

Project:
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Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: A - 1

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June						
1	08:43	08:19	07:29	07:22	19:30 (1)	06:21	05:39	07:10 (4)				
	16:51	17:36	18:24	20:15	6	19:36 (1)	21:02	21:44	21	07:31 (4)		
2	08:43	08:18	07:27	07:20	19:26 (1)	06:20	05:39	07:12 (4)				
	16:52	17:38	18:26	20:16	14	19:40 (1)	21:03	21:45	19	07:31 (4)		
3	08:43	08:16	07:25	07:18	19:24 (1)	06:18	05:38	07:12 (4)				
	16:53	17:39	18:28	20:18	18	19:42 (1)	21:05	21:46	18	07:30 (4)		
4	08:43	08:15	07:23	07:16	19:23 (1)	06:16	07:10 (4)	05:37	07:14 (4)			
	16:54	17:41	18:29	20:19	20	19:43 (1)	21:06	2	07:12 (4)	21:47	15	07:29 (4)
5	08:43	08:13	07:21	07:14	19:22 (1)	06:14	07:08 (4)	05:37	07:14 (4)			
	16:55	17:43	18:31	20:21	21	19:43 (1)	21:08	4	07:12 (4)	21:48	14	07:28 (4)
6	08:43	08:12	07:19	07:12	19:20 (1)	06:13	07:07 (4)	05:36	07:16 (4)			
	16:56	17:45	18:33	20:22	23	19:43 (1)	21:10	6	07:13 (4)	21:49	12	07:28 (4)
7	08:42	08:10	07:17	07:09	19:19 (1)	06:11	07:06 (4)	05:36	07:17 (4)			
	16:58	17:46	18:34	20:24	24	19:43 (1)	21:11	8	07:14 (4)	21:50	9	07:26 (4)
8	08:42	08:09	07:15	07:07	19:19 (1)	06:09	07:05 (4)	05:35	07:19 (4)			
	16:59	17:48	18:36	20:26	24	19:43 (1)	21:13	10	07:15 (4)	21:51	6	07:25 (4)
9	08:42	08:07	07:13	07:05	19:19 (1)	06:08	07:05 (4)	05:35				
	17:00	17:50	18:38	20:27	24	19:43 (1)	21:14	11	07:16 (4)	21:52		
10	08:41	08:05	07:10	07:03	19:18 (1)	06:06	07:04 (4)	05:34				
	17:01	17:52	18:39	20:29	25	19:43 (1)	21:16	12	07:16 (4)	21:52		
11	08:41	08:04	07:08	07:01	19:19 (1)	06:04	07:04 (4)	05:34				
	17:03	17:53	18:41	20:30	23	19:42 (1)	21:17	14	07:18 (4)	21:53		
12	08:40	08:02	07:06	06:59	19:19 (1)	06:03	07:03 (4)	05:34				
	17:04	17:55	18:43	20:32	23	19:42 (1)	21:18	15	07:18 (4)	21:54		
13	08:39	08:00	07:04	06:57	19:19 (1)	06:01	07:03 (4)	05:33				
	17:06	17:57	18:44	20:34	22	19:41 (1)	21:20	16	07:19 (4)	21:54		
14	08:39	07:58	07:02	06:55	19:20 (1)	06:00	07:03 (4)	05:33				
	17:07	17:59	18:46	20:35	19	19:39 (1)	21:21	18	07:21 (4)	21:55		
15	08:38	07:57	07:00	06:53	19:21 (1)	05:58	07:03 (4)	05:33				
	17:08	18:00	18:47	20:37	17	19:38 (1)	21:23	18	07:21 (4)	21:55		
16	08:37	07:55	06:57	06:51	19:23 (1)	05:57	07:03 (4)	05:33				
	17:10	18:02	18:49	20:38	13	19:36 (1)	21:24	19	07:22 (4)	21:56		
17	08:37	07:53	06:55	06:48	19:26 (1)	05:56	07:03 (4)	05:33				
	17:11	18:04	18:51	20:40	6	19:32 (1)	21:26	20	07:23 (4)	21:56		
18	08:36	07:51	06:53	06:46	19:27 (1)	05:54	07:04 (4)	05:33				
	17:13	18:06	18:52	20:41	20	19:32 (1)	21:27	20	07:24 (4)	21:57		
19	08:35	07:49	06:51	06:44	19:28 (1)	05:53	07:03 (4)	05:33				
	17:15	18:07	18:54	20:43	21	19:32 (1)	21:28	21	07:24 (4)	21:57		
20	08:34	07:47	06:49	06:42	19:29 (1)	05:52	07:03 (4)	05:33				
	17:16	18:09	18:55	20:45	22	19:32 (1)	21:29	22	07:25 (4)	21:57		
21	08:33	07:45	06:47	06:40	19:30 (1)	05:50	07:04 (4)	05:33				
	17:18	18:11	18:57	20:46	22	19:32 (1)	21:31	22	07:26 (4)	21:58		
22	08:32	07:43	06:44	06:38	19:31 (1)	05:49	07:04 (4)	05:33				
	17:19	18:12	18:59	20:48	23	19:32 (1)	21:32	23	07:27 (4)	21:58		
23	08:31	07:41	06:42	06:36	19:32 (1)	05:48	07:05 (4)	05:34				
	17:21	18:14	19:00	20:49	23	19:32 (1)	21:34	23	07:28 (4)	21:58		
24	08:30	07:39	06:40	06:34	19:33 (1)	05:47	07:05 (4)	05:34				
	17:23	18:16	19:02	20:51	23	19:33 (1)	21:35	23	07:28 (4)	21:58		
25	08:28	07:37	06:38	06:33	19:34 (1)	05:46	07:06 (4)	05:34				
	17:24	18:18	19:03	20:52	23	19:34 (1)	21:36	23	07:29 (4)	21:58		
26	08:27	07:35	06:36	06:31	19:35 (1)	05:45	07:06 (4)	05:35				
	17:26	18:19	19:05	20:54	24	19:35 (1)	21:37	24	07:30 (4)	21:58		
27	08:26	07:33	06:33	06:29	19:36 (1)	05:44	07:07 (4)	05:35				
	17:28	18:21	19:07	20:56	24	19:36 (1)	21:39	24	07:31 (4)	21:58		
28	08:25	07:31	06:31	06:27	19:37 (1)	05:43	07:07 (4)	05:35				
	17:29	18:23	19:08	20:57	24	19:37 (1)	21:40	24	07:31 (4)	21:58		
29	08:23	07:29	06:25	06:21	19:38 (1)	05:42	07:09 (4)	05:36				
	17:31	18:24	19:09	20:59	24	19:38 (1)	21:41	24	07:33 (4)	21:58		
30	08:22	07:27	06:23	06:19	19:39 (1)	05:41	07:09 (4)	05:37				
	17:33	18:26	19:11	21:00	23	19:39 (1)	21:42	23	07:32 (4)	21:58		
31	08:21	07:25	06:15	06:11	19:40 (1)	05:40	07:10 (4)	05:37				
	17:34	18:28	19:13	21:01	22	19:40 (1)	21:43	22	07:32 (4)	21:58		
Potential sun hours	266	281	368	413	478	490						
Total, worst case				322	491	114						
Sun reduction				0,38	0,42	0,40						
Oper. time red.				1,00	1,00	1,00						
Wind dir. red.				0,63	0,69	0,69						
Total reduction				0,24	0,29	0,28						
Total, real				77	142	31						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: A - 1

Assumptions for shadow calculations

Maximum distance for influence	2.000 m	Sunshine probability S/S0 (Sun hours/Possible sun hours) []	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
Minimum sun height over horizon for influence	3 °		0,19	0,25	0,34	0,38	0,42	0,40	0,41	0,38	0,40	0,36	0,21	0,16					
Day step for calculation	1 days	Operational time																	
Time step for calculation	1 minutes		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
			229	400	474	433	482	294	286	409	629	981	1.144	1.046	940	474	278	261	8.760

