

Project:

Pawlowo_Golancz_miasto_07102010

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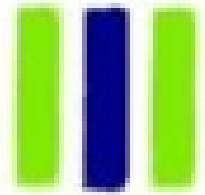
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 1 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	08:05 08:37-08:54/17 15:45 09:33-09:50/17	07:36 08:14-08:27/13 16:34 15:37-15:51/14	06:41 16:33-16:45/12 17:28	06:28 19:24	05:20 19:37-19:48/11 20:18	04:33 21:06
2	08:04 08:37-08:55/18 15:46 09:35-09:50/15	07:34 08:16-08:25/9 16:36 15:38-15:49/11	06:38 16:37-16:42/5 17:30	06:25 19:26	05:18 19:39-19:51/12 20:19	04:32 21:07
3	08:04 08:38-08:56/18 15:47 09:36-09:50/14	07:33 08:18-08:23/5 16:38 15:40-15:47/7	06:36 17:32	06:23 19:28	05:17 19:40-19:52/12 20:21	04:31 21:08
4	08:04 08:37-08:56/19 15:48 09:37-09:49/12	07:31 16:40	06:34 17:34	06:20 19:30	05:15 19:42-19:53/11 20:23	04:31 21:09
5	08:04 08:38-08:57/19 15:49 09:39-09:49/10	07:29 16:42	06:31 17:36	06:18 19:32	05:13 19:43-19:55/12 20:25	04:30 21:10
6	08:03 08:38-08:57/19 15:51 09:41-09:47/6	07:28 16:44	06:29 17:37	06:16 19:33	05:11 19:43-19:56/13 20:26	04:29 21:11
7	08:03 08:39-08:58/19 15:52	07:26 16:46	06:27 17:39	06:13 19:35	05:09 19:44-19:59/15 20:28	04:28 21:12
8	08:02 08:39-08:58/19 15:53	07:24 16:48	06:25 17:41	06:11 19:37	05:07 19:45-19:59/14 20:30	04:28 21:13
9	08:02 08:40-08:58/18 15:55	07:22 16:50	06:22 17:43	06:09 19:39	05:05 19:45-19:58/13 20:32	04:27 21:14
10	08:01 08:33-08:35/2 15:56 08:41-08:59/18	07:20 16:52	06:20 17:45	06:06 19:41	05:03 19:47-19:57/10 20:33	04:27 21:15
11	08:01 08:32-08:35/3 15:58 08:42-08:59/17	07:18 16:54	06:18 17:10-17:21/11 17:47	06:04 19:42	05:02 19:49-19:55/6 20:35	04:26 21:15
12	08:00 08:31-08:36/5 15:59 08:42-08:59/17	07:16 16:56	06:15 17:06-17:22/16 17:49	06:02 19:44	05:00 20:37	04:26 21:16
13	07:59 08:30-08:37/7 16:01 08:43-08:59/16	07:14 16:58	06:13 17:04-17:24/20 17:50	06:00 19:46	04:58 20:38	04:26 21:17
14	07:58 08:29-08:38/9 15:26-15:28/2 16:02 08:44-08:59/15	07:12 17:00	06:10 17:03-17:26/23 17:52	05:57 19:20-19:22/2 19:48	04:57 20:40	04:26 21:18
15	07:58 08:28-08:38/10 15:25-15:30/5 16:04 08:45-08:58/13	07:10 17:01	06:08 17:01-17:27/26 17:54	05:55 19:19-19:22/3 19:49	04:55 20:41	04:25 21:18
16	07:57 08:27-08:39/12 15:25-15:32/7 16:06 08:46-08:58/12	07:08 17:03	06:06 17:00-17:28/28 17:56	05:53 19:19-19:24/5 19:51	04:53 20:43	04:25 21:19
