 23.25	05.10 22.02	06.37 20.20	07.59 18.38	08.29 16.01	09.51 14.56
10	03.49 23.23	05.13 21.59	06.40 20.16	08.02 18.35	08.32 15.58	09.53 14.55
11	03.51 23.21	05.16 21.56	06.43 20.13	08.04 18.32	08.35 15.55	09.54 14.54
12	03.53 23.19	05.19 21.53	06.45 20.09	08.07 18.28	08.38 15.52	09.56 14.54
13	03.56 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.50	09.58 14.53
14	03.58 23.15	05.25 21.46	06.51 20.03	08.13 18.22	08.44 15.47	09.59 14.52
15	04.00 23.13	05.27 21.43	06.53 19.59	08.16 18.18	08.47 15.44	10.01 14.52
16	04.03 23.10	05.30 21.40	06.56 19.56	08.18 18.15	08.50 15.42	10.02 14.52
17	04.05 23.08	05.33 21.36	06.59 19.52	08.21 18.12	08.53 15.39	10.03 14.51
18	04.08 23.06	05.36 21.33	07.02 19.49	08.24 18.09	08.56 15.36	10.04 14.51
19	04.11 23.03	05.39 21.30	07.04 19.46	08.27 18.05	08.59 15.34	10.05 14.51
20	04.13 23.01	05.42 21.27	07.07 19.42	08.30 18.02	09.02 15.31	10.06 14.52
21	04.16 22.58	05.45 21.23	07.10 19.39	08.33 17.59	09.05 15.29	10.07 14.52
22	04.19 22.55	05.47 21.20	07.12 19.35	08.36 17.56	09.08 15.27	10.07 14.52
23	04.21 22.53	05.50 21.17	07.15 19.32	08.39 17.53	09.11 15.24	10.08 14.53
24	04.24 22.50	05.53 21.13	07.18 19.29	08.41 17.49	09.14 15.22	10.08 14.53
25	04.27 22.47	05.56 21.10	07.20 19.25	08.44 17.46	09.16 15.20	10.08 14.54
26	04.30 22.44	05.59 21.07	07.23 19.22	08.47 17.43	09.19 15.18	10.09 14.55
27	04.33 22.41	06.01 21.03	07.26 19.19	08.50 17.40	09.22 15.16	10.09 14.56
28	04.36 22.39	06.04 21.00	07.29 19.15	08.53 17.37	09.25 15.14	10.08 14.57
29	04.38 22.36	06.07 20.57	07.31 19.12	08.56 17.34	09.27 15.12	10.08 14.59
30	04.41 22.33	06.10 20.53	07.34 19.08	08.59 17.31	09.30 15.10	10.08 15.00
31	04.44 22.30	06.13 20.50	07.37 19.05	09.02 17.27	09.33 15.08	10.07 15.02
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) Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

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
Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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

Project:

20220502 Kattiharju extension

Licensed user:

PROKON Regenerative Energien eG
Kirchhoffstraße 3
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+49 4821 6855 100
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 !-I 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]

Table with 12 columns representing months (Jan-Dec) and 31 rows representing days. Each cell contains two values: a sun rise time and a sun set time.

Potential sun hours

Sum of minutes with flicker

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



Project:

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Licensed user:

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

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) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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

Project:

20220502 Kattiharju extension

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 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) Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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 15.03	09.06 16.25	07.39 17.50	06.55 20.18	05.15 21.44	03.48 23.12	03.32 23.37	04.47 22.27	06.15 20.46	07.36 19.05	08.05 15.00-15.26/26 16.24	09.32 15.08
2	10.05 15.05	09.03 16.28	07.36 17.53	06.52 20.21	05.12 21.47	03.46 23.14	03.34 23.36	04.50 22.24	06.18 20.43	07.39 19.01	08.08 15.00-15.25/25 16.21	09.35 15.06
3	10.05 15.07	09.00 16.32	07.33 17.56	06.48 20.23	05.09 21.50	03.44 23.16	03.35 23.34	04.53 22.20	06.21 20.40	07.42 18.58	08.11 15.01-15.24/23 16.18	09.37 15.04
4	10.04 15.09	08.57 16.35	15.38-15.46/8 07.29	06.45 20.26	05.06 21.53	03.42 23.18	03.37 23.33	04.56 22.17	06.23 20.36	07.45 18.55	08.14 15.02-15.23/21 16.15	09.39 15.03
5	10.03 15.11	08.54 16.38	15.36-15.50/14 07.26	06.42 20.29	05.03 21.56	03.40 23.21	03.39 23.32	04.58 22.14	06.26 20.33	07.47 18.51	08.17 15.04-15.22/18 16.12	09.42 15.01
6	10.01 15.13	08.51 16.41	15.33-15.51/18 07.23	06.38 20.32	05.00 21.59	03.39 23.23	03.41 23.30	05.01 22.11	06.29 20.29	07.50 18.48	08.20 15.06-15.19/13 16.09	09.44 15.00
7	10.00 15.15	08.48 16.44	15.32-15.53/21 07.19	06.35 20.35	04.56 22.02	03.37 23.25	03.42 23.28	05.04 22.08	06.32 20.26	07.53 18.45	08.23 15.09-15.16/7 16.06	09.46 14.59
8	09.59 15.17	08.45 16.47	15.31-15.54/23 07.16	06.32 20.37	04.53 22.05	03.35 23.27	03.44 23.27	05.07 22.05	06.34 20.23	07.56 18.41	08.26 16.03	09.48 14.57
9	09.57 15.20	08.42 16.50	15.31-15.56/25 07.13	06.28 20.40	04.50 22.08	03.34 23.28	03.46 23.25	05.10 22.02	06.37 20.19	07.58 18.38	08.29 16.01	09.50 14.56
10	09.56 15.22	08.39 16.53	15.30-15.57/27 07.09	06.25 20.43	04.47 22.11	03.33 23.30	03.49 23.23	05.13 21.59	06.40 20.16	08.01 18.35	08.32 15.58	09.52 14.55
11	09.54 15.25	08.36 16.56	15.29-15.57/28 07.06	06.21 20.46	04.44 22.14	03.31 23.32	03.51 23.21	05.16 21.56	06.42 20.13	08.04 18.31	08.35 15.55	09.54 14.54
12	09.52 15.27	08.33 16.59	15.29-15.58/29 07.03	06.18 20.49	04.41 22.17	03.30 23.33	03.53 23.19	05.19 21.52	06.45 20.09	08.07 18.28	08.38 15.52	09.56 14.54
13	09.51 15.30	08.30 17.02	15.29-15.58/29 06.59	06.15 20.52	04.38 22.20	03.29 23.34	03.55 23.17	05.22 21.49	06.48 20.06	08.10 18.25	08.41 15.49	09.57 14.53
14	09.49 15.32	08.27 17.05	15.29-15.58/29 06.56	06.11 20.54	04.35 22.22	03.28 23.36	03.58 23.15	05.24 21.46	06.51 20.02	08.12 18.22	08.44 15.47	09.59 14.52
15	09.47 15.35	08.24 17.08	15.28-15.58/30 06.53	06.08 20.57	04.32 22.25	03.27 23.37	04.00 23.12	05.27 21.43	06.53 19.59	08.15 18.18	08.47 15.44	10.00 14.52
16	09.45 15.38	08.21 17.11	15.29-15.58/29 06.49	06.05 21.00	04.29 22.28	03.27 23.38	04.03 23.10	05.30 21.39	06.56 19.56	08.18 18.15	08.50 15.41	10.02 14.52
17	09.43 15.41	08.18 17.14	15.28-15.57/29 06.46	06.01 21.03	04.27 22.31	03.26 23.39	04.05 23.08	05.33 21.36	06.59 19.52	08.21 18.12	08.53 15.39	10.03 14.51
18	09.41 15.43	08.15 17.17	15.29-15.57/28 06.43	05.58 21.06	04.24 22.34	03.26 23.39	04.08 23.05	05.36 21.33	07.01 19.49	08.24 16.08-16.21/13 18.08	08.56 15.36	10.04 14.51
19	09.38 15.46	08.12 17.20	15.29-15.56/27 06.39	05.55 21.09	04.21 22.37	03.25 23.40	04.11 23.03	05.39 21.30	07.04 19.45	08.27 16.05-16.23/18 18.05	08.59 15.34	10.05 14.51
20	09.36 15.49	08.08 17.23	15.30-15.55/25 06.36	05.51 21.12	04.18 22.40	03.25 23.40	04.13 23.00	05.42 21.26	07.07 19.42	08.30 16.03-16.24/21 18.02	09.02 15.31	10.06 14.51
21	09.34 15.52	08.05 17.26	15.31-15.54/23 06.32	05.48 21.15	04.15 22.43	03.25 23.41	04.16 22.58	05.44 21.23	07.09 19.39	08.32 16.02-16.25/23 17.59	09.05 15.29	10.06 14.52
22	09.32 15.55	08.02 17.29	15.33-15.53/20 06.29	05.45 21.18	04.13 22.45	03.25 23.41	04.19 22.55	05.47 21.20	07.12 19.35	08.35 16.00-16.26/26 17.56	09.08 15.26	10.07 14.52
23	09.29 15.58	07.59 17.32	15.35-15.51/16 06.26	05.41 21.20	04.10 22.48	03.26 23.41	04.21 22.52	05.50 21.16	07.15 19.32	08.38 16.00-16.27/27 17.52	09.10 15.24	10.08 14.53
24	09.27 16.01	07.56 17.35	15.38-15.48/10 06.22	05.38 21.23	04.07 22.51	03.26 23.41	04.24 22.50	05.53 21.13	07.17 19.28	08.41 15.59-16.27/28 17.49	09.13 15.22	10.08 14.53
25	09.24 16.04	07.52 17.38	06.19 18.58	05.35 21.26	04.05 22.54	03.27 23.41	04.27 22.47	05.56 21.10	07.20 19.25	07.44 14.58-15.27/29 16.46	09.16 15.20	10.08 14.54
26	09.22 16.07	07.49 17.41	06.16 19.01	05.32 21.29	04.02 22.56	03.27 23.40	04.30 22.44	05.58 21.06	07.23 19.22	07.47 14.58-15.27/29 16.43	09.19 15.18	10.08 14.55
27	09.19 16.10	07.46 17.44	06.12 19.04	05.28 21.32	04.00 22.59	03.28 23.40	04.33 22.41	06.01 21.03	07.26 19.18	07.50 14.58-15.28/30 16.40	09.22 15.15	10.08 14.56
28	09.16 16.13	07.43 17.47	06.09 19.07	05.25 21.35	03.57 23.02	03.29 23.39	04.35 22.38	06.04 21.00	07.28 19.15	07.53 14.58-15.27/29 16.37	09.24 15.13	10.08 14.57
29	09.14 16.16	07.41 17.47	07.05 20.09	05.22 21.38	03.55 23.04	03.30 23.39	04.38 22.35	06.07 20.56	07.31 19.12	07.56 14.58-15.27/29 16.33	09.27 15.11	10.08 14.59
30	09.11 16.19	07.41 17.47	07.02 20.12	05.19 21.41	03.53 23.07	03.31 23.38	04.41 22.32	06.10 20.53	07.34 19.08	07.59 14.59-15.27/28 16.30	09.30 15.10	10.07 15.00
31	09.08 16.22	07.41 17.47	06.59 20.15	05.19 21.41	03.51 23.09	04.44 22.30	06.12 20.50	06.12 20.50	08.02 16.27	14.59-15.26/27 16.27	10.07 15.01	10.07 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