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:37 21:58	06:11 21:28	07:14 (4) 06:57	19:18 (1) 07:42	07:33 08:20	08:20 16:45
2	05:38 21:57	06:12 21:27	07:15 (4) 06:59	19:16 (1) 07:44	07:34 08:22	08:22 16:44
3	05:38 21:57	06:14 21:25	07:15 (4) 07:00	19:17 (1) 07:46	07:36 08:23	08:23 16:43
4	05:39 21:57	07:26 (4) 06:15	07:15 (4) 07:02	19:16 (1) 07:47	07:38 08:24	08:24 16:43
5	05:40 21:56	07:24 (4) 06:17	07:16 (4) 07:03	19:16 (1) 07:49	07:39 08:26	08:26 16:43
6	05:41 21:56	07:32 (4) 06:18	07:25 (4) 07:05	19:40 (1) 19:15	17:15 16:43	16:43 08:27
7	05:41 21:56	07:23 (4) 06:18	07:16 (4) 07:05	19:16 (1) 07:50	07:41 08:27	08:27 16:42
8	05:42 21:55	07:33 (4) 06:20	07:23 (4) 07:06	19:39 (1) 19:13	17:13 16:42	16:42 08:28
9	05:42 21:55	07:21 (4) 06:20	07:18 (4) 07:06	19:17 (1) 07:52	07:43 08:28	08:28 16:42
10	05:43 21:55	07:34 (4) 06:19	07:23 (4) 07:07	19:39 (1) 19:11	17:12 16:42	16:42 08:29
11	05:43 21:54	07:20 (4) 06:23	07:18 (4) 07:08	19:17 (1) 07:53	07:44 08:29	08:29 16:42
12	05:43 21:54	07:35 (4) 06:21	07:21 (4) 07:09	19:37 (1) 19:09	17:10 16:42	16:42 08:30
13	05:43 21:54	07:20 (4) 06:23	07:19 (4) 07:09	19:18 (1) 07:55	07:46 08:30	08:30 16:41
14	05:44 21:53	07:37 (4) 06:23	07:20 (4) 07:11	19:36 (1) 19:07	17:09 16:41	16:41 08:31
15	05:44 21:53	07:19 (4) 06:24	07:11 07:12	19:19 (1) 07:57	07:48 08:31	08:31 16:41
16	05:45 21:53	07:38 (4) 06:24	07:12 07:14	19:33 (1) 19:05	17:07 16:41	16:41 08:32
17	05:45 21:53	07:19 (4) 06:26	07:12 20:08	19:23 (1) 07:58	07:49 08:32	08:32 16:41
18	05:46 21:53	07:39 (4) 06:26	20:08 07:14	19:30 (1) 19:03	17:06 16:41	16:41 08:33
19	05:46 21:52	07:18 (4) 06:27	07:14 20:06	08:00 19:01	07:51 16:41	08:33 16:41
20	05:47 21:52	07:40 (4) 06:28	20:06 07:15	19:01 08:01	17:04 16:41	16:41 08:34
21	05:47 21:51	07:18 (4) 06:28	07:15 20:04	08:01 18:58	07:53 17:03	08:34 16:41
22	05:48 21:51	07:41 (4) 06:30	20:04 07:17	18:58 08:03	17:03 07:54	16:41 08:35
23	05:48 21:50	07:17 (4) 06:30	07:17 20:02	08:03 18:56	07:54 17:02	08:35 16:41
24	05:49 21:50	07:41 (4) 06:31	20:02 07:18	18:56 08:04	17:02 07:56	16:41 08:36
25	05:49 21:49	07:17 (4) 06:31	07:18 20:00	08:04 18:54	07:56 17:00	08:36 16:41
26	05:49 21:49	07:41 (4) 06:31	20:00 07:20	18:54 08:06	17:00 07:58	16:41 08:37
27	05:50 21:48	07:16 (4) 06:33	07:20 19:57	08:06 18:52	07:58 16:59	08:37 16:41
28	05:50 21:48	07:40 (4) 06:33	19:57 07:21	18:52 08:08	16:59 07:59	16:41 08:38
29	05:52 21:48	07:16 (4) 06:34	07:21 19:55	08:08 18:50	07:59 16:58	08:38 16:41
30	05:52 21:48	07:40 (4) 06:34	19:55 07:23	18:50 08:09	16:58 08:01	16:41 08:38
31	05:53 21:47	07:15 (4) 06:36	07:23 19:53	08:09 18:48	08:01 16:56	08:38 16:42
32	05:54 21:47	07:39 (4) 06:37	19:53 07:24	18:48 08:11	16:56 08:02	16:42 08:39
33	05:54 21:45	07:15 (4) 06:37	07:24 19:51	08:11 18:46	08:02 16:55	08:39 16:42
34	05:55 21:45	07:38 (4) 06:37	19:51 07:26	18:46 08:13	16:55 08:04	16:42 08:40
35	05:55 21:44	07:14 (4) 06:39	07:26 19:48	08:13 18:44	08:04 16:54	08:40 16:42
36	05:56 21:44	07:38 (4) 06:40	19:48 07:27	18:44 08:14	16:54 08:06	16:42 08:40
37	05:56 21:43	07:14 (4) 06:40	07:27 19:46	08:14 18:42	08:06 16:53	08:40 16:43
38	05:58 21:43	07:37 (4) 06:42	19:46 07:29	18:42 08:16	16:53 08:07	16:43 08:41
39	05:58 21:42	07:15 (4) 06:42	07:29 19:44	08:16 18:40	08:07 16:52	08:41 16:43
40	05:59 21:42	07:37 (4) 06:43	19:44 07:30	18:40 08:18	16:52 08:09	16:43 08:41
41	05:59 21:41	07:14 (4) 06:43	07:30 19:42	08:18 18:38	08:09 16:51	08:41 16:44
42	06:00 21:41	07:36 (4) 06:49	19:42 07:32	18:38 08:19	16:51 08:10	16:44 08:42
43	06:00 21:40	07:14 (4) 06:45	07:32 19:40	08:19 18:36	08:10 16:50	08:42 16:44
44	06:01 21:40	07:35 (4) 06:47	19:40 07:33	18:36 07:21	16:50 08:12	16:44 08:42
45	06:01 21:38	07:13 (4) 06:46	07:33 19:37	07:21 17:34	08:12 16:49	08:42 16:45
46	06:03 21:38	07:34 (4) 06:45	19:37 07:35	17:34 07:22	16:49 08:13	16:45 08:43
47	06:03 21:37	07:14 (4) 06:48	07:35 19:34 (1)	07:22 17:33	08:13 16:48	08:43 16:46
48	06:04 21:37	07:34 (4) 06:43	19:35 07:36	17:33 07:24	16:48 08:15	16:46 08:43
49	06:04 21:36	07:14 (4) 06:49	07:36 19:25 (1)	07:24 17:31	08:15 16:47	08:43 16:46
50	06:05 21:36	07:33 (4) 06:41	19:25 (1) 19:33	17:31 07:26	16:47 08:16	16:46 08:43
51	06:05 21:34	07:13 (4) 06:51	07:38 19:22 (1)	07:26 17:29	08:16 16:47	08:43 16:47
52	06:05 21:34	07:32 (4) 06:51	19:22 (1) 19:31	07:26 17:29	08:16 16:47	08:43 16:47
53	06:07 21:33	07:13 (4) 06:53	07:39 19:21 (1)	07:27 17:27	08:18 16:46	08:43 16:48
54	06:07 21:33	07:31 (4) 06:53	19:21 (1) 19:29	07:27 17:27	08:18 16:46	08:43 16:48
55	06:08 21:31	07:14 (4) 06:54	07:41 19:19 (1)	07:29 17:25	08:19 16:45	08:43 16:49
56	06:08 21:31	07:31 (4) 06:54	19:19 (1) 19:26	07:29 17:25	08:19 16:45	08:43 16:49
57	06:10 21:31	07:14 (4) 06:56	19:19 (1) 19:26	07:31 17:25	08:43 16:45	08:43 16:49
58	06:10 21:30	07:31 (4) 06:56	19:26 19:19 (1)	17:25 17:23	16:45 16:50	16:49 16:50
59	Potential sun hours	494	380	334	272	252
60	Total, worst case	534	175	224		
61	Sun reduction	0,41	0,38	0,40		
62	Oper. time red.	1,00	1,00	1,00		
63	Wind dir. red.	0,69	0,66	0,63		
64	Total reduction	0,28	0,25	0,25		
65	Total, real	151	44	56		

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:
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Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: B - 2

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December			
1	08:44	09:35 (4)	08:19	07:29	07:22	06:21	05:39	05:37	06:11	06:57	07:42	07:33	08:20	09:27 (4)	
	16:51	68 13:58 (2)	17:36	18:24	20:15	21:02	21:44	21:58	21:28	20:30	19:24	17:22	16:45	37 10:11 (3)	
2	08:43	09:36 (4)	08:18	07:27	07:20	06:19	05:39	05:38	06:12	06:59	07:44	07:34	08:22	09:25 (4)	
	16:52	66 13:58 (2)	17:38	18:26	20:16	21:03	21:45	21:57	21:27	20:28	19:22	17:20	16:44	40 10:11 (3)	
3	08:43	09:35 (4)	08:16	07:25	07:18	06:18	05:38	05:38	06:14	07:00	07:46	07:36	08:23	09:24 (4)	
	16:53	66 13:57 (2)	17:39	18:28	20:18	21:05	21:46	21:57	21:25	20:26	19:20	17:18	16:43	42 10:11 (3)	
4	08:43	09:36 (4)	08:15	07:23	07:16	06:16	05:37	05:39	06:15	07:02	07:47	07:38	08:24	09:25 (4)	
	16:54	63 13:56 (2)	17:41	18:29	20:19	21:06	21:47	21:57	21:24	20:24	19:18	17:17	16:43	43 10:12 (3)	
5	08:43	09:38 (4)	08:13	07:21	07:14	06:14	05:37	05:40	06:17	07:03	07:49	07:39	08:26	09:24 (4)	
	16:55	61 13:56 (2)	17:43	18:31	20:21	21:08	21:48	21:56	21:22	20:22	19:15	17:15	16:43	51 13:38 (2)	
6	08:43	09:38 (4)	08:12	07:19	07:12	06:13	05:36	05:41	06:18	07:05	07:50	07:41	08:27	09:24 (4)	
	16:56	55 13:54 (2)	17:45	18:33	20:22	21:10	21:49	21:56	21:20	20:19	19:13	17:13	16:42	56 13:40 (2)	
7	08:42	09:39 (4)	08:10	07:17	07:09	06:11	05:35	05:41	06:20	07:06	07:52	07:43	08:28	09:25 (4)	
	16:58	51 13:53 (2)	17:46	18:34	20:24	21:11	21:50	21:55	21:19	20:17	19:11	17:12	16:42	60 13:43 (2)	
8	08:42	09:40 (4)	08:09	07:15	07:07	06:09	05:35	05:42	06:21	07:08	07:53	07:44	08:29	09:25 (4)	
	16:59	43 10:27 (3)	17:48	18:36	20:26	21:13	21:51	21:55	21:17	20:15	19:09	17:10	16:42	61 13:44 (2)	
9	08:42	09:41 (4)	08:07	07:13	07:05	06:08	05:35	05:43	06:23	07:09	07:55	07:46	08:30	09:25 (4)	
	17:00	42 10:28 (3)	17:50	18:38	20:27	21:14	21:52	21:54	21:15	20:13	19:07	17:09	16:41	65 13:46 (2)	
10	08:41	09:42 (4)	08:05	07:10	07:03	06:06	05:34	05:44	06:24	07:11	07:57	07:48	08:31	09:25 (4)	
	17:01	41 10:28 (3)	17:52	18:39	20:29	21:16	21:52	21:53	21:14	20:11	19:05	17:07	16:41	67 13:47 (2)	
11	08:41	09:45 (4)	08:04	07:08	07:01	06:04	05:34	05:45	06:26	07:12	07:58	07:49	08:32	09:25 (4)	
	17:03	38 10:29 (3)	17:53	18:41	20:30	21:17	21:53	21:53	21:12	20:08	19:03	17:06	16:41	68 13:48 (2)	
12	08:40	09:58 (3)	08:02	07:06	06:59	06:03	05:34	05:46	06:27	07:14	08:00	07:51	08:33	09:25 (4)	
	17:04	31 10:29 (3)	17:55	18:43	20:32	21:19	21:54	21:52	21:10	20:06	19:01	17:04	16:41	69 13:49 (2)	
13	08:40	09:58 (3)	08:00	07:04	06:57	06:01	05:33	05:47	06:28	07:15	08:01	07:53	08:34	09:26 (4)	
	17:06	31 10:29 (3)	17:57	18:44	20:34	21:20	21:54	21:51	21:08	20:04	18:58	17:03	16:41	70 13:50 (2)	
14	08:39	09:58 (3)	07:58	07:02	06:55	06:00	05:33	05:48	06:30	07:17	08:03	07:54	09:46 (3)	08:35	09:26 (4)
	17:07	31 10:29 (3)	17:59	18:46	20:35	21:21	21:55	21:50	21:06	20:02	18:56	17:02	9 09:55 (3)	16:41	71 13:51 (2)
15	08:38	09:58 (3)	07:57	07:00	06:53	05:58	05:33	05:49	06:31	07:18	08:05	07:56	09:42 (3)	08:36	09:26 (4)
	17:08	31 10:29 (3)	18:00	18:47	20:37	21:23	21:55	21:49	21:04	20:00	18:54	17:00	15 09:57 (3)	16:41	72 13:51 (2)
16	08:37	09:59 (3)	07:55	06:57	06:50	05:57	05:33	05:50	06:33	07:20	08:06	07:58	09:41 (3)	08:37	09:27 (4)
	17:10	30 10:29 (3)	18:02	18:49	20:38	21:24	21:56	21:49	21:03	19:57	18:52	16:59	18 09:59 (3)	16:41	71 13:52 (2)
17	08:37	10:00 (3)	07:53	06:55	06:48	05:56	05:33	05:52	06:34	07:21	08:08	07:59	09:40 (3)	08:38	09:27 (4)
	17:11	30 10:30 (3)	18:04	18:51	20:40	21:26	21:56	21:48	21:01	19:55	18:50	16:58	21 10:01 (3)	16:41	72 13:52 (2)
18	08:36	10:01 (3)	07:51	06:53	06:46	05:54	05:33	05:53	06:36	07:23	08:09	08:01	09:40 (3)	08:38	09:27 (4)
	17:13	30 10:31 (3)	18:06	18:52	20:41	21:27	21:57	21:47	20:59	19:53	18:48	16:56	23 10:03 (3)	16:42	73 13:53 (2)
19	08:35	10:01 (3)	07:49	06:51	06:44	05:53	05:33	05:54	06:37	07:24	08:11	08:02	09:38 (3)	08:39	09:28 (4)
	17:15	29 10:30 (3)	18:07	18:54	20:43	21:28	21:57	21:46	20:57	19:51	18:46	16:55	25 10:03 (3)	16:42	73 13:54 (2)
20	08:34	10:01 (3)	07:47	06:49	06:42	05:52	05:33	05:55	06:39	07:26	08:13	08:04	09:38 (3)	08:40	09:28 (4)
	17:16	29 10:30 (3)	18:09	18:55	20:45	21:30	21:57	21:44	20:55	19:48	18:44	16:54	26 10:04 (3)	16:42	73 13:54 (2)
21	08:33	10:02 (3)	07:45	06:47	06:40	05:50	05:33	05:56	06:40	07:27	08:14	08:06	09:38 (3)	08:40	09:29 (4)
	17:18	27 10:29 (3)	18:11	18:57	20:46	21:31	21:58	21:43	20:53	19:46	18:42	16:53	27 10:05 (3)	16:43	72 13:55 (2)
22	08:32	10:03 (3)	07:43	06:44	06:38	05:49	05:33	05:58	06:42	07:29	08:16	08:07	09:37 (3)	08:41	09:29 (4)
	17:19	26 10:29 (3)	18:12	18:59	20:48	21:32	21:58	21:42	20:51	19:44	18:40	16:52	29 10:06 (3)	16:43	72 13:55 (2)
23	08:31	10:04 (3)	07:41	06:42	06:36	05:48	05:34	05:59	06:43	07:30	08:18	08:09	09:38 (3)	08:41	09:30 (4)
	17:21	25 10:29 (3)	18:14	19:00	20:49	21:34	21:58	21:41	20:49	19:42	18:38	16:51	29 10:07 (3)	16:44	72 13:56 (2)
24	08:30	10:06 (3)	07:39	06:40	06:34	05:47	05:34	06:00	06:45	07:32	08:19	08:10	09:38 (3)	08:42	09:30 (4)
	17:23	23 10:29 (3)	18:16	19:02	20:51	21:35	21:58	21:40	20:47	19:40	18:36	16:50	30 10:08 (3)	16:44	73 13:56 (2)
25	08:29	10:06 (3)	07:37	06:38	06:33	05:46	05:34	06:01	06:46	07:33	08:21	08:12	09:37 (3)	08:42	09:30 (4)
	17:24	21 10:27 (3)	18:18	19:03	20:52	21:36	21:58	21:38	20:45	19:37	18:34	16:49	30 10:07 (3)	16:45	72 13:56 (2)
26	08:27	10:08 (3)	07:35	06:36	06:31	05:45	05:35	06:03	06:48	07:35	08:23	08:13	09:38 (3)	08:43	09:32 (4)
	17:26	18 10:26 (3)	18:19	19:05	20:54	21:38	21:58	21:37	20:43	19:35	18:33	16:48	30 10:08 (3)	16:46	72 13:57 (2)
27	08:26	10:11 (3)	07:33	06:33	06:29	05:44	05:35	06:04	06:49	07:36	08:24	08:15	09:38 (3)	08:43	09:32 (4)
	17:28	14 10:25 (3)	18:21	19:07	20:56	21:39	21:58	21:36	20:41	19:33	18:31	16:47	31 10:09 (3)	16:46	71 13:57 (2)
28	08:25	10:13 (3)	07:31	06:31	06:27	05:43	05:35	06:05	06:51	07:38	08:26	08:16	09:38 (3)	08:43	09:32 (4)
	17:29	9 10:22 (3)	18:23	19:08	20:57	21:40	21:58	21:34	20:39	19:31	18:29	16:47	31 10:09 (3)	16:47	71 13:57 (2)
29	08:24			07:29	06:25	05:42	05:36	06:07	06:53	07:39	08:28	08:18	09:39 (3)	08:43	09:33 (4)
	17:31			20:10	20:59	21:41	21:58	21:33	20:36	19:29	18:27	16:46	31 10:10 (3)	16:48	70 13:57 (2)
30	08:22			07:27	06:23	05:41	05:36	06:08	06:54	07:41	08:29	08:19	09:39 (3)	08:43	09:33 (4)
	17:33			20:11	21:00	21:42	21:58	21:31	20:34	19:26	18:25	16:45	31 10:10 (3)	16:49	71 13:58 (2)
31	08:21			07:25	06:21	05:40		06:10	06:56		07:31		08:43		09:34 (4)
	17:34			20:13	21:03	21:43		21:30	20:32		17:23		16:50	69 13:58 (2)	
Potential sun hours	266	281	368	413	478	490	494	449	380	334	272	252	2019		
Total, worst case		1029										436			
Sun reduction		0,19										0,21			0,16
Oper. time red.		1,00										1,00			1,00
Wind dir. red.		0,55										0,54			0,58
Total reduction		0,11										0,11			0,09
Total, real		109										49			189