17	07:56 08:26-08:40/14 15:24-15:33/9 16:07 08:48-08:57/9	07:06 17:05	06:03 16:59-17:28/29 17:58	05:50 19:20-19:25/5 19:53	04:52 20:45	04:25 21:19
18	07:55 08:24-08:40/16 15:24-15:35/11 16:09 08:49-08:55/6	07:04 16:35-16:39/4 17:07	06:01 16:58-17:28/30 17:59	05:48 19:20-19:27/7 19:55	04:50 20:46	04:25 21:20
19	07:54 08:23-08:40/17 16:11 15:25-15:37/12	07:02 16:33-16:41/8 17:09	05:59 16:58-17:29/31 18:01	05:46 19:22-19:29/7 19:57	04:49 20:48	04:25 21:20
20	07:53 08:22-08:41/19 16:12 15:25-15:39/14	07:00 16:33-16:43/10 17:11	05:56 16:57-17:28/31 18:03	05:44 19:58	04:47 20:49	04:25 21:20
21	07:51 08:20-08:41/21 16:14 15:25-15:40/15	06:58 16:32-16:46/14 17:13	05:54 16:57-17:28/31 18:05	05:42 20:00	04:46 20:51	04:25 21:21
22	07:50 08:19-08:41/22 16:16 15:25-15:43/18	06:56 16:30-16:47/17 17:15	05:51 16:56-17:27/31 18:07	05:39 20:02	04:44 20:52	04:25 21:21
23	07:49 08:18-08:42/24 16:18 15:26-15:45/19	06:54 16:30-16:49/19 17:17	05:49 16:57-17:27/30 18:08	05:37 20:04	04:43 20:54	04:26 21:21
24	07:48 08:16-08:41/25 16:19 15:26-15:47/21	06:52 16:30-16:51/21 17:19	05:47 16:57-17:26/29 18:10	05:35 20:05	04:42 20:55	04:26 21:21
25	07:46 08:15-08:41/26 16:21 15:27-15:49/22	06:49 16:31-16:51/20 17:21	05:44 16:57-17:25/28 18:12	05:33 19:38-19:40/2 20:07	04:41 20:57	04:26 21:21
26	07:45 08:13-08:40/27 16:23 15:27-15:51/24	06:47 16:30-16:49/19 17:22	05:42 16:58-17:24/26 18:14	05:31 19:38-19:40/2 20:09	04:39 20:58	04:27 21:21
27	07:44 08:12-08:39/27 16:25 15:28-15:52/24	06:45 16:31-16:49/18 17:24	05:39 16:59-17:21/22 18:16	05:29 19:37-19:42/5 20:11	04:38 20:59	04:27 21:21
28	07:42 08:11-08:29/18 15:29-15:52/23 16:27 08:31-08:37/6	06:43 16:33-16:48/15 17:26	05:37 17:01-17:20/19 18:17	05:27 19:37-19:43/6 20:12	04:37 21:01	04:28 21:21
29	07:41 08:12-08:28/16 16:29 15:30-15:52/22	 17:19	06:35 18:03-18:18/15 19:19	05:25 19:37-19:45/8 20:14	04:36 21:02	04:28 21:21
30	07:39 08:13-08:29/16 16:31 15:32-15:51/19	 17:21	06:32 18:07-18:12/5 19:21	05:23 19:37-19:47/10 20:16	04:35 21:03	04:29 21:20
31	07:38 08:13-08:28/15 16:32 15:36-15:52/16	 17:23	06:30 19:23	 20:18	04:34 21:04	 21:20
Potential sun hours	254	275	367	418	490	505
Sum of minutes with flicker	1003	224	498	62	129	0