Project:

20220502 Kattiharju extension

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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 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	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	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

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)
 Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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

Project:

20220502 Kattiharju extension

Licensed user:

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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 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

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

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

Project:

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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 01 - NORDEX N175/6.X-6800 6800 175.0 !-! hub: 171,5 m (TOT: 259,0 m) (139)
Sunshine probability S (Average daily sunshine hours) []

Assumptions for shadow calculations

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	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					
	23.23	21.59	20.16	18.35	15.58	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					
	23.22	21.56	20.13	18.32	15.55	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					
	23.19	21.53	20.10	18.28	15.52	14.54	12.26-12.50/24					
13	03.56	05.22	06.48	08.10	08.41	11.33-11.56/23	13.23-13.40/17					
	23.17	21.50	20.06	18.25	15.50	14.53	12.25-12.50/25					
14	03.58	05.25	06.51	08.13	08.44	11.33-11.57/24	13.22-13.42/20					
	23.15	21.46	20.03	18.22	15.47	14.53	12.25-12.51/26					
15	04.00	05.28	06.54	08.16	08.47	11.33-11.58/25	13.22-13.43/21					
	23.13	21.43	19.59	18.19	15.44	14.52	12.25-12.52/27					
16	04.03	05.30	06.56	08.19	08.50	11.33-11.59/26	13.21-13.43/22					
	23.11	21.40	19.56	18.15	15.42	14.52	12.24-12.52/28					
17	04.06	05.33	06.59	08.21	08.53	11.32-11.59/27	13.21-13.43/22					
	23.08	21.37	19.53	18.12	15.39	14.52	12.24-12.53/29					
18	04.08	05.36	07.02	08.24	08.56	11.32-11.59/27	13.21-13.44/23					
	23.06	21.33	19.49	18.09	15.37	14.51	12.24-12.53/29					
19	04.11	05.39	07.04	08.27	08.59	11.32-12.00/28	13.21-13.45/24					
	23.03	21.30	19.46	18.05	15.34	14.52	12.25-12.54/29					
20	04.13	05.42	07.07	08.30	09.02	11.33-12.01/28	13.22-13.45/23					
	23.01	21.27	19.42	18.02	15.32	14.52	12.25-12.54/29					
21	04.16	05.45	07.10	08.33	09.05	11.33-12.01/28	13.22-13.46/24					
	22.58	21.23	19.39	17.59	15.29	14.52	12.26-12.55/29					
22	04.19	05.48	07.12	08.36	09.08	11.32-12.00/28	13.22-13.45/23					
	22.55	21.20	19.36	17.56	15.27	14.52	12.25-12.54/29					
23	04.22	05.50	07.15	08.39	09.11	11.33-12.01/28	13.22-13.45/23					
	22.53	21.17	19.32	17.53	15.24	14.53	12.26-12.54/28					
24	04.24	05.53	07.18	08.42	09.14	11.33-12.01/28	13.23-13.46/23					
	22.50	21.14	19.29	17.49	15.22	14.54	12.26-12.55/29					
25	04.27	05.56	07.21	07.44	09.16	11.34-12.01/27	13.23-13.46/23					
	22.47	21.10	19.25	16.46	15.20	14.54	12.27-12.55/28					
26	04.30	05.59	07.23	07.47	09.19	11.35-12.02/27	13.24-13.46/22					
	22.44	21.07	19.22	16.43	15.18	14.55	12.28-12.55/27					
27	04.33	06.02	07.26	07.50	09.22	11.35-12.02/27	13.25-13.46/21					
	22.42	21.04	19.19	16.40	15.16	14.56	12.28-12.55/27					
28	04.36	06.04	07.29	07.53	09.25	11.36-12.02/26	13.26-13.46/20					
	22.39	21.00	19.15	16.37	15.14	14.57	12.28-12.54/26					
29	04.38	06.07	07.31	07.56	09.27	11.36-12.01/25	13.26-13.45/19					
	22.36	20.57	19.12	16.34	15.12	14.59	12.29-12.54/25					
30	04.41	06.10	07.34	07.59	09.30	11.37-12.01/24	13.27-13.45/18					
	22.33	20.53	19.08	16.31	15.10	15.00	12.30-12.54/24					
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	486					
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