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:
ombre2

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13/07/2012 09:11 / 4

Licensed user:
SGS Belgium NV, Environmental Services
Haven 407 Polderdijkweg 16
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catherine.Nève / catherine.neve@sgs.com
Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: C - 3

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0,19	0,25	0,34	0,38	0,42	0,40	0,41	0,38	0,40	0,36	0,21	0,16

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
229	400	474	433	482	294	286	409	629	981	1.144	1.046	940	474	278	261	8.760

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December			
1	08:43	08:19	07:29	07:22	06:21	20:15 (1)	05:39	05:37	06:11	06:57	07:42	07:32	08:20		
	16:51	17:36	18:24	20:15	21:02	10	20:25 (1)	21:44	21:58	21:28	20:30	19:24	17:22	16:45	
2	08:43	08:18	07:27	07:20	06:19	20:17 (1)	05:39	05:38	06:12	06:59	07:44	07:34	08:22		
	16:52	17:38	18:26	20:16	21:03	6	20:23 (1)	21:45	21:57	21:27	20:28	19:22	17:20	16:44	
3	08:43	08:16	07:25	07:18	06:18		05:38	05:38	06:14	07:00	07:46	07:36	08:23		
	16:53	17:39	18:28	20:18	21:05		21:46	21:57	21:25	20:26	19:20	17:18	16:43		
4	08:43	08:15	07:23	07:16	06:16		05:37	05:39	06:15	07:02	07:47	07:38	08:24		
	16:54	17:41	18:29	20:19	21:06		21:47	21:57	21:24	20:24	19:18	17:17	16:43		
5	08:43	08:13	07:21	07:14	06:14		05:37	05:40	06:17	07:03	07:49	07:39	08:25		
	16:55	17:43	18:31	20:21	21:08		21:48	21:56	21:22	20:21	19:15	17:15	16:43		
6	08:43	08:12	07:19	07:12	06:13		05:36	05:41	06:18	07:05	07:50	07:41	08:27		
	16:56	17:45	18:33	20:22	21:09		21:49	21:56	21:20	20:19	19:13	17:13	16:42		
7	08:42	08:10	07:17	07:09	06:11		05:36	05:42	06:20	07:06	07:52	07:43	08:28		
	16:58	17:46	18:34	20:24	21:11		21:50	21:55	21:19	20:17	19:11	17:12	16:42		
8	08:42	08:09	07:15	07:07	06:09		05:35	05:42	06:21	07:08	07:53	07:44	08:29		
	16:59	17:48	18:36	20:26	21:12		21:51	21:55	21:17	20:15	19:09	17:10	16:42		
9	08:42	08:07	07:13	07:05	06:08		05:35	05:43	06:23	07:09	07:55	07:46	08:30		
	17:00	17:50	18:38	20:27	21:14		21:52	21:54	21:15	20:13	19:07	17:09	16:41		
10	08:41	08:05	07:10	07:03	06:06		05:34	05:44	06:24	07:11	07:56	07:48	08:31		
	17:01	17:52	18:39	20:29	21:15		21:52	21:53	21:14	20:11	19:05	17:07	16:41		
11	08:41	08:04	07:08	07:01	06:04		05:34	05:45	06:26	07:12	07:58	07:49	08:32		
	17:03	17:53	18:41	20:30	21:17		21:53	21:53	21:12	8	20:32 (1)	20:08	19:03	17:06	16:41
12	08:40	08:02	07:06	06:59	06:03		05:34	05:46	06:27	20:22 (1)	07:14	08:00	07:51	08:33	
	17:04	17:55	18:42	20:32	21:18		21:54	21:52	21:10	11	20:33 (1)	20:06	19:01	17:04	16:41
13	08:39	08:00	07:04	06:57	06:01		05:33	05:47	06:28	20:22 (1)	07:15	08:01	07:53	08:34	
	17:06	17:57	18:44	20:34	21:20		21:54	21:51	21:08	12	20:34 (1)	20:04	18:58	17:03	16:41
14	08:39	07:58	07:02	06:55	06:00		05:33	05:48	06:30	20:21 (1)	07:17	08:03	07:54	08:35	
	17:07	17:59	18:46	20:35	21:21		21:55	21:50	21:06	14	20:35 (1)	20:02	18:56	17:02	16:41
15	08:38	07:57	07:00	06:53	05:58		05:33	05:49	06:31	20:21 (1)	07:18	08:04	07:56	08:36	
	17:08	18:00	18:47	20:37	21:23		21:55	21:49	21:04	14	20:35 (1)	20:00	18:54	17:00	16:41
16	08:37	07:55	06:57	06:50	05:57		05:33	05:50	06:33	20:20 (1)	07:20	08:06	07:57	08:37	
	17:10	18:02	18:49	20:38	21:24		21:56	21:48	21:02	15	20:35 (1)	19:57	18:52	16:59	16:41
17	08:36	07:53	06:55	06:48	05:56		05:33	05:52	06:34	20:20 (1)	07:21	08:08	07:59	08:38	
	17:11	18:04	18:51	20:40	21:26		21:56	21:47	21:01	14	20:34 (1)	19:55	18:50	16:58	16:41
18	08:36	07:51	06:53	06:46	05:54		05:33	05:53	06:36	20:20 (1)	07:23	08:09	08:01	08:38	
	17:13	18:06	18:52	20:41	21:27		21:57	21:46	20:59	12	20:32 (1)	19:53	18:48	16:56	16:42
19	08:35	07:49	06:51	06:44	05:53		05:33	05:54	06:37	20:20 (1)	07:24	08:11	08:02	08:39	
	17:15	18:07	18:54	20:43	21:28		21:57	21:45	20:57	9	20:29 (1)	19:51	18:46	16:55	16:42
20	08:34	07:47	06:49	06:42	05:52		05:33	05:55	06:39	20:22 (1)	07:26	08:13	08:04	08:40	
	17:16	18:09	18:55	20:45	21:30		21:57	21:44	20:55	6	20:28 (1)	19:48	18:44	16:54	16:42
21	08:33	07:45	06:47	06:40	05:50		05:33	05:56	06:40	20:23 (1)	07:27	08:14	08:05	08:40	
	17:18	18:11	18:57	20:46	21:31		21:58	21:43	20:53	3	20:26 (1)	19:46	18:42	16:53	16:43
22	08:32	07:43	06:44	06:38	05:49		05:33	05:58	06:42		07:29	08:16	08:07	08:41	
	17:19	18:12	18:59	20:48	3	20:21 (1)	21:32	21:58	21:42	20:51	19:44	18:40	16:52	16:43	
23	08:31	07:41	06:42	06:36	05:48		05:34	05:59	06:43		07:30	08:17	08:09	08:41	
	17:21	18:14	19:00	20:49	7	20:23 (1)	21:34	21:58	21:41	20:49	19:42	18:38	16:51	16:44	
24	08:30	07:39	06:40	06:34	05:47		05:34	06:00	06:45		07:32	08:19	08:10	08:42	
	17:23	18:16	19:02	20:51	10	20:24 (1)	21:35	21:58	21:40	20:47	19:40	18:36	16:50	16:44	
25	08:28	07:37	06:38	06:32	05:46		05:34	06:01	06:46		07:33	07:21	08:12	08:42	
	17:24	18:18	19:03	20:52	12	20:25 (1)	21:36	21:58	21:38	20:45	19:37	17:34	16:49	16:45	
26	08:27	07:35	06:36	06:31	05:45		05:35	06:03	06:48		07:35	07:22	08:13	08:42	
	17:26	18:19	19:05	20:54	14	20:27 (1)	21:37	21:58	21:37	20:43	19:35	17:33	16:48	16:46	
27	08:26	07:33	06:33	06:29	05:44		05:35	06:04	06:49		07:36	07:24	08:15	08:43	
	17:28	18:21	19:07	20:56	15	20:28 (1)	21:39	21:58	21:36	20:41	19:33	17:31	16:47	16:46	
28	08:25	07:31	06:31	06:27	05:43		05:35	06:05	06:51		07:38	07:26	08:16	08:43	
	17:29	18:23	19:08	20:57	15	20:28 (1)	21:40	21:58	21:34	20:38	19:31	17:29	16:47	16:47	
29	08:23		07:29	06:25	05:42		05:36	06:07	06:52		07:39	07:27	08:17	08:43	
	17:31		20:10	20:59	14	20:27 (1)	21:41	21:58	21:33	20:36	19:29	17:27	16:46	16:48	
30	08:22		07:27	06:23	05:41		05:37	06:08	06:54		07:41	07:29	08:19	08:43	
	17:33		20:11	21:00	13	20:26 (1)	21:42	21:58	21:31	20:34	19:26	17:25	16:45	16:49	
31	08:21		07:25	06:20	05:40				06:10	06:56		07:31	08:19	08:43	
	17:34		20:13		21:43				21:30	20:32		17:23	16:46	16:50	
Potential sun hours	266	281	368	413	478	490	494	449		380	334	272	252		
Total, worst case				103	16			118							
Sun reduction				0,38	0,42			0,38							
Oper. time red.				1,00	1,00			1,00							
Wind dir. red.				0,58	0,58			0,58							
Total reduction				0,22	0,24			0,22							
Total, real				23	4			26							