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

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

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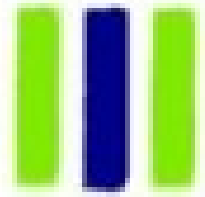
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 1 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	04:29 21:20	05:08 20:47	06:00 19:42	06:51 17:45-18:03/18 18:31	06:47 16:22	07:40 08:14-08:17/3 15:40 08:24-08:41/17
2	04:30 21:20	05:09 19:58-20:06/8 20:45	06:01 19:40	06:53 17:47-18:00/13 18:28	06:49 16:20	07:42 08:15-08:17/2 15:39 08:23-08:41/18
3	04:31 21:19	05:11 19:56-20:07/11 20:43	06:03 19:38	06:54 17:53-17:55/2 18:26	06:51 16:18	07:43 08:24-08:42/18 15:38
4	04:32 21:19	05:12 19:55-20:09/14 20:41	06:05 19:35	06:56 18:23	06:53 16:16	07:44 08:24-08:42/18 15:38
5	04:33 21:18	05:14 19:54-20:09/15 20:39	06:07 19:33	06:58 18:21	06:55 16:15	07:46 08:24-08:43/19 15:37
6	04:33 21:18	05:16 19:54-20:07/13 20:38	06:08 19:31	07:00 18:19	06:58 16:13	07:47 08:24-08:43/19 15:37 09:27-09:33/6
7	04:34 21:17	05:17 19:53-20:05/12 20:36	06:10 19:28	07:01 18:16	06:58 16:11	07:48 08:25-08:44/19 15:36 09:26-09:36/10
8	04:35 21:17	05:19 19:53-20:04/11 20:34	06:12 19:26	07:03 18:14	07:00 07:49-07:54/5 16:09 15:11-15:18/7	07:50 08:25-08:44/19 15:36 09:25-09:37/12
9	04:36 21:16	05:21 19:51-20:02/11 20:32	06:13 19:23	07:05 18:12	07:02 07:46-07:56/10 16:07 15:09-15:20/11	07:51 08:26-08:44/18 15:35 09:24-09:38/14
10	04:37 21:15	05:22 19:48-20:00/12 20:30	06:15 19:21	07:07 18:09	07:04 07:45-07:58/13 16:06 15:08-15:22/14	07:52 08:26-08:44/18 15:35 09:24-09:39/15
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13	04:41 21:12	05:27 19:45-19:56/11 20:24	06:20 19:14	07:12 17:06-17:19/13 18:02	07:09 07:43-08:00/17 16:01 15:02-15:24/22	07:55 08:30-08:46/16 15:35 09:24-09:43/19
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16	04:44 21:09	05:33 19:45-19:49/4 20:18	06:25 17:49-18:11/22 19:07	07:18 17:02-17:22/20 17:56	07:15 07:46-08:13/27 15:56 15:00-15:24/24	07:58 08:33-08:47/14 15:35 09:25-09:45/20
17	04:46 21:08	05:34 19:44-19:46/2 20:16	06:27 17:47-18:12/25 19:04	07:19 17:02-17:22/20 17:53	07:17 07:48-08:14/26 15:55 15:00-15:22/22	07:59 08:33-08:47/14 15:35 09:24-09:45/21
18	04:47 21:07	05:36 20:14	06:29 17:45-18:12/27 19:02	07:21 17:02-17:22/20 17:51	07:18 07:50-08:15/25 15:54 15:00-15:21/21	08:00 08:34-08:48/14 15:35 09:25-09:46/21
19	04:48 21:06	05:38 20:11	06:30 17:44-18:13/29 18:59	07:23 17:02-17:20/18 17:49	07:20 07:52-08:16/24 15:52 15:00-15:19/19	08:00 08:35-08:48/13 15:36 09:26-09:47/21
20	04:50 21:05	05:39 20:09	06:32 17:43-18:13/30 18:57	07:25 17:02-17:18/16 17:47	07:22 07:54-08:16/22 15:51 15:00-15:18/18	08:01 08:35-08:48/13 15:36 09:25-09:47/22
21	04:51 21:03	05:41 20:07	06:34 17:43-18:13/30 18:55	07:27 17:02-17:15/13 17:45	07:24 07:56-08:17/21 15:50 15:01-15:16/15	08:02 08:36-08:49/13 15:36 09:26-09:48/22
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28	05:01 20:53	05:53 19:21-19:23/2 19:51	06:46 17:41-18:08/27 18:38	07:40 16:30	07:35 08:09-08:18/9 15:06-15:08/2 15:42 08:24-08:39/15	08:04 08:38-08:53/15 15:41 09:30-09:50/20
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31	05:06 20:48	05:58 19:45		06:45 16:24		08:05 08:38-08:54/16 15:43 09:33-09:51/18
Potential sun hours	507	457	382	330	263	238
Sum of minutes with flicker	0	188	449	216	786	972

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:

Pawlowo_Golancz_miasto_07102010

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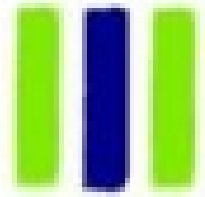
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