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) []

Table with 12 columns: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. Values: 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

Table with 13 columns: N, NNE, ENE, E, ESE, SSE, S, SSW, WSW, W, WNW, NNW, Sum. Values: 655, 459, 397, 401, 441, 806, 1 020, 1 265, 1 030, 811, 627, 615, 8 527

Main data table with columns for months (January-December) and rows for days (1-31). Each cell contains two values representing sunrise and sunset times.

Potential sun hours

Summary row for Potential sun hours and Sum of minutes with flicker across months.

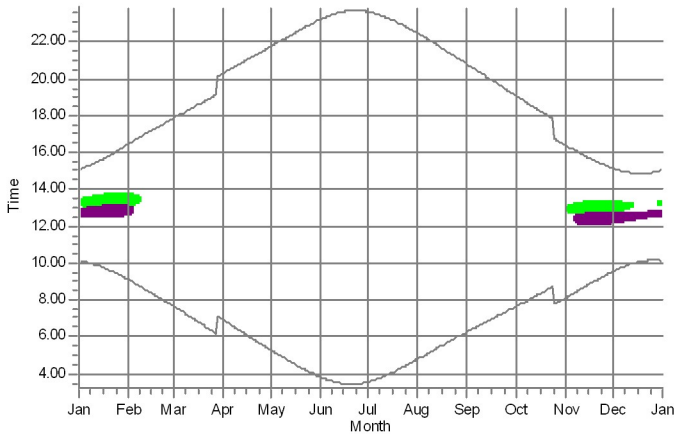
Table layout: For each day in each month the following matrix apply

Table with 2 rows and 3 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm); First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

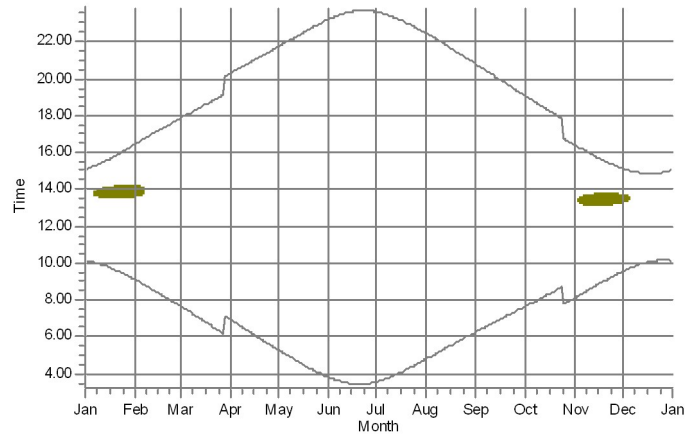
SHADOW - Calendar per WTG, graphical

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

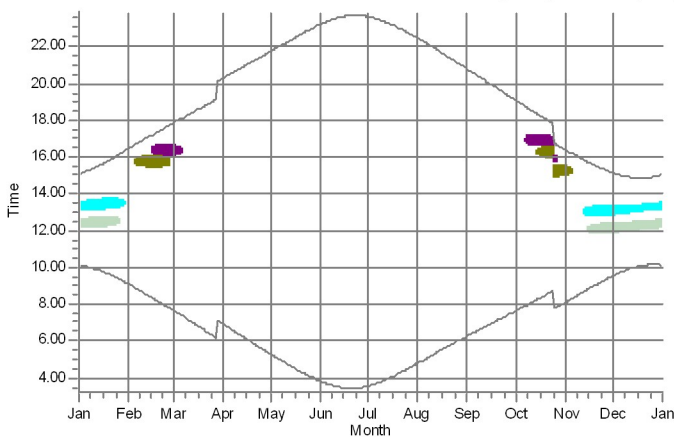
K 01: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