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:
ombre2

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13/07/2012 09:11 / 5

Licensed user:
SGS Belgium NV, Environmental Services
Haven 407 Polderdijkweg 16
NL-S-62030 Antwerpen
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catherine.Nève / catherine.neve@sgs.com
Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: D - 4

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:43 16:51	08:19 17:36	07:29 18:24	07:22 20:14	06:21 21:02	05:39 21:44	05:37 21:58	06:11 21:28	06:57 20:30	19:48 (2) 19:59 (2)	07:42 19:24	18:07 (4) 18:37 (4)	07:32 17:22	08:20 16:45
2	08:43 16:52	08:18 17:38	07:27 18:26	07:20 20:16	06:19 21:03	05:39 21:45	05:38 21:57	06:12 21:27	06:58 20:28	19:46 (2) 19:59 (2)	07:44 19:22	18:08 (4) 18:37 (4)	07:34 17:20	08:22 16:44
3	08:43 16:53	08:16 17:39	07:25 18:28	07:18 20:18	06:18 21:05	05:38 21:46	05:38 21:57	06:14 21:25	07:00 20:26	19:46 (2) 20:00 (2)	07:45 19:20	18:09 (4) 18:36 (4)	07:36 17:18	08:23 16:43
4	08:43 16:54	08:15 17:41	07:23 18:29	07:16 20:19	06:16 21:06	05:37 21:47	05:37 21:57	06:15 21:24	07:01 20:24	19:46 (2) 19:57 (2)	07:47 19:18	18:09 (4) 18:34 (4)	07:37 17:17	08:24 16:43
5	08:43 16:55	08:13 17:43	07:21 18:31	07:14 20:21	19:53 (2) 21:08	06:14 21:48	05:37 21:56	06:17 21:22	07:03 20:21	19:46 (2) 19:56 (2)	07:49 19:15	18:10 (4) 18:33 (4)	07:39 17:15	08:25 16:42
6	08:43 16:56	08:12 17:45	07:19 18:33	17:39 (4) 20:22	07:12 21:09	19:50 (2) 21:49	06:12 21:56	06:18 21:20	07:04 20:19	19:46 (2) 19:53 (2)	07:50 19:13	18:11 (4) 18:30 (4)	07:41 17:13	08:27 16:42
7	08:42 16:58	08:10 17:46	07:17 18:34	17:36 (4) 20:24	07:09 21:11	19:49 (2) 21:50	05:35 21:55	06:11 21:19	07:06 20:17	19:48 (2) 19:51 (2)	07:52 19:11	18:13 (4) 18:28 (4)	07:43 17:12	08:28 16:42
8	08:42 16:59	08:09 17:48	07:15 18:36	17:34 (4) 20:26	07:07 21:12	19:49 (2) 21:51	05:35 21:55	06:21 21:17	07:08 20:15	19:48 (2) 19:09	07:53 19:09	18:18 (4) 18:24 (4)	07:44 17:10	08:29 16:41
9	08:42 17:00	08:07 17:50	07:13 18:38	17:32 (4) 20:27	07:05 21:14	19:48 (2) 20:02 (2)	05:35 21:52	06:22 21:15	07:09 20:13	19:07 19:07	07:55 19:07	18:10 (4) 18:10 (4)	07:46 17:09	08:30 16:41
10	08:41 17:01	08:05 17:52	07:10 18:39	17:31 (4) 20:29	07:03 21:15	19:48 (2) 20:01 (2)	05:34 21:52	06:24 21:13	07:11 20:11	19:05 19:05	07:56 19:05	18:10 (4) 18:10 (4)	07:48 17:07	08:31 16:41
11	08:41 17:03	08:04 17:53	07:08 18:41	17:29 (4) 20:30	07:01 21:17	19:49 (2) 20:00 (2)	05:34 21:53	06:25 21:12	07:12 20:08	19:08 19:08	07:58 19:08	18:10 (4) 18:10 (4)	07:49 17:06	08:32 16:41
12	08:40 17:04	08:02 17:55	07:06 18:42	17:28 (4) 20:32	06:59 21:18	19:50 (2) 19:59 (2)	05:34 21:54	06:27 21:10	07:14 20:06	19:00 19:00	08:00 19:00	18:10 (4) 18:10 (4)	07:51 17:04	08:33 16:41
13	08:39 17:06	08:00 17:57	07:04 18:44	17:28 (4) 20:33	06:57 21:20	19:52 (2) 20:01 (3)	05:33 21:54	06:28 21:08	07:15 20:15	19:00 18:58	08:01 18:58	18:10 (4) 18:10 (4)	07:53 17:03	08:34 16:41
14	08:39 17:07	08:00 17:59	07:02 18:46	17:28 (4) 20:35	06:55 21:21	19:52 (3) 20:04 (3)	05:33 21:55	06:30 21:06	07:17 20:02	18:56 18:56	08:03 18:56	18:10 (4) 18:10 (4)	07:54 17:01	08:35 16:41
15	08:38 17:08	08:00 18:00	07:00 18:47	17:27 (4) 20:37	06:52 21:23	19:50 (3) 20:05 (3)	05:33 21:55	06:31 21:04	07:18 20:00	18:54 18:54	08:04 18:54	18:10 (4) 18:10 (4)	07:56 17:00	08:36 16:41
16	08:37 17:10	08:00 18:02	07:00 18:49	17:26 (4) 20:38	06:50 21:24	19:49 (3) 20:06 (3)	05:33 21:56	06:33 21:02	07:20 19:57	19:57 (3) 20:06 (3)	08:06 18:52	18:10 (4) 18:10 (4)	07:57 17:00	08:37 16:41
17	08:36 17:11	08:00 18:04	07:00 18:51	17:26 (4) 20:40	06:48 21:26	19:47 (3) 20:07 (3)	05:33 21:56	06:34 21:01	07:21 19:55	19:54 (3) 20:08 (3)	08:07 18:50	18:10 (4) 18:10 (4)	07:59 17:00	08:38 16:41
18	08:36 17:13	08:00 18:05	07:00 18:52	17:27 (4) 20:41	06:46 21:27	19:47 (3) 20:07 (3)	05:33 21:57	06:36 20:59	07:23 19:53 (3)	19:53 (3) 20:09 (3)	08:09 18:53	18:10 (4) 18:10 (4)	08:01 17:00	08:39 16:42
19	08:35 17:14	08:00 18:07	07:00 18:54	17:27 (4) 20:43	06:44 21:28	19:46 (3) 20:07 (3)	05:33 21:57	06:37 20:57	07:24 19:52 (3)	20:10 (3) 19:51	08:09 18:54	18:10 (4) 18:10 (4)	08:02 17:00	08:40 16:42
20	08:34 17:16	08:00 18:09	07:00 18:55	17:28 (4) 20:45	06:42 21:30	19:46 (3) 20:07 (3)	05:33 21:57	06:39 20:55	07:26 19:51 (3)	19:51 (3) 20:11 (3)	08:13 18:48	18:10 (4) 18:10 (4)	08:04 17:00	08:40 16:42
21	08:33 17:18	08:00 18:11	07:00 18:57	17:28 (4) 20:46	06:40 21:31	19:46 (3) 20:06 (3)	05:33 21:58	06:40 20:53	07:27 19:50 (3)	19:50 (3) 20:11 (3)	08:14 18:42	18:10 (4) 18:10 (4)	08:05 17:00	08:40 16:42
22	08:32 17:19	08:00 18:12	07:00 18:59	17:29 (4) 20:48	06:38 21:32	19:46 (3) 20:06 (3)	05:33 21:58	06:42 20:51	07:29 19:50 (3)	19:50 (3) 20:11 (3)	08:16 18:38	18:10 (4) 18:10 (4)	08:07 17:00	08:41 16:43
23	08:31 17:21	08:00 18:14	07:00 19:00	17:31 (4) 20:49	06:36 21:34	19:46 (3) 20:05 (3)	05:34 21:58	06:43 20:49	07:30 19:49 (3)	19:50 (3) 20:11 (3)	08:17 18:39	18:10 (4) 18:10 (4)	08:09 17:00	08:41 16:44
24	08:30 17:22	08:00 18:16	07:00 19:02	17:33 (4) 20:51	06:34 21:35	19:46 (3) 20:04 (3)	05:34 21:58	06:45 20:47	07:32 19:40 (3)	19:42 (3) 19:40 (3)	08:19 18:36	18:10 (4) 18:10 (4)	08:10 17:00	08:42 16:44
25	08:28 17:24	08:00 18:17	07:00 19:03	17:35 (4) 20:52	06:32 21:36	19:47 (3) 20:02 (3)	05:34 21:58	06:46 20:45	07:33 19:30 (3)	19:30 (3) 20:10 (3)	08:21 18:09	18:10 (4) 18:10 (4)	08:12 17:00	08:42 16:45
26	08:27 17:26	08:00 18:19	07:00 19:05	17:44 (4) 20:54	06:31 21:37	19:48 (3) 20:01 (3)	05:35 21:58	06:48 20:43	07:22 19:20 (3)	18:09 (4) 19:35	07:22 18:04 (4)	18:10 (4) 18:10 (4)	08:13 17:00	08:42 16:46
27	08:26 17:27	08:00 18:21	07:00 19:07	17:44 (4) 20:56	06:29 21:39	19:51 (3) 19:59 (3)	05:35 21:58	06:04 20:41	07:36 19:33	19:30 (3) 20:08 (3)	07:24 18:08 (4)	18:10 (4) 18:10 (4)	08:15 17:00	08:43 16:46
28	08:25 17:34	08:00 18:23	07:00 19:08	17:44 (4) 20:58	06:27 21:40	19:59 (3) 20:06 (3)	05:35 21:58	06:05 20:38	07:38 19:26	19:38 20:06 (3)	07:26 18:08 (4)	18:10 (4) 18:10 (4)	08:16 17:00	08:43 16:47
29	08:23 17:31	08:00 18:20	07:00 19:09	17:44 (4) 20:59	06:25 21:41	19:59 (3) 20:03 (3)	05:36 21:58	06:07 20:36	07:39 19:18	19:39 (3) 20:05 (3)	07:27 18:07 (4)	18:10 (4) 18:10 (4)	08:17 17:00	08:43 16:48
30	08:22 17:33	08:00 18:17	07:00 19:10	17:44 (4) 21:00	06:23 21:42	19:59 (3) 20:03 (3)	05:36 21:58	06:08 20:34	07:41 19:26	19:26 (3) 20:01 (3)	07:29 18:07 (4)	18:10 (4) 18:10 (4)	08:19 17:00	08:44 16:49
31	08:21 17:34	08:00 18:25	07:00 19:13	17:44 (4) 20:13	06:21 21:43	19:59 (3) 20:03 (3)	05:36 21:58	06:09 20:32	07:42 19:26	19:33 (3) 19:59 (2)	07:29 18:08 (4)	18:10 (4) 18:10 (4)	08:20 17:00	08:44 16:50
Potential sun hours	266	281	368	413	326	478	490	449	263	380	400	174	272	252
Total, worst case														
Sun reduction			0,34		0,38				0,38		0,40	0,36		
Oper. time red.			1,00		1,00				1,00		1,00	1,00		
Wind dir. red.			0,69		0,60				0,59		0,67	0,69		
Total reduction			0,23		0,23				0,23		0,27	0,25		
Total, real			117		74				59		108	43		