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12	08:00 08:32-08:46/14 15:59 08:32-08:46/13	07:16 15:51-16:21/30 16:56 17:49	06:15 17:49	06:02 19:05-19:17/12 19:44 20:37	05:00 20:37	04:26 05:08-05:35/27 21:16 21:16
13	07:59 08:33-08:46/13 16:01 08:33-08:46/13	07:14 15:51-16:21/30 16:58 17:50	06:13 17:50	06:00 19:05-19:19/14 19:46 20:38	04:58 20:38	04:26 05:09-05:36/27 21:17 21:17
14	07:58 08:33-08:46/13 16:02 08:33-08:46/12	07:12 15:51-16:21/30 17:00 17:52	06:10 17:52	05:57 19:06-19:21/15 19:48 20:40	04:57 20:40	04:26 05:09-05:36/27 21:18 21:18
15	07:58 08:34-08:46/12 16:04 08:34-08:46/10	07:10 15:51-16:21/30 17:01 17:54	06:08 17:54	05:55 19:07-19:22/15 19:49 20:41	04:55 20:41	04:25 05:10-05:36/26 21:18 21:18
16	07:57 08:36-08:46/10 16:06 08:36-08:46/10	07:08 15:50-16:20/30 17:03 17:56	06:06 17:56	05:53 19:08-19:24/16 19:51 20:43	04:53 20:43	04:25 05:10-05:37/27 21:19 21:19
17	07:56 08:37-08:45/8 16:07 08:37-08:45/8	07:06 15:51-16:20/29 17:05 17:58	06:03 17:58	05:50 19:08-19:25/17 19:53 20:45	04:52 20:45	04:25 05:10-05:37/27 21:19 21:19
18	07:55 08:39-08:43/4 16:09 08:39-08:43/4	07:04 15:51-16:19/28 17:07 17:59	06:01 17:59	05:48 19:09-19:24/15 19:55 20:46	04:50 20:46	04:25 05:10-05:37/27 21:20 21:20
19	07:54 08:39-08:43/4 16:11 08:39-08:43/4	07:02 15:52-16:19/27 17:09 18:01	05:59 18:01	05:46 19:10-19:23/13 19:56 20:48	04:49 20:48	04:25 05:10-05:37/27 21:20 21:20
20	07:53 08:39-08:43/4 16:12 08:39-08:43/4	07:00 15:53-16:18/25 17:11 18:03	05:56 18:03	05:44 19:12-19:21/9 19:58 20:49	04:47 20:49	04:25 05:11-05:37/26 21:20 21:20
21	07:51 08:39-08:43/4 16:14 08:39-08:43/4	06:58 15:55-16:17/22 17:13 18:05	05:54 18:05	05:42 19:12-19:21/9 20:00 20:51	04:46 20:51	04:25 05:11-05:37/26 21:20 21:20
22	07:50 08:39-08:43/4 16:16 08:39-08:43/4	06:56 15:55-16:14/19 17:15 18:07	05:51 18:07	05:39 19:12-19:21/9 20:02 20:52	04:44 20:52	04:25 05:11-05:37/26 21:21 21:21
23	07:49 08:39-08:43/4 16:18 08:39-08:43/4	06:54 15:58-16:12/14 17:17 18:08	05:49 18:08	05:37 19:12-19:21/9 20:04 20:54	04:43 20:54	04:26 05:11-05:38/27 21:21 21:21
24	07:48 08:39-08:43/4 16:19 08:39-08:43/4	06:52 16:02-16:09/7 17:19 18:10	05:47 18:10	05:35 19:12-19:21/9 20:05 20:55	04:42 20:55	04:26 05:11-05:38/27 21:21 21:21
25	07:46 15:47-15:49/2 16:21 15:47-15:49/2	06:49 17:21 17:21 18:12	05:44 18:12	05:33 19:12-19:21/9 20:07 20:57	04:41 20:57	04:26 05:11-05:38/27 21:21 21:21
26	07:45 15:46-15:51/5 16:23 15:46-15:51/5	06:47 17:22 17:22 18:14	05:42 18:14	05:31 19:12-19:21/9 20:09 20:58	04:39 20:58	04:27 05:12-05:39/27 21:21 21:21
27	07:44 15:45-15:52/7 16:25 15:45-15:52/7	06:45 17:24 17:24 18:16	05:39 18:16	05:29 19:12-19:21/9 20:11 20:59	04:38 20:59	04:27 05:12-05:39/27 21:21 21:21
28	07:42 15:45-15:55/10 16:27 15:45-15:55/10	06:43 17:26 17:26 18:17	05:37 18:17	05:27 19:12-19:21/9 20:12 21:01	04:37 21:01	04:28 05:12-05:39/27 21:21 21:21
29	07:41 15:44-15:57/13 16:29 15:44-15:57/13	06:41 17:29 17:29 18:19	05:35 18:19	05:25 19:12-19:21/9 20:14 21:02	04:36 21:02	04:28 05:12-05:39/27 21:21 21:21
30	07:39 15:44-15:59/15 16:31 15:44-15:59/15	06:39 17:31 17:31 18:21	05:33 18:21	05:23 19:12-19:21/9 20:16 21:03	04:35 21:03	04:29 05:13-05:40/27 21:20 21:20
31	07:38 15:44-16:02/18 16:32 15:44-16:02/18	06:37 17:33 17:33 18:23	05:31 18:23	05:21 19:12-19:21/9 20:18 21:04	04:34 21:04	04:29 05:13-05:40/27 21:20 21:20
Potential sun hours	254	275	367	418	490	505
Sum of minutes with flicker	472	594	6	187	250	808