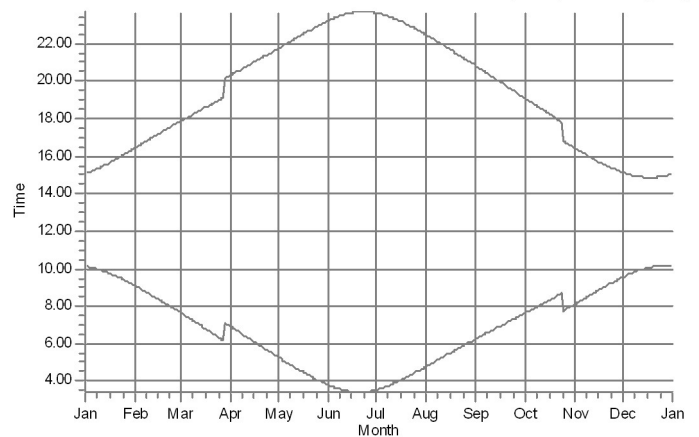
K 02: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 149,5 m (TOT: 231,0 m)



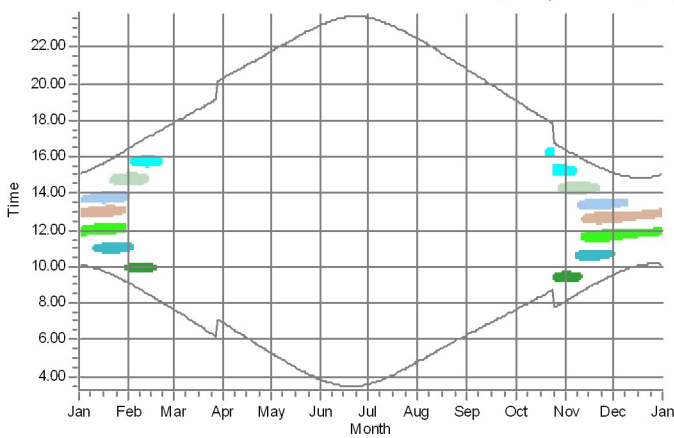
K 03: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



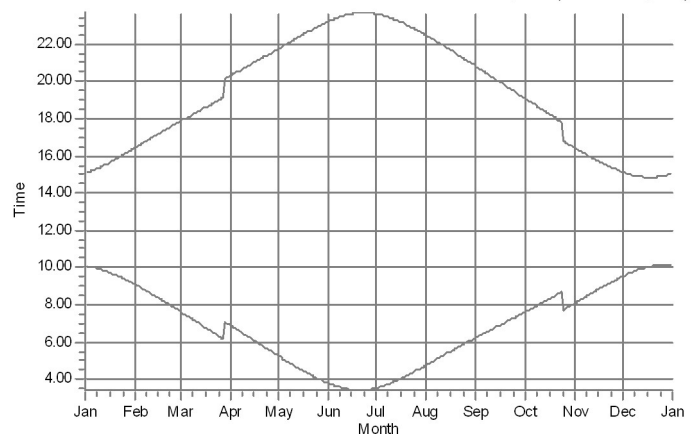
K 04: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



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 x 5,0 Azimuth: 0,0° Slope: 90,0° (60)
- AF: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (61)
- AG: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (62)
- AD: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (64)

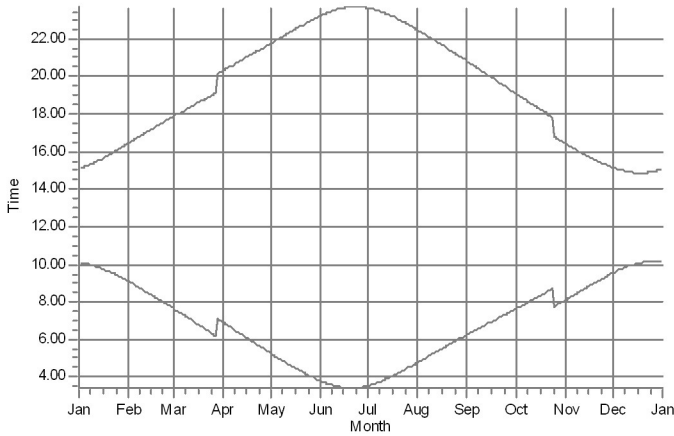
- AC: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (65)
- AB: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (66)
- Z: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (68)
- Y: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (69)