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:
ombre2

Printed/Page
13/07/2012 09:11 / 6

Licensed user:
SGS Belgium NV, Environmental Services
Haven 407 Polderdijkweg 16
NL-S-62030 Antwerpen
00 32 (0)3 545 87 50
catherine.Nève / catherine.neve@sgs.com
Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: E - 5

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December			
1	08:43	15:57 (3)	08:19	07:29	07:22	06:21	05:39	05:37	06:11	06:57	07:42	07:32	08:20	15:41 (3)	
	16:51	16:08 (3)	17:36	18:24	20:14	21:02	21:44	21:58	21:28	20:30	19:24	17:22	16:44	16:15 (3)	
2	08:43	15:57 (3)	08:18	07:27	07:20	06:19	05:38	05:38	06:12	06:58	07:44	07:34	08:22	15:41 (3)	
	16:52	16:09 (3)	17:38	18:26	20:16	21:03	21:45	21:57	21:27	20:28	19:22	17:20	16:44	15:56 (3)	
3	08:43	15:56 (3)	08:16	07:25	07:18	06:18	05:38	05:38	06:14	07:00	07:45	07:36	08:23	15:41 (3)	
	16:53	16:09 (3)	17:39	18:28	20:18	21:05	21:46	21:57	21:25	20:26	19:20	17:18	16:43	15:56 (3)	
4	08:43	15:57 (3)	08:15	07:23	07:16	06:16	05:37	05:39	06:15	07:01	07:47	07:38	08:24	15:43 (3)	
	16:54	16:10 (3)	17:41	18:29	20:19	21:06	21:47	21:57	21:24	20:24	19:18	17:17	16:43	14:57 (3)	
5	08:43	15:57 (3)	08:13	07:21	07:14	06:14	05:37	05:40	06:17	07:03	07:49	07:39	08:25	15:43 (3)	
	16:55	16:11 (3)	17:43	18:31	20:21	21:08	21:48	21:56	21:22	20:21	19:15	17:15	16:42	14:57 (3)	
6	08:43	15:57 (3)	08:12	07:19	07:12	06:12	05:36	05:41	06:18	07:04	07:50	07:41	08:27	15:43 (3)	
	16:56	16:11 (3)	17:45	18:33	20:22	21:09	21:49	21:56	21:20	20:19	19:13	17:13	16:42	14:57 (3)	
7	08:42	15:58 (3)	08:10	07:17	07:09	06:11	05:35	05:41	06:20	07:06	07:52	07:43	08:28	15:44 (3)	
	16:58	16:12 (3)	17:46	18:34	20:24	21:11	21:50	21:55	21:19	20:17	19:11	17:12	16:42	14:58 (3)	
8	08:42	15:57 (3)	08:09	07:15	07:07	06:09	05:35	05:42	06:21	07:07	07:53	07:44	08:29	15:45 (3)	
	16:59	16:12 (3)	17:48	18:36	20:26	21:13	21:51	21:55	21:17	20:15	19:09	17:10	16:41	13:58 (3)	
9	08:42	15:58 (3)	08:07	07:13	07:05	06:07	05:34	05:43	06:22	07:09	07:55	07:46	08:30	15:45 (3)	
	17:00	16:13 (3)	17:50	18:38	20:27	21:14	21:52	21:54	21:15	20:13	19:07	17:09	16:41	13:58 (3)	
10	08:41	15:58 (3)	08:05	07:10	07:03	06:06	05:34	05:44	06:24	07:10	07:56	07:48	08:31	15:46 (3)	
	17:01	16:13 (3)	17:52	18:39	20:29	21:16	21:52	21:53	21:14	20:11	19:05	17:07	16:41	12:58 (3)	
11	08:41	15:59 (3)	08:04	07:08	07:01	06:04	05:34	05:45	06:25	07:12	07:58	07:49	08:32	15:47 (3)	
	17:03	16:14 (3)	17:53	18:41	20:30	21:17	21:53	21:53	21:12	20:08	19:03	17:06	16:41	11:58 (3)	
12	08:40	16:00 (3)	08:02	07:06	06:59	06:03	05:33	05:46	06:27	07:14	08:00	07:51	08:33	15:47 (3)	
	17:04	16:14 (3)	17:55	18:42	20:32	21:18	21:54	21:52	21:10	20:06	19:00	17:04	16:41	12:59 (3)	
13	08:39	16:00 (3)	08:00	07:04	06:57	06:01	05:33	05:47	06:28	07:15	08:01	07:53	08:34	15:48 (3)	
	17:05	16:14 (3)	17:57	18:44	20:33	21:20	21:54	21:51	21:08	20:04	18:58	17:03	16:41	11:59 (3)	
14	08:39	16:00 (3)	07:58	07:02	06:55	06:00	05:33	05:48	06:30	07:17	08:03	07:54	08:35	15:49 (3)	
	17:07	16:14 (3)	17:59	18:46	20:35	21:21	21:55	21:50	21:06	20:02	18:56	17:01	16:41	10:59 (3)	
15	08:38	16:01 (3)	07:57	07:00	06:52	05:58	05:33	05:49	06:31	07:18	08:04	07:56	08:36	15:50 (3)	
	17:08	16:14 (3)	18:00	18:47	20:37	21:23	21:55	21:49	21:04	20:00	18:54	17:00	16:41	9:59 (3)	
16	08:37	16:02 (3)	07:55	06:57	06:50	05:57	05:33	05:50	06:33	07:20	08:06	07:57	08:37	15:51 (3)	
	17:10	16:14 (3)	18:02	18:49	20:38	21:24	21:56	21:48	21:02	19:57	18:52	16:59	16:41	9:00 (3)	
17	08:37	16:03 (3)	07:53	06:55	06:48	05:56	05:33	05:51	06:34	07:21	08:08	07:59	08:38	15:51 (3)	
	17:11	16:14 (3)	18:04	18:51	20:40	21:26	21:56	21:48	21:01	19:55	18:50	16:58	16:41	8:59 (3)	
18	08:36	16:04 (3)	07:51	06:53	06:46	05:54	05:33	05:53	06:36	07:23	08:09	08:01	08:38	15:52 (3)	
	17:13	16:13 (3)	18:05	18:52	20:41	21:27	21:57	21:47	20:59	19:53	18:48	16:56	16:42	8:00 (3)	
19	08:35	16:06 (3)	07:49	06:51	06:44	05:53	05:33	05:54	06:37	07:24	08:11	08:02	08:39	15:53 (3)	
	17:14	16:12 (3)	18:07	18:54	20:43	21:28	21:57	21:45	20:57	19:51	18:46	16:55	16:42	7:00 (3)	
20	08:34	16:07 (3)	07:47	06:49	06:42	05:52	05:33	05:55	06:39	07:26	08:13	08:04	08:40	15:53 (3)	
	17:16	18:09	18:55	20:45	21:30	21:57	21:44	20:55	19:48	18:44	16:54	16:42	16:42	7:00 (3)	
21	08:33	16:08 (3)	07:45	06:46	06:40	05:50	05:33	05:56	06:40	07:27	08:14	08:05	08:40	15:54 (3)	
	17:18	18:11	18:57	20:46	21:31	21:58	21:43	20:53	19:46	18:42	16:53	16:43	16:43	7:01 (3)	
22	08:32	16:09 (3)	07:43	06:44	06:38	05:49	05:33	05:57	06:42	07:29	08:16	08:07	08:41	15:54 (3)	
	17:19	18:12	18:59	20:48	21:32	21:58	21:42	20:51	19:44	18:40	16:52	16:43	16:43	7:01 (3)	
23	08:31	16:10 (3)	07:41	06:42	06:36	05:48	05:33	05:59	06:43	07:30	08:17	08:09	08:41	15:55 (3)	
	17:21	18:14	19:00	20:49	21:34	21:58	21:41	20:49	19:42	18:38	16:51	6	15:49 (3)	16:44	7:02 (3)
24	08:30	16:11 (3)	07:39	06:40	06:34	05:47	05:34	06:00	06:45	07:32	08:19	08:10	15:42 (3)	08:42	15:55 (3)
	17:22	18:16	19:02	20:51	21:35	21:58	21:40	20:47	19:40	18:36	16:50	9	15:51 (3)	16:44	7:02 (3)
25	08:28	16:12 (3)	07:37	06:38	06:32	05:46	05:34	06:01	06:46	07:33	08:21	08:12	15:41 (3)	08:42	15:55 (3)
	17:24	18:17	19:03	20:52	21:36	21:58	21:38	20:45	19:37	17:34	16:49	11	15:52 (3)	16:45	7:02 (3)
26	08:27	16:13 (3)	07:35	06:36	06:30	05:45	05:34	06:03	06:48	07:35	08:22	08:13	15:41 (3)	08:43	15:56 (3)
	17:26	18:19	19:05	20:54	21:37	21:58	21:37	20:43	19:35	17:32	16:48	12	15:53 (3)	16:46	8:00 (3)
27	08:26	16:14 (3)	07:33	06:33	06:29	05:44	05:35	06:04	06:49	07:36	08:24	08:15	15:40 (3)	08:43	15:56 (3)
	17:27	18:21	19:07	20:56	21:39	21:58	21:36	20:41	19:33	17:31	16:47	13	15:53 (3)	16:46	8:00 (3)
28	08:25	16:15 (3)	07:31	06:31	06:27	05:43	05:35	06:05	06:51	07:38	08:26	08:16	15:40 (3)	08:43	15:56 (3)
	17:29	18:23	19:08	20:57	21:40	21:58	21:34	20:38	19:31	17:29	16:47	14	15:54 (3)	16:47	9:00 (3)
29	08:23	16:16 (3)	07:29	06:25	06:20	05:36	05:36	06:07	06:52	07:39	08:27	08:17	15:41 (3)	08:43	15:56 (3)
	17:31	18:25	19:10	20:59	21:41	21:58	21:33	20:36	19:28	17:27	16:46	15	15:56 (3)	16:48	10:00 (3)
30	08:22	16:17 (3)	07:27	06:23	06:19	05:41	05:36	06:08	06:54	07:41	08:29	08:19	15:41 (3)	08:43	15:56 (3)
	17:32	18:26	19:11	21:00	21:42	21:58	21:31	20:34	19:26	17:25	16:45	15	15:56 (3)	16:49	10:00 (3)
31	08:21	16:18 (3)	07:25	06:21	06:17	05:40	05:36	06:09	06:55	07:42	08:30	08:20	15:42 (3)	08:43	15:56 (3)
	17:34	18:28	19:13	21:02	21:43	21:59	21:30	20:32	19:24	17:23	16:44	16	15:50 (3)	16:50	11:00 (3)
Potential sun hours	266	281	368	413	478	490	494	449	380	334	272	252			
Total, worst case	244												323		
Sun reduction	0,19												0,21		0,16
Oper. time red.	1,00												1,00		1,00
Wind dir. red.	0,74												0,74		0,74
Total reduction	0,14												0,16		0,12
Total, real	34												15		38