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:

Pawlowo_Golancz_miasto_07102010

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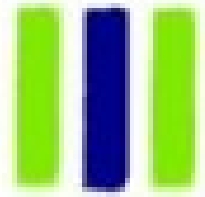
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal**WTG:** 2 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	04:29 05:12-05:39/27	05:08 20:47	06:00 19:04-19:14/10	06:51 18:31	06:47 15:21-15:49/28	07:40 08:14-08:28/14
2	04:30 05:13-05:40/27	05:09 20:45	06:01 19:04-19:12/8	06:53 18:28	06:49 15:22-15:49/27	07:42 08:15-08:28/13 14:39-14:43/4
3	04:31 05:13-05:40/27	05:11 20:43	06:03 19:04-19:10/6	06:54 18:26	06:51 15:21-15:48/27	07:43 08:17-08:29/12 14:38-14:45/7
4	04:32 05:13-05:41/28	05:12 20:41	06:05 19:03-19:07/4	06:56 18:23	06:53 15:19-15:46/27	07:44 08:18-08:29/11 14:37-14:46/9
5	04:33 05:13-05:40/27	05:14 20:39	06:07 19:04-19:06/2	06:58 18:21	06:55 15:17-15:44/27	07:46 08:20-08:41/21
6	04:33 05:13-05:40/27	05:16 20:38	06:08 19:30	07:00 18:19	06:56 15:16-15:42/26	07:47 08:21-08:41/20
7	04:34 05:13-05:41/28	05:17 20:36	06:10 19:28	07:01 18:16	06:58 15:16-15:40/24	07:48 08:23-08:43/20
8	04:35 05:14-05:41/27	05:19 20:34	06:12 18:49-18:57/8	07:03 18:14	07:00 15:15-15:38/23	07:50 08:24-08:43/19
9	04:36 05:14-05:41/27	05:21 20:32	06:13 18:48-18:56/8	07:05 18:12	07:02 15:15-15:34/19	07:51 08:25-08:44/19
10	04:37 05:14-05:41/27	05:22 20:30	06:15 18:46-18:53/7	07:07 18:09	07:04 15:15-15:34/19	07:52 08:26-08:44/18
11	04:38 05:15-05:41/26	05:24 20:28	06:17 18:45-18:51/6	07:09 18:07	07:06 15:15-15:32/17	07:53 08:28-08:45/17
12	04:40 05:15-05:41/26	05:26 20:26	06:18 18:44-18:48/4	07:10 18:05	07:08 15:16-15:30/14	07:54 08:29-08:46/17
13	04:41 05:15-05:41/26	05:27 20:24	06:20 18:44-18:46/2	07:12 18:02	07:09 15:16-15:29/13	07:55 08:30-08:46/16
14	04:42 05:15-05:41/26	05:29 20:22	06:22 19:11	07:14 18:00	07:11 15:17-15:27/10	07:56 08:31-08:47/16
15	04:43 05:16-05:40/24	05:31 20:20	06:24 19:09	07:16 17:58	07:13 15:17-15:25/8	07:57 08:32-08:47/15
16	04:44 05:17-05:41/24	05:33 20:18	06:25 19:07	07:18 17:56	07:15 15:18-15:24/6	07:58 08:33-08:48/15
17	04:46 05:17-05:40/23	05:34 20:16	06:27 19:04	07:19 17:53	07:17 15:20-15:22/2	07:59 08:33-08:48/15
18	04:47 05:18-05:40/22	05:36 20:14	06:29 19:02	07:21 17:51	07:18 15:24	08:00 08:34-08:49/15
19	04:48 05:19-05:39/20	05:38 20:11	06:30 18:59	07:23 17:49	07:20 15:52	08:00 08:35-08:49/14
20	04:50 05:21-05:39/18	05:39 20:09	06:32 18:57	07:25 17:47	07:22 15:51	08:01 08:35-08:49/14
21	04:51 05:22-05:38/16	05:41 20:07	06:34 18:55	07:27 17:45	07:24 15:50	08:02 08:36-08:50/14
22	04:52 05:23-05:37/14	05:43 19:19-19:21/2	06:35 18:52	07:28 17:43	07:25 15:48	08:02 08:36-08:50/14
23	04:54 05:25-05:36/11	05:44 19:15-19:25/10	06:37 18:50	07:30 17:40	07:27 15:47	08:03 08:37-08:51/14
24	04:55 05:26-05:34/8	05:46 19:14-19:27/13	06:39 18:47	07:32 17:38	07:29 15:46	08:03 08:37-08:51/14
25	04:57 05:27-05:31/4	05:48 19:12-19:27/15	06:41 18:45	07:34 17:36	07:31 15:45	08:04 08:37-08:51/14
26	04:58 05:50	05:50 19:11-19:28/17	06:42 18:42	07:36 17:34	07:32 15:44	08:04 08:38-08:53/15
27	05:00 05:55	05:51 19:09-19:25/16	06:44 18:40	07:38 17:32	07:34 15:43	08:04 08:38-08:53/15
28	05:01 05:53	05:53 19:09-19:23/14	06:46 18:38	07:40 17:30	07:35 15:42	08:04 08:38-08:53/15
29	05:03 05:52	05:55 19:07-19:21/14	06:47 18:35	07:42 17:28	07:37 15:41	08:04 08:38-08:54/16
30	05:04 05:50	05:56 19:05-19:19/14	06:49 18:33	07:44 17:26	07:39 15:40	08:05 08:38-08:54/16
31	05:06 05:48	05:58 19:05-19:17/12	06:51 18:31	07:46 17:24	07:41 15:39	08:05 08:38-08:55/17
Potential sun hours	507	457	382	330	263	238
Sum of minutes with flicker	560	127	65	359	390	1031