- X: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (70)
- W: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (71)

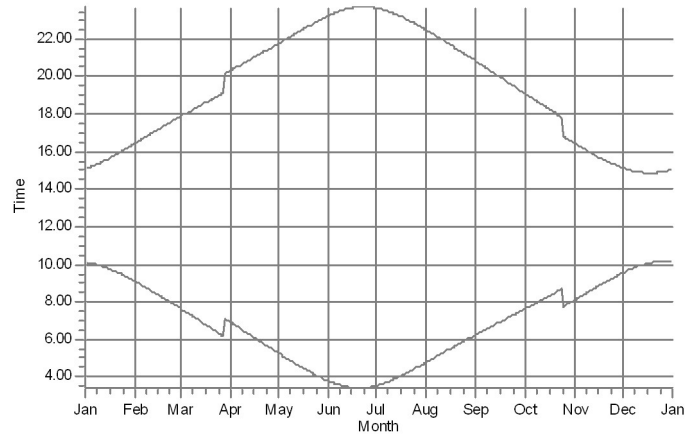
SHADOW - Calendar per WTG, graphical

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

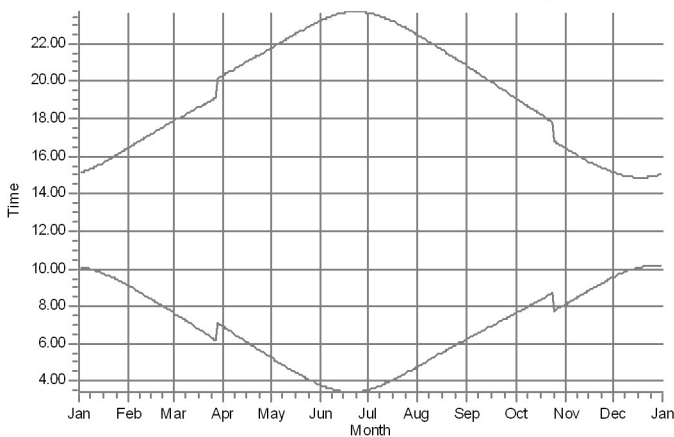
K 07: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 149,5 m (TOT: 231,0 m)



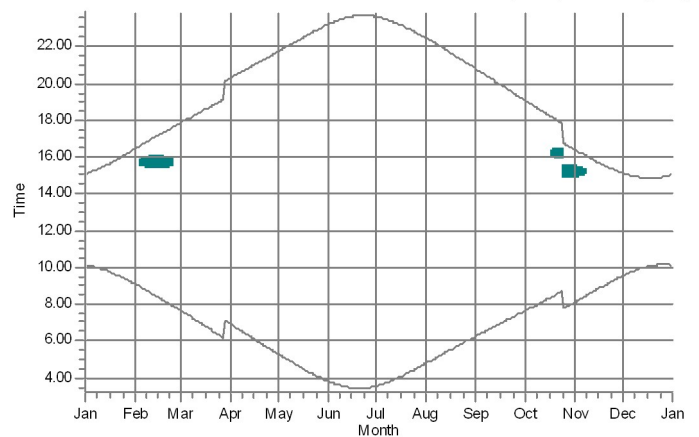
K 08: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 149,5 m (TOT: 231,0 m)



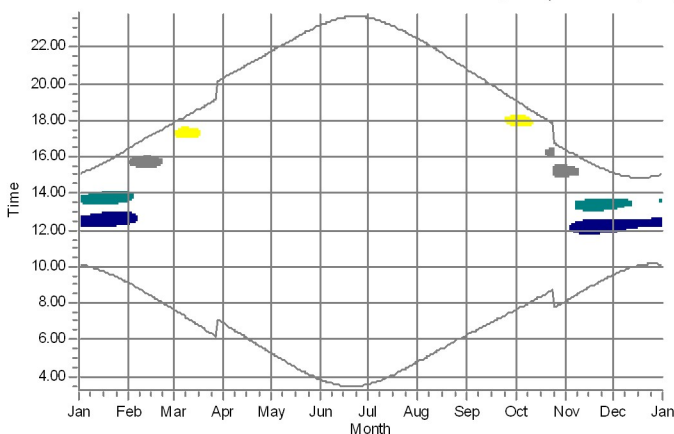
K 09: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