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:

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Licensed user:

SGS Belgium NV, Environmental Services

Haven 407 Polderdijkweg 16

NL-S-62030 Antwerpen

00 32 (0)3 545 87 50

catherine.Neve / catherine.neve@sgs.com

Calculated:

13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: F - 6

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
 229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:44	08:19	07:29	07:22	06:21	05:39	05:37	06:11	06:57	07:42	07:33	08:20
	16:51	17:36	18:24	20:15	21:02	21:44	21:58	21:28	20:30	19:24	17:22	16:44
2	08:43	08:18	07:27	07:20	06:19	05:39	05:38	06:12	06:58	07:44	07:34	08:22
	16:52	17:38	18:26	20:16	21:03	21:45	21:57	21:27	20:28	19:22	17:20	16:44
3	08:43	08:16	07:25	07:18	06:18	05:38	05:38	06:14	07:00	07:46	07:36	08:23
	16:53	17:39	18:28	20:18	21:05	21:46	21:57	21:25	20:26	19:20	17:18	16:43
4	08:43	08:15	07:23	07:16	06:16	05:37	05:39	06:15	07:02	07:47	07:38	08:24
	16:54	17:41	18:29	20:19	21:06	21:47	21:57	21:24	20:24	19:18	17:17	16:43
5	08:43	08:13	07:21	07:14	06:14	05:37	05:40	06:17	07:03	07:49	07:39	08:26
	16:55	17:43	18:31	20:21	21:08	21:48	21:56	21:22	20:21	19:15	17:15	16:42
6	08:43	08:12	07:19	07:12	06:12	05:36	05:41	06:18	07:05	07:50	07:41	08:27
	16:56	17:45	18:33	20:22	21:10	21:49	21:56	21:20	20:19	19:13	17:13	16:42
7	08:42	08:10	07:17	07:09	06:11	05:35	05:41	06:20	07:06	07:52	07:43	08:28
	16:58	17:46	18:34	20:24	21:11	21:50	21:55	21:19	20:17	19:11	17:12	16:42
8	08:42	08:09	07:15	07:07	06:09	05:35	05:42	06:21	07:08	07:53	07:44	08:29
	16:59	17:48	18:36	20:26	21:13	21:51	21:55	21:17	20:15	19:09	17:10	16:41
9	08:42	08:07	07:13	07:05	06:08	05:35	05:43	06:22	07:09	07:55	07:46	08:30
	17:00	17:50	18:38	20:27	21:14	21:52	21:54	21:15	20:13	19:07	17:09	16:41
10	08:41	08:05	07:10	07:03	06:06	05:34	05:44	06:24	07:11	07:57	07:48	08:31
	17:01	17:52	18:39	20:29	21:16	21:52	21:53	21:14	20:11	19:05	17:07	16:41
11	08:41	08:04	07:08	07:01	06:04	05:34	05:45	06:25	07:12	07:58	07:49	08:32
	17:03	17:53	18:41	20:30	21:17	21:53	21:53	21:12	20:08	19:03	17:06	16:41
12	08:40	08:02	07:06	06:59	06:03	05:34	05:46	06:27	07:14	08:00	07:51	08:33
	17:04	17:55	18:42	20:32	21:19	21:54	21:52	21:10	20:06	19:00	17:04	16:41
13	08:40	08:00	07:04	06:57	06:01	05:33	05:47	06:28	07:15	08:01	07:53	08:34
	17:06	17:57	18:44	20:34	21:20	21:54	21:51	21:08	20:04	18:58	17:03	16:41
14	08:39	07:58	07:02	06:55	06:00	05:33	05:48	06:30	07:17	08:03	07:54	08:35
	17:07	17:59	18:46	20:35	21:21	21:55	21:50	21:06	20:02	18:56	17:01	16:41
15	08:38	07:57	07:00	06:53	05:58	05:33	05:49	06:31	07:18	08:04	07:56	08:36
	17:08	18:00	18:47	20:37	21:23	21:55	21:49	21:04	20:00	18:54	17:00	16:41
16	08:37	07:55	06:57	06:50	05:57	05:33	05:50	06:33	07:20	08:06	07:58	08:37
	17:10	18:02	18:49	20:38	21:24	21:56	21:49	21:03	19:57	18:52	16:59	16:41
17	08:37	07:53	06:55	06:48	05:56	05:33	05:51	06:34	07:21	08:08	07:59	08:38
	17:11	18:04	18:51	20:40	21:26	21:56	21:48	21:01	19:55	18:50	16:58	16:41
18	08:36	07:51	06:53	06:46	05:54	05:33	05:53	06:36	07:23	08:09	08:01	08:38
	17:13	18:06	18:52	20:41	21:27	21:57	21:47	20:59	19:53	18:48	16:56	16:42
19	08:35	07:49	06:51	06:44	05:53	05:33	05:54	06:37	07:24	08:11	08:02	08:39
	17:14	18:07	18:54	20:43	21:28	21:57	21:46	20:57	19:51	18:46	16:55	16:42
20	08:34	07:47	06:49	06:42	05:52	05:33	05:55	06:39	07:26	08:13	08:04	08:40
	17:16	18:09	18:55	20:45	21:30	21:57	21:44	20:55	19:48	18:44	16:54	16:42
21	08:33	07:45	06:47	06:40	05:50	05:33	05:56	06:40	07:27	08:14	08:06	08:40
	17:18	18:11	18:57	20:46	21:31	21:58	21:43	20:53	19:46	18:42	16:53	16:43
22	08:32	07:43	06:44	06:38	05:49	05:33	05:57	06:42	07:29	08:16	08:07	08:41
	17:19	18:12	18:59	20:48	21:32	21:58	21:42	20:51	19:44	18:40	16:52	16:43
23	08:31	07:41	06:42	06:36	05:48	05:34	05:59	06:43	07:30	08:18	08:09	08:41
	17:21	18:14	19:00	20:49	21:34	21:58	21:41	20:49	19:42	18:38	16:51	16:44
24	08:30	07:39	06:40	06:34	05:47	05:34	06:00	06:45	07:32	08:19	08:10	08:42
	17:22	18:16	19:02	20:51	21:35	21:58	21:40	20:47	19:40	18:36	16:50	16:44
25	08:29	07:37	06:38	06:32	05:46	05:34	06:01	06:46	07:33	08:21	08:12	08:42
	17:24	18:17	19:03	20:52	21:36	21:58	21:38	20:45	19:37	17:34	16:49	16:45
26	08:27	07:35	06:36	06:31	05:45	05:34	06:03	06:48	07:35	08:22	08:13	08:43
	17:26	18:19	19:05	20:54	21:37	21:58	21:37	20:43	19:35	17:33	16:48	16:46
27	08:26	07:33	06:33	06:29	05:44	05:35	06:04	06:49	07:36	08:24	08:15	08:43
	17:27	18:21	19:07	20:56	21:39	21:58	21:36	20:41	19:33	17:31	16:47	16:46
28	08:25	07:31	06:31	06:27	05:43	05:35	06:05	06:51	07:38	08:26	08:16	08:43
	17:29	18:23	19:08	20:57	21:40	21:58	21:34	20:39	19:31	17:29	16:47	16:47
29	08:24		07:29	06:25	05:42	05:36	06:07	06:52	07:39	08:27	08:18	08:43
	17:31		20:10	20:59	21:41	21:58	21:33	20:36	19:29	17:27	16:46	16:48
30	08:22		07:27	06:23	05:41	05:36	06:08	06:54	07:41	08:29	08:19	08:43
	17:33		20:11	21:00	21:42	21:58	21:31	20:34	19:26	17:25	16:45	16:49
31	08:21		07:25		05:40		06:10	06:55		07:31		08:43
	17:34		20:13		21:43		21:30	20:32		17:23		16:50
Potential sun hours	266	281	368	413	478	490	494	449	380	334	272	252
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:
ombre2

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Licensed user:
SGS Belgium NV, Environmental Services
Haven 407 Polderdijkweg 16
NL-S-62030 Antwerpen
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catherine.Nève / catherine.neve@sgs.com
Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: G - 7