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:

Pawlowo_Golancz_miasto_07102010

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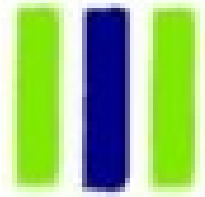
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 3 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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
 The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	08:04	07:36	06:40	06:28 18:13-18:49/36	05:20	04:33
	15:45	16:34	17:28	19:24	20:18	21:06
2	08:04 08:37-08:39/2	07:34	06:38	06:25 18:12-18:48/36	05:18	04:32
	15:46	16:36	17:30	19:26	20:19	21:07
3	08:04 08:37-08:39/2	07:33	06:36	06:23 18:12-18:48/36	05:16	04:31
	15:47	16:38	17:32	19:28	20:21	21:08
4	08:04 08:36-08:39/3	07:31	06:34	06:20 18:12-18:47/35	05:15	04:30
	15:48	16:40	17:34	19:30	20:23	21:09
5	08:04 08:36-08:40/4	07:29	06:31	06:18 18:12-18:46/34	05:13	04:30
	15:49	16:42	17:36	19:32	20:25	21:10
6	08:03 08:35-08:40/5	07:27	06:29	06:16 06:39-06:41/2	05:11	04:29
	15:51	16:44	17:37	19:33 18:13-18:45/32	20:26	21:11
7	08:03 08:35-08:41/6	07:26	06:27	06:13 06:37-06:42/5	05:09	04:28
	15:52	16:46	17:39	19:35 18:14-18:45/31	20:28	21:12
8	08:02 08:34-08:40/6	07:24	06:24	06:11 06:34-06:42/8	05:07	04:28
	15:53	16:48	17:41	19:37 18:14-18:43/29	20:30	21:13
9	08:02 08:33-08:40/7	07:22	06:22	06:09 06:32-06:42/10	05:05	04:27
	15:55	16:50	17:43	19:39 18:15-18:41/26	20:31	21:14
10	08:01 08:33-08:41/8	07:20	06:20 17:17-17:19/2	06:06 06:30-06:43/13	05:03	04:27
	15:56	16:52	17:45	19:40 18:17-18:40/23	20:33	21:15
11	08:01 08:33-08:41/8	07:18	06:17 17:15-17:21/6	06:04 06:27-06:42/15	05:02 05:28-05:31/3	04:26
	15:58	16:54	17:47	19:42 18:18-18:37/19	20:35	21:15
12	08:00 08:34-08:40/6	07:16	06:15 17:13-17:22/9	06:02 06:25-06:42/17	05:00 05:26-05:31/5	04:26
	15:59	16:56	17:48	19:44 18:21-18:34/13	20:36	21:16
13	07:59 08:36-08:38/2	07:14	06:13 17:13-17:24/11	05:59 06:26-06:41/15	04:58 05:25-05:32/7	04:26
	16:01	16:58	17:50	19:46	20:38	21:17
14	07:58 08:29-08:31/2	07:12	06:10 17:12-17:26/14	05:57 06:26-06:40/14	04:57 05:23-05:32/9	04:26
	16:02	16:59	17:52	19:48	20:40	21:17
15	07:58 08:28-08:31/3	07:10	06:08 17:11-17:28/17	05:55 06:28-06:39/11	04:55 05:22-05:33/11	04:25