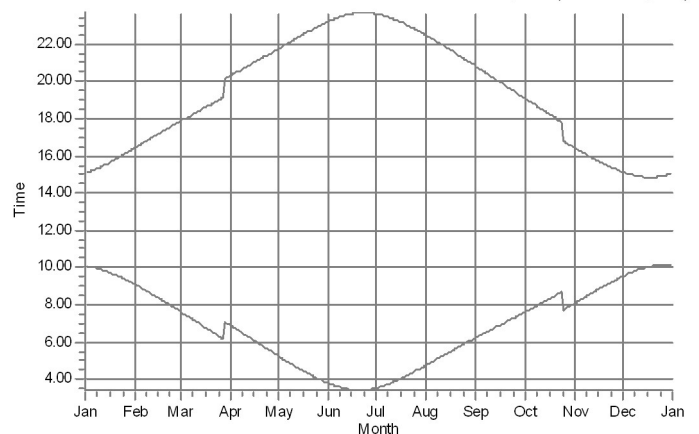
K 10: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



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 x 5,0 Azimuth: 0,0° Slope: 90,0° (63)
 AM: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (65)

AK: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (67)
 AJ: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (68)

Project:

20220502 Kattiharju extension

Licensed user:

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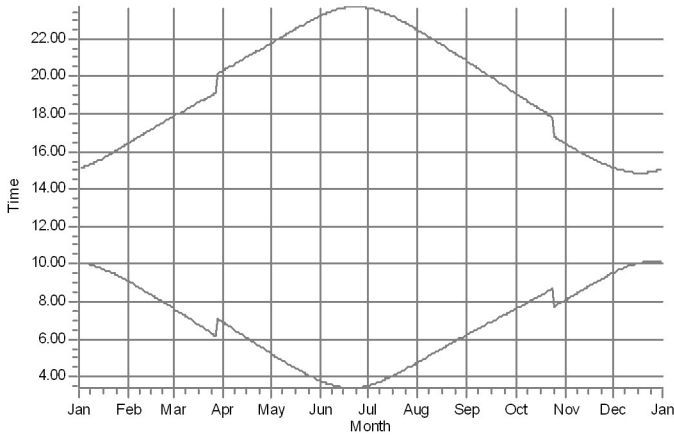
Calculated:

29/11/2024 10.37/4.0.552

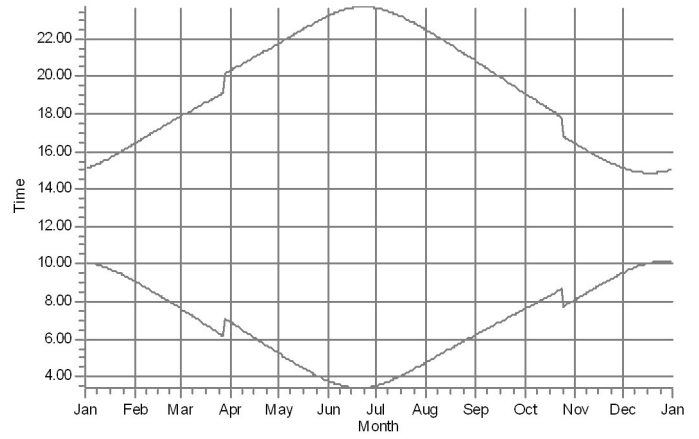
SHADOW - Calendar per WTG, graphical

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

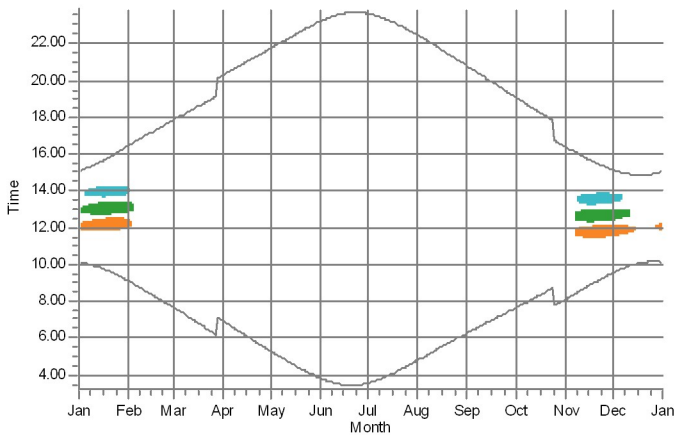
K 13: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