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:44	08:19	07:29	07:23	06:21	05:39	05:37	06:11	06:57	07:43	07:33	08:20
	16:51	17:36	18:24	20:15	21:02	21:44	21:58	21:29	20:30	19:24	17:22	16:45
2	08:43	08:18	07:27	07:20	06:20	05:39	05:38	06:12	06:59	07:44	07:34	08:22
	16:52	17:38	18:26	20:16	21:03	21:45	21:57	21:27	20:28	19:22	17:20	16:44
3	08:43	08:17	07:25	07:18	06:18	05:38	05:39	06:14	07:00	07:46	07:36	08:23
	16:53	17:40	18:28	20:18	21:05	21:46	21:57	21:25	20:26	19:20	17:18	16:44
4	08:43	08:15	07:23	07:16	06:16	05:37	05:39	06:15	07:02	07:47	07:38	08:24
	16:54	17:41	18:29	20:19	21:07	21:47	21:57	21:24	20:24	19:18	17:17	16:43
5	08:43	08:13	07:21	07:14	06:14	05:37	05:40	06:17	07:03	07:49	07:39	08:26
	16:55	17:43	18:31	20:21	21:08	21:48	21:56	21:22	20:22	19:16	17:15	16:43
6	08:43	08:12	07:19	07:12	06:13	05:36	05:41	06:18	07:05	07:50	07:41	08:27
	16:57	17:45	18:33	20:23	21:10	21:49	21:56	21:20	20:19	19:13	17:13	16:42
7	08:42	08:10	07:17	07:10	06:11	05:36	05:42	06:20	07:06	07:52	07:43	08:28
	16:58	17:47	18:34	20:24	21:11	21:50	21:55	21:19	20:17	19:11	17:12	16:42
8	08:42	08:09	07:15	07:07	06:09	05:35	05:42	06:21	07:08	07:53	07:44	08:29
	16:59	17:48	18:36	20:26	21:13	21:51	21:55	21:17	20:15	19:09	17:10	16:42
9	08:42	08:07	07:13	07:05	06:08	05:35	05:43	06:23	07:09	07:55	07:46	08:30
	17:00	17:50	18:38	20:27	21:14	21:52	21:54	21:15	20:13	19:07	17:09	16:41
10	08:41	08:05	07:11	07:03	06:06	05:34	05:44	06:24	07:11	07:57	07:48	08:31
	17:02	17:52	18:39	20:29	21:16	21:52	21:53	21:14	20:11	19:05	17:07	16:41
11	08:41	08:04	07:08	07:01	06:05	05:34	05:45	06:26	07:12	07:58	07:49	08:32
	17:03	17:53	18:41	20:30	21:17	21:53	21:53	21:12	20:08	19:03	17:06	16:41
12	08:40	08:02	07:06	06:59	06:03	05:34	05:46	06:27	07:14	08:00	07:51	08:33
	17:04	17:55	18:43	20:32	21:19	21:54	21:52	21:10	20:06	19:01	17:04	16:41
13	08:40	08:00	07:04	06:57	06:01	05:33	05:47	06:29	07:15	08:01	07:53	08:34
	17:06	17:57	18:44	20:34	21:20	21:54	21:51	21:08	20:04	18:59	17:03	16:41
14	08:39	07:58	07:02	06:55	06:00	05:33	05:48	06:30	07:17	08:03	07:54	08:35
	17:07	17:59	18:46	20:35	21:21	21:55	21:50	21:06	20:02	18:56	17:02	16:41
15	08:38	07:57	07:00	06:53	05:59	05:33	05:49	06:32	07:18	08:05	07:56	08:36
	17:09	18:00	18:47	20:37	21:23	21:55	21:49	21:04	20:00	18:54	17:00	16:41
16	08:37	07:55	06:58	06:51	05:57	05:33	05:51	06:33	07:20	08:06	07:58	08:37
	17:10	18:02	18:49	20:38	21:24	21:56	21:49	21:03	19:57	18:52	16:59	16:41
17	08:37	07:53	06:55	06:49	05:56	05:33	05:52	06:35	07:21	08:08	07:59	08:38
	17:12	18:04	18:51	20:40	21:26	21:56	21:48	21:01	19:55	18:50	16:58	16:42
18	08:36	07:51	06:53	06:46	05:54	05:33	05:53	06:36	07:23	08:09	08:01	08:38
	17:13	18:06	18:52	20:41	21:27	21:57	21:47	20:59	19:53	18:48	16:57	16:42
19	08:35	07:49	06:51	06:44	05:53	05:33	05:54	06:38	07:24	08:11	08:02	08:39
	17:15	18:07	18:54	20:43	21:28	21:57	21:46	20:57	19:51	18:46	16:55	16:42
20	08:34	07:47	06:49	06:42	05:52	05:33	05:55	06:39	07:26	08:13	08:04	08:40
	17:16	18:09	18:56	20:45	21:30	21:57	21:44	20:55	19:49	18:44	16:54	16:42
21	08:33	07:45	06:47	06:40	05:51	05:33	05:56	06:41	07:27	08:14	08:06	08:40
	17:18	18:11	18:57	20:46	21:31	21:58	21:43	20:53	19:46	18:42	16:53	16:43
22	08:32	07:43	06:44	06:38	05:49	05:33	05:58	06:42	07:29	08:16	08:07	08:41
	17:19	18:12	18:59	20:48	21:32	21:58	21:42	20:51	19:44	18:40	16:52	16:43
23	08:31	07:41	06:42	06:36	05:48	05:34	05:59	06:44	07:30	08:18	08:09	08:41
	17:21	18:14	19:00	20:49	21:34	21:58	21:41	20:49	19:42	18:38	16:51	16:44
24	08:30	07:39	06:40	06:35	05:47	05:34	06:00	06:45	07:32	08:19	08:10	08:42
	17:23	18:16	19:02	20:51	21:35	21:58	21:40	20:47	19:40	18:36	16:50	16:44
25	08:29	07:38	06:38	06:33	05:46	05:34	06:02	06:47	07:33	08:21	08:12	08:42
	17:24	18:18	19:03	20:52	21:36	21:58	21:38	20:45	19:37	17:35	16:49	16:45
26	08:27	07:36	06:36	06:31	05:45	05:35	06:03	06:48	07:35	08:23	08:13	08:43
	17:26	18:19	19:05	20:54	21:38	21:58	21:37	20:43	19:35	17:33	16:48	16:46
27	08:26	07:33	06:33	06:29	05:44	05:35	06:04	06:50	07:36	08:24	08:15	08:43
	17:28	18:21	19:07	20:56	21:39	21:58	21:36	20:41	19:33	17:31	16:48	16:46
28	08:25	07:31	06:31	06:27	05:43	05:36	06:06	06:51	07:38	08:26	08:16	08:43
	17:29	18:23	19:08	20:57	21:40	21:58	21:34	20:39	19:31	17:29	16:47	16:47
29	08:24		07:29	06:25	05:42	05:36	06:07	06:53	07:39	08:28	08:18	08:43
	17:31		20:10	20:59	21:41	21:58	21:33	20:36	19:29	17:27	16:46	16:48
30	08:22		07:27	06:23	05:41	05:37	06:08	06:54	07:41	08:29	08:19	08:43
	17:33		20:11	21:00	21:42	21:58	21:31	20:34	19:26	17:25	16:45	16:49
31	08:21		07:25		05:40		06:10	06:56		07:31		08:43
	17:34		20:13		21:43		21:30	20:32		17:24		16:50
Potential sun hours	266	281	368	413	478	490	494	449	380	334	272	252
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:

ombre2

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Licensed user:

SGS Belgium NV, Environmental Services

Haven 407 Polderdijkweg 16

NL-S-62030 Antwerpen

00 32 (0)3 545 87 50

catherine.Neve / catherine.neve@sgs.com

Calculated:

13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: H - 8

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
 229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:43	08:19	07:29	07:22	06:21	05:39	05:37	06:11	06:57	07:42	07:33	08:20
	16:51	17:36	18:24	20:15	21:02	21:44	21:58	21:28	20:30	19:24	17:22	16:45
2	08:43	08:18	07:27	07:20	06:20	05:39	05:38	06:12	06:59	07:44	07:34	08:22
	16:52	17:38	18:26	20:16	21:03	21:45	21:57	21:27	20:28	19:22	17:20	16:44
3	08:43	08:16	07:25	07:18	06:18	05:38	05:38	06:14	07:00	07:46	07:36	08:23
	16:53	17:40	18:28	20:18	21:05	21:46	21:57	21:25	20:26	19:20	17:18	16:43
4	08:43	08:15	07:23	07:16	06:16	05:37	05:39	06:15	07:02	07:47	07:38	08:24
	16:54	17:41	18:29	20:19	21:06	21:47	21:57	21:24	20:24	19:18	17:17	16:43
5	08:43	08:13	07:21	07:14	06:14	05:37	05:40	06:17	07:03	07:49	07:39	08:26
	16:55	17:43	18:31	20:21	21:08	21:48	21:56	21:22	20:22	19:15	17:15	16:43
6	08:43	08:12	07:19	07:12	06:13	05:36	05:41	06:18	07:05	07:50	07:41	08:27
	16:56	17:45	18:33	20:22	21:10	21:49	21:56	21:20	20:19	19:13	17:13	16:42
7	08:42	08:10	07:17	07:09	06:11	05:36	05:42	06:20	07:06	07:52	07:43	08:28
	16:58	17:46	18:34	20:24	21:11	21:50	21:55	21:19	20:17	19:11	17:12	16:42
8	08:42	08:09	07:15	07:07	06:09	05:35	05:42	06:21	07:08	07:53	07:44	08:29
	16:59	17:48	18:36	20:26	21:13	21:51	21:55	21:17	20:15	19:09	17:10	16:42
9	08:42	08:07	07:13	07:05	06:08	05:35	05:43	06:23	07:09	07:55	07:46	08:30
	17:00	17:50	18:38	20:27	21:14	21:52	21:54	21:15	20:13	19:07	17:09	16:41
10	08:41	08:05	07:10	07:03	06:06	05:34	05:44	06:24	07:11	07:57	07:48	08:31
	17:02	17:52	18:39	20:29	21:16	21:52	21:53	21:14	20:11	19:05	17:07	16:41
11	08:41	08:04	07:08	07:01	06:04	05:34	05:45	06:26	07:12	07:58	07:49	08:32
	17:03	17:53	18:41	20:30	21:17	21:53	21:53	21:12	20:08	19:03	17:06	16:41
12	08:40	08:02	07:06	06:59	06:03	05:34	05:46	06:27	07:14	08:00	07:51	08:33
	17:04	17:55	18:43	20:32	21:18	21:54	21:52	21:10	20:06	19:01	17:04	16:41
13	08:39	08:00	07:04	06:57	06:01	05:33	05:47	06:29	07:15	08:01	07:53	08:34
	17:06	17:57	18:44	20:34	21:20	21:54	21:51	21:08	20:04	18:58	17:03	16:41
14	08:39	07:58	07:02	06:55	06:00	05:33	05:48	06:30	07:17	08:03	07:54	08:35
	17:07	17:59	18:46	20:35	21:21	21:55	21:50	21:06	20:02	18:56	17:02	16:41
15	08:38	07:57	07:00	06:53	05:58	05:33	05:49	06:31	07:18	08:05	07:56	08:36
	17:09	18:00	18:47	20:37	21:23	21:55	21:49	21:04	20:00	18:54	17:00	16:41
16	08:37	07:55	06:57	06:51	05:57	05:33	05:50	06:33	07:20	08:06	07:58	08:37
	17:10	18:02	18:49	20:38	21:24	21:56	21:48	21:03	19:57	18:52	16:59	16:41
17	08:37	07:53	06:55	06:48	05:56	05:33	05:52	06:34	07:21	08:08	07:59	08:38
	17:12	18:04	18:51	20:40	21:26	21:56	21:48	21:01	19:55	18:50	16:58	16:41
18	08:36	07:51	06:53	06:46	05:54	05:33	05:53	06:36	07:23	08:09	08:01	08:38
	17:13	18:06	18:52	20:41	21:27	21:57	21:47	20:59	19:53	18:48	16:56	16:42
19	08:35	07:49	06:52	06:44	05:53	05:33	05:54	06:37	07:24	08:11	08:02	08:39
	17:15	18:07	18:54	20:43	21:28	21:57	21:45	20:57	19:51	18:46	16:55	16:42
20	08:34	07:47	06:49	06:42	05:52	05:33	05:55	06:39	07:26	08:13	08:04	08:40
	17:16	18:09	18:55	20:45	21:30	21:57	21:44	20:55	19:48	18:44	16:54	16:42
21	08:33	07:45	06:47	06:40	05:50	05:33	05:56	06:40	07:27	08:14	08:06	08:40
	17:18	18:11	18:57	20:46	21:31	21:58	21:43	20:53	19:46	18:42	16:53	16:43
22	08:32	07:43	06:44	06:38	05:49	05:33	05:58	06:42	07:29	08:16	08:07	08:41
	17:19	18:12	18:59	20:48	21:32	21:58	21:42	20:51	19:44	18:40	16:52	16:43
23	08:31	07:41	06:42	06:36	05:48	05:34	05:59	06:43	07:30	08:18	08:09	08:41
	17:21	18:14	19:00	20:49	21:34	21:58	21:41	20:49	19:42	18:38	16:51	16:44
24	08:30	07:39	06:40	06:34	05:47	05:34	06:00	06:45	07:32	08:19	08:10	08:42
	17:23	18:16	19:02	20:51	21:35	21:58	21:40	20:47	19:40	18:36	16:50	16:44
25	08:28	07:37	06:38	06:33	05:46	05:34	06:01	06:47	07:33	08:21	08:12	08:42
	17:24	18:18	19:03	20:52	21:36	21:58	21:38	20:45	19:37	17:34	16:49	16:45
26	08:27	07:35	06:36	06:31	05:45	05:35	06:03	06:48	07:35	08:22	08:13	08:43
	17:26	18:19	19:05	20:54	21:37	21:58	21:37	20:43	19:35	17:33	16:48	16:46
27	08:26	07:33	06:33	06:29	05:44	05:35	06:04	06:50	07:36	08:24	08:15	08:43
	17:28	18:21	19:07	20:56	21:39	21:58	21:36	20:41	19:33	17:31	16:47	16:46
28	08:25	07:31	06:31	06:27	05:43	05:36	06:05	06:51	07:38	08:26	08:16	08:43
	17:29	18:23	19:08	20:57	21:40	21:58	21:34	20:39	19:31	17:29	16:47	16:47
29	08:23		07:29	06:25	05:42	05:36	06:07	06:53	07:39	08:27	08:18	08:43
	17:31		20:10	20:59	21:41	21:58	21:33	20:36	19:29	17:27	16:46	16:48
30	08:22		07:27	06:23	05:41	05:37	06:08	06:54	07:41	08:29	08:19	08:43
	17:33		20:11	21:00	21:42	21:58	21:31	20:34	19:26	17:25	16:45	16:49
31	08:21		07:25		05:40		06:10	06:56		07:31		08:43
	17:34		20:13		21:43		21:30	20:32		17:24		16:50
Potential sun hours	266	281	368	413	478	490	494	449	380	334	272	252
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:
ombre2