	16:04	17:01	17:54	19:49	20:41	21:18
16	07:57 08:27-08:31/4	07:08	06:06 17:11-17:30/19	05:53 06:16-06:18/2	04:53 05:20-05:33/13	04:25
	16:06	17:03	17:56	19:51 06:28-06:36/8	20:43	21:19
17	07:56 08:26-08:31/5	07:06	06:03 17:10-17:31/21	05:50 06:14-06:20/6	04:52 05:19-05:33/14	04:25
	16:07	17:05	17:58	19:53	20:45	21:19
18	07:55 08:24-08:30/6	07:04	06:01 17:11-17:31/20	05:48 06:12-06:21/9	04:50 05:18-05:34/16	04:25
	16:09	17:07	17:59 17:32-17:34/2	19:55	20:46	21:19
19	07:54 08:23-08:30/7	07:02	05:59 17:12-17:36/24	05:46 06:10-06:22/12	04:49 05:16-05:33/17	04:25
	16:11	17:09	18:01	19:56	20:48	21:20
20	07:53 08:22-08:30/8	07:00	05:56 17:12-17:37/25	05:44 06:08-06:23/15	04:47 05:17-05:33/16	04:25
	16:12	17:11	18:03	19:58	20:49	21:20
21	07:51 08:20-08:23/3	06:58	05:54 17:14-17:39/25	05:42 06:06-06:23/17	04:46 05:18-05:33/15	04:25
	16:14	17:13	18:05	20:00	20:51	21:20
22	07:50 08:19-08:24/5	06:56	05:51 17:15-17:40/25	05:39 06:03-06:22/19	04:44 05:19-05:33/14	04:25
	16:16	17:15	18:07	20:02	20:52	21:21
23	07:49 08:18-08:24/6	06:54	05:49 17:20-17:42/22	05:37 06:03-06:22/19	04:43 05:18-05:31/13	04:26
	16:18	17:17	18:08	20:04	20:54	21:21
24	07:48 08:16-08:22/6	06:52	05:47 17:19-17:45/26	05:35 06:03-06:22/19	04:42 05:19-05:31/12	04:26
	16:19	17:19	18:10	20:05	20:55	21:21
25	07:46 08:18-08:21/3	06:49	05:44 17:18-17:46/28	05:33 06:03-06:21/18	04:41 05:20-05:30/10	04:26
	16:21	17:21	18:12	20:07	20:57	21:21
26	07:45	06:47	05:42 17:17-17:48/31	05:31 06:03-06:20/17	04:39 05:22-05:29/7	04:27
	16:23	17:22	18:14	20:09	20:58	21:21
27	07:44	06:45	05:39 17:15-17:48/33	05:29 06:04-06:19/15	04:38	04:27
	16:25	17:24	18:16	20:11	20:59	21:21
28	07:42	06:43	05:37 17:15-17:49/34	05:27 06:05-06:18/13	04:37	04:28
	16:27	17:26	18:17	20:12	21:01	21:21
29	07:41		06:35 18:14-18:49/35	05:25 06:07-06:16/9	04:36	04:28
	16:29		19:19	20:14	21:02	21:21
30	07:39		06:32 18:13-18:49/36	05:22	04:35	04:29
	16:31		19:21	20:16	21:03	21:20
31	07:38		06:30 18:13-18:49/36		04:34	
	16:32		19:23		21:04	
Potential sun hours	254	275	367	418	490	505
Sum of minutes with flicker	117	0	501	658	182	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:

Pawlowo_Golancz_miasto_07102010

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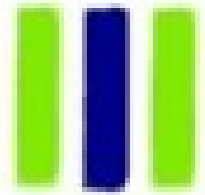
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 3 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	04:29 21:20	05:08 05:37-05:41/4 20:47	06:00 06:27-06:42/15 19:42 18:17-18:36/19	06:51 17:53-18:03/10 18:31	06:47 16:22	07:40 08:15-08:23/8 15:40
2	04:30 21:20	05:09 05:39-05:41/2 20:45	06:01 06:28-06:41/13 19:40 18:15-18:38/23	06:53 17:53-18:00/7 18:28	06:49 16:20	07:42 08:15-08:23/8 15:39
3	04:31 21:19	05:11 20:43	06:03 06:30-06:40/10 19:38 18:13-18:39/26	06:54 17:54-17:57/3 18:26	06:51 16:18	07:43 08:17-08:24/7 15:38
4	04:32 21:19	05:12 20:41	06:05 06:31-06:39/8 19:35 18:11-18:40/29	06:56 18:23	06:53 16:16	07:44 08:18-08:24/6 15:38
5	04:33 21:18	05:14 20:39	06:07 06:33-06:38/5 19:33 18:10-18:41/31	06:58 18:21	06:54 16:15	07:46 08:20-08:26/6 15:37
6	04:33 21:18	05:16 20:38	06:08 06:35-06:37/2 19:30 18:09-18:41/32	07:00 18:19	06:56 16:13	07:47 08:21-08:26/5 15:37
7	04:34 21:17	05:17 20:36	06:10 18:08-18:41/33 19:28	07:01 18:16	06:58 16:11	07:48 08:23-08:27/4 15:36
8	04:35 21:17	05:19 20:34	06:12 18:07-18:42/35 19:26	07:03 18:14	07:00 16:09	07:50 08:24-08:27/3 15:36
9	04:36 21:16	05:21 20:32	06:13 18:07-18:42/35 19:23	07:05 18:12	07:02 16:07	07:51 08:25-08:27/2 15:35
10	04:37 21:15	05:22 20:30	06:15 18:05-18:41/36 19:21	07:07 18:09	07:04 16:06	07:52 08:26-08:28/2 15:35
11	04:38 21:14	05:24 20:28	06:17 18:05-18:41/36 19:19	07:09 18:07	07:06 16:04	07:53 08:28-08:30/2 15:35
12	04:40 21:13	05:26 20:26	06:18 18:04-18:40/36 19:16	07:10 18:05	07:08 16:03	07:54 08:46-08:48/2 15:35
13	04:41 21:12	05:27 06:18-06:21/3 20:24	06:20 18:04-18:40/36 19:14	07:12 18:02	07:09 16:01	07:55 08:45-08:50/5 15:35
14	04:42 21:11	05:29 06:15-06:25/10 20:22	06:22 18:05-18:40/35 19:11	07:14 18:00	07:11 15:59	07:56 08:45-08:51/6 15:35
15	04:43 21:10	05:31 06:12-06:26/14 20:20	06:23 18:04-18:38/34 19:09	07:16 17:58	07:13 15:58	07:57 08:45-08:52/7 15:35
16	04:44 21:09	05:32 06:11-06:27/16 20:18	06:25 18:05-18:38/33 19:07	07:17 17:56	07:15 15:56	07:58 08:45-08:53/8 15:35
17	04:46 05:32-05:37/5 21:08	05:34 06:10-06:27/17 20:16	06:27 18:05-18:37/32 19:04	07:19 17:53	07:17 07:51-07:54/3 15:55	07:59 08:44-08:53/9 15:35
18	04:47 05:31-05:39/8 21:07	05:36 06:09-06:28/19 20:14	06:29 18:05-18:34/29 19:02	07:21 17:51	07:18 07:50-07:56/6 15:54	08:00 08:45-08:54/9 15:35
19	04:48 05:29-05:40/11 21:06	05:38 06:09-06:28/19 20:11	06:30 18:06-18:32/26 18:59	07:23 17:49	07:20 07:52-07:58/6 15:52	08:00 08:46-08:55/9 15:36
20	04:50 05:29-05:42/13 21:05	05:39 06:08-06:28/20 20:09	06:32 18:06-18:29/23 18:57	07:25 17:47	07:22 07:54-07:59/5 15:51	08:01 08:45-08:55/10 15:36
21	04:51 05:28-05:42/14 21:03	05:41 06:09-06:28/19 20:07	06:34 18:02-18:26/24 18:55	07:27 17:45	07:24 07:56-07:59/3 15:50	08:02 08:46-08:56/10 15:36
22	04:52 05:28-05:42/14 21:02	05:43 06:10-06:27/17 20:05	06:35 17:59-18:24/25 18:52	07:28 17:43	07:25 07:58-08:06/8 15:48	08:02 08:46-08:56/10 15:37
23	04:54 05:28-05:43/15 21:01	05:44 06:12-06:26/14 20:03	06:37 17:57-18:22/25 18:50	07:30 17:40	07:27 08:00-08:07/7 15:47	08:03 08:47-08:57/10 15:37
24	04:55 05:27-05:43/16 20:59	05:46 06:14-06:26/12 20:00	06:39 17:56-18:20/24 18:47	07:32 17:38	07:29 08:02-08:08/6 15:46	08:03 08:47-08:57/10 15:38
25	04:57 05:27-05:43/16 20:58	05:48 06:15-06:24/9 19:58	06:41 17:54-18:17/23 18:45	06:34 