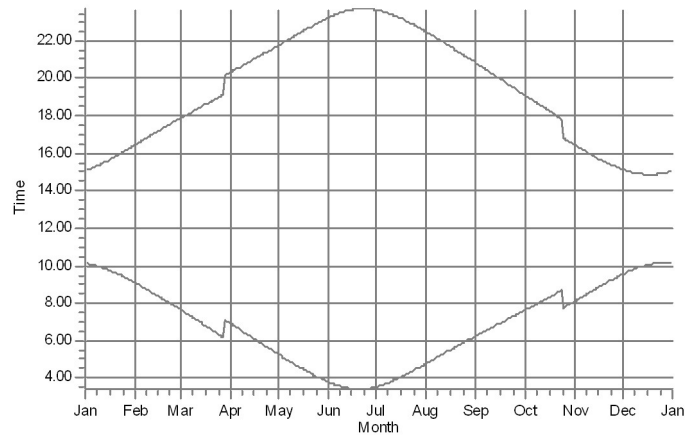
K 14: NORDEX N163/6.X-6800 6800 163.0 !-!hub: 150,5 m (TOT: 232,0 m)



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



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



Shadow receptors

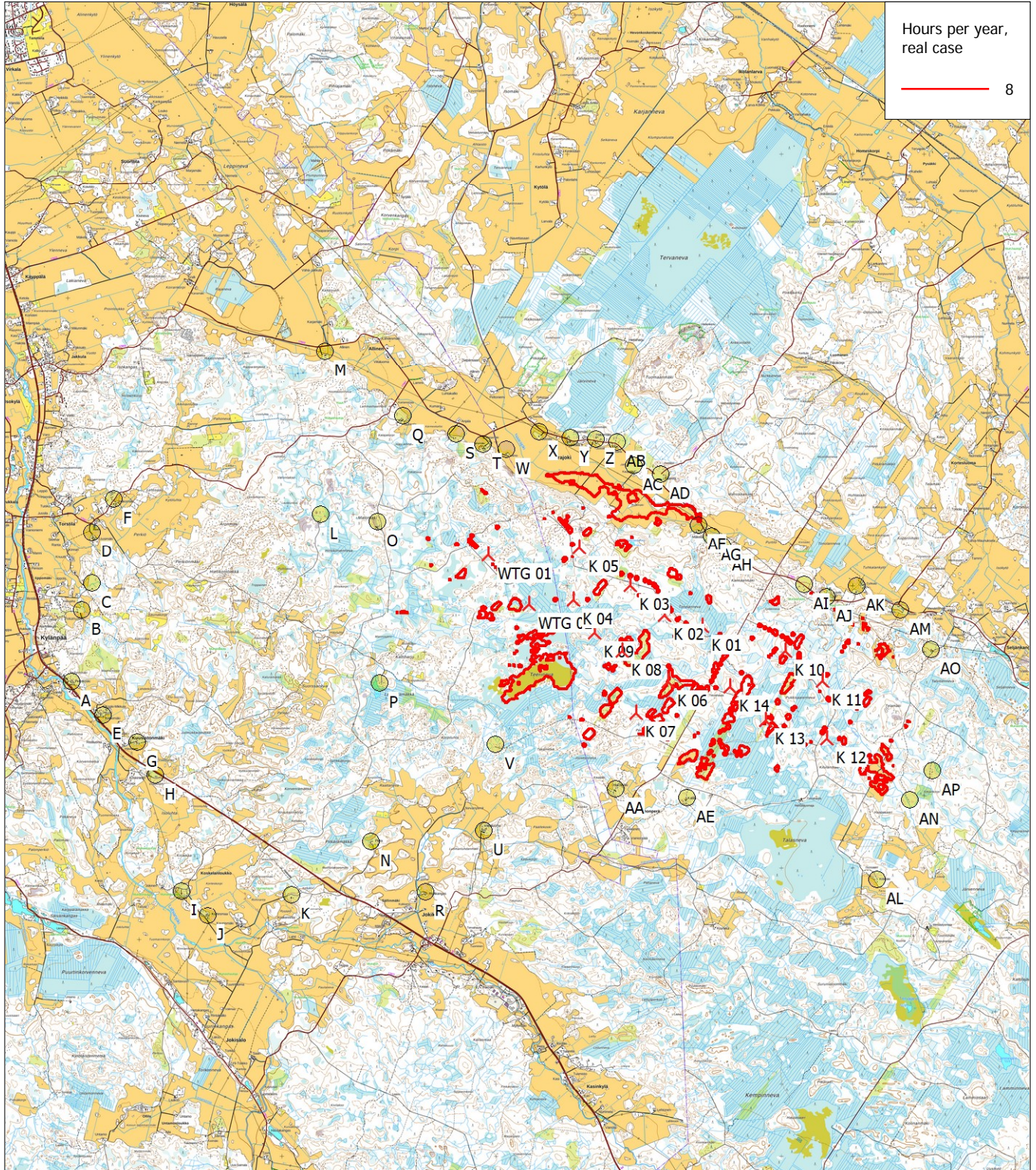
X: Shadow Receptor: 5,0 x 5,0 Azimuth: 0,0° Slope: 90,0° (70)

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

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

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