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13/07/2012 09:11 / 10

Licensed user:
SGS Belgium NV, Environmental Services
Haven 407 Polderdijkweg 16
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00 32 (0)3 545 87 50
catherine.Neve / catherine.neve@sgs.com
Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: I - 9

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	
1	08:44	08:19	07:29	07:23	07:52 (3)	06:21	
	16:51	17:36	18:24	20:15	11 08:03 (3)	21:02	
2	08:44	08:18	07:27	07:20	07:51 (3)	06:20	
	16:52	17:38	18:26	20:16	12 08:03 (3)	21:03	
3	08:43	08:17	07:25	07:18	07:51 (3)	06:18	
	16:53	17:40	18:28	20:18	12 08:03 (3)	21:05	
4	08:43	08:15	07:23	07:16	07:51 (3)	06:16	
	16:54	17:41	18:29	20:19	12 08:03 (2)	21:07	
5	08:43	08:14	09:13 (1)	07:21	07:52 (3)	06:14	
	16:55	17:43	9 09:22 (1)	18:31	20:21	14 08:06 (2)	21:08
6	08:43	08:12	09:10 (1)	07:19	07:12	07:52 (2)	06:13
	16:57	17:45	14 09:24 (1)	18:33	20:23	15 08:07 (2)	21:10
7	08:43	08:10	09:09 (1)	07:17	07:10	07:50 (2)	06:11
	16:58	17:47	18 09:27 (1)	18:34	20:24	17 08:07 (2)	21:11
8	08:42	08:09	09:08 (1)	07:15	07:07	07:50 (2)	06:09
	16:59	17:48	20 09:28 (1)	18:36	20:26	17 08:07 (2)	21:13
9	08:42	08:07	09:06 (1)	07:13	07:05	07:49 (2)	06:08
	17:00	17:50	23 09:29 (1)	18:38	20:27	18 08:07 (2)	21:14
10	08:41	08:05	09:05 (1)	07:11	07:03	07:49 (2)	06:06
	17:02	17:52	24 09:29 (1)	18:39	20:29	18 08:07 (2)	21:16
11	08:41	08:04	09:05 (1)	07:08	07:01	07:49 (2)	06:04
	17:03	17:53	26 09:31 (1)	18:41	20:30	18 08:07 (2)	21:17
12	08:40	08:02	09:05 (1)	07:06	06:59	07:49 (2)	06:03
	17:04	17:55	26 09:31 (1)	18:43	20:32	17 08:06 (2)	21:19
13	08:40	08:00	09:04 (1)	07:04	06:57	07:50 (2)	06:01
	17:06	17:57	27 09:31 (1)	18:44	20:34	15 08:05 (2)	21:20
14	08:39	07:58	09:04 (1)	07:02	06:55	07:51 (2)	06:00
	17:07	17:59	27 09:31 (1)	18:46	20:35	12 08:03 (2)	21:21
15	08:38	07:57	09:04 (1)	07:00	06:53	07:53 (2)	05:59
	17:09	18:00	27 09:31 (1)	18:47	20:37	8 08:01 (2)	21:23
16	08:37	07:55	09:04 (1)	06:58	06:51		05:57
	17:10	18:02	27 09:31 (1)	18:49	20:38		21:24
17	08:37	07:53	09:04 (1)	06:55	06:49		05:56
	17:12	18:04	27 09:31 (1)	18:51	20:40		21:26
18	08:36	07:51	09:04 (1)	06:53	06:46		05:54
	17:13	18:06	26 09:30 (1)	18:52	20:42		21:27
19	08:35	07:49	09:05 (1)	06:51	06:44		05:53
	17:15	18:07	24 09:29 (1)	18:54	20:43		21:29
20	08:34	07:47	09:06 (1)	06:49	06:42		05:52
	17:16	18:09	22 09:28 (1)	18:56	20:45		21:30
21	08:33	07:45	09:07 (1)	06:47	06:40		05:51
	17:18	18:11	20 09:27 (1)	18:57	20:46		21:31
22	08:32	07:43	09:08 (1)	06:44	06:38		05:49
	17:19	18:12	17 09:25 (1)	18:59	20:48		21:33
23	08:31	07:41	09:10 (1)	06:42	06:36		05:48
	17:21	18:14	13 09:23 (1)	19:00	20:49		21:34
24	08:30	07:40	09:15 (1)	06:40	06:35		05:47
	17:23	18:16	2 09:17 (1)	19:02	20:51		21:35
25	08:29	07:38		06:38	06:33		05:46
	17:24	18:18		19:03	20:53		21:36
26	08:27	07:36		06:36	06:31		05:45
	17:26	18:19		19:05	20:54		21:38
27	08:26	07:33		06:33	06:29		05:44
	17:28	18:21		19:07	20:56		21:39
28	08:25	07:31		06:31	06:27		05:43
	17:29	18:23		19:08	20:57		21:40
29	08:24			07:29	06:25		05:42
	17:31			20:10	20:59		21:41
30	08:22			07:27	07:57 (3)	06:23	05:41
	17:33			20:11	3 08:00 (3)	21:00	21:42
31	08:21			07:25	07:53 (3)		05:40
	17:34			20:13	9 08:02 (3)		21:43
Potential sun hours	266	281	368	413	478	490	
Total, worst case			419	12	216		
Sun reduction			0,25	0,34	0,38		
Oper. time red.			1,00	1,00	1,00		
Wind dir. red.			0,53	0,64	0,64		
Total reduction			0,13	0,22	0,24		
Total, real			54	3	52		

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:
ombre2

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catherine.Nève / catherine.neve@sgs.com
Calculated:
13/07/2012 09:10/2.7.468

SHADOW - Calendar

Calculation: Ombre nouvelles coordonnées Shadow receptor: I - 9

Assumptions for shadow calculations

Maximum distance for influence 2.000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

Sunshine probability S/S0 (Sun hours/Possible sun hours) []

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
0,19 0,25 0,34 0,38 0,42 0,40 0,41 0,38 0,40 0,36 0,21 0,16

Operational time

N NNE NE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
229 400 474 433 482 294 286 409 629 981 1.144 1.046 940 474 278 261 8.760
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:37 21:58	06:11 21:29	06:57 20:30	07:48 (2) 18 08:06 (2)	07:43 19:24	07:33 17:22
2	05:38 21:57	06:12 21:27	06:59 20:28	07:48 (2) 18 08:06 (2)	07:44 19:22	07:34 17:20
3	05:38 21:57	06:14 21:25	07:00 20:26	07:47 (2) 18 08:05 (2)	07:46 19:20	07:36 17:18
4	05:39 21:57	06:15 21:24	07:02 20:24	07:47 (2) 17 08:04 (2)	07:47 19:18	07:38 17:17
5	05:40 21:56	06:17 21:22	07:03 20:22	07:47 (2) 17 08:04 (2)	07:49 19:16	07:39 17:15
6	05:41 21:56	06:18 21:21	07:05 20:19	07:47 (2) 15 08:02 (2)	07:50 19:13	07:41 17:13
7	05:42 21:55	06:20 21:19	07:06 20:17	07:47 (3) 14 08:01 (2)	07:52 19:11	07:43 17:12
8	05:42 21:55	06:21 21:17	07:08 20:15	07:45 (3) 13 07:58 (2)	07:53 19:09	07:44 17:10
9	05:43 21:54	06:23 21:15	07:09 20:13	07:45 (3) 12 07:57 (3)	07:55 19:07	07:46 17:09
10	05:44 21:53	06:24 21:14	07:11 20:11	07:44 (3) 12 07:56 (3)	07:57 19:05	07:48 17:07
11	05:45 21:53	06:26 21:12	07:12 20:08	07:45 (3) 11 07:56 (3)	07:58 19:03	07:49 17:06
12	05:46 21:52	06:27 21:10	07:14 20:06	07:45 (3) 9 07:54 (3)	08:00 19:01	07:51 17:04
13	05:47 21:51	06:29 21:08	07:15 20:04	07:47 (3) 5 07:52 (3)	08:01 18:59	07:53 17:03
14	05:48 21:50	06:30 21:06	07:17 20:02	08:03 18:56	07:54 17:02	08:35 16:41
15	05:49 21:50	06:32 21:05	07:18 20:00	08:05 18:54	07:56 17:00	08:36 16:41
16	05:50 21:49	06:33 21:03	07:20 19:57	08:06 18:52	07:58 16:59	08:37 16:41
17	05:52 21:48	06:35 21:01	07:21 19:55	08:08 18:50	07:59 16:58	08:38 16:41
18	05:53 21:47	06:36 20:59	07:23 19:53	08:09 18:48	08:01 16:57	08:38 16:42
19	05:54 21:46	06:38 20:57	07:24 19:51	08:11 18:46	08:02 16:55	08:39 16:42
20	05:55 21:44	06:39 20:55	07:26 19:49	08:13 18:44	08:04 16:54	08:40 16:42
21	05:56 21:43	06:41 20:53	07:27 19:46	08:14 18:42	08:06 16:53	08:40 16:43
22	05:58 21:42	06:42 20:51	07:29 19:44	08:16 18:40	08:07 16:52	08:41 16:43
23	05:59 21:41	06:44 20:49	07:30 19:42	08:18 18:38	08:09 16:51	08:41 16:44
24	06:00 21:40	06:45 20:47	07:32 19:40	08:19 18:36	08:10 16:50	08:42 16:44
25	06:01 21:38	06:47 20:45	07:33 19:37	08:21 17:35	08:12 16:49	08:42 16:45
26	06:03 21:37	06:48 20:43	07:35 19:35	08:23 17:33	08:13 16:48	08:43 16:46
27	06:04 21:36	06:50 20:41	07:36 19:33	08:24 17:31	08:15 16:47	08:43 16:46
28	06:06 21:34	06:51 20:39	07:38 19:31	08:26 17:29	08:16 16:47	08:43 16:47
29	06:07 21:33	06:53 20:37	07:39 19:29	08:28 17:27	08:18 16:46	08:43 16:48
30	06:08 21:32	06:54 20:34	07:41 19:26	08:30 17:25	08:19 16:45	08:43 16:49
31	06:10 21:30	06:56 20:32	07:49 (2) 17 08:06 (2)	07:31 17:24	08:34 (1) 25 08:59 (1)	08:44 16:50
Potential sun hours	494	449	380	334	272	252
Total, worst case		53	179	323	105	
Sun reduction		0,38	0,40	0,36	0,21	
Oper. time red.		1,00	1,00	1,00	1,00	
Wind dir. red.		0,65	0,64	0,53	0,53	
Total reduction		0,24	0,25	0,19	0,11	
Total, real		13	45	60	11	

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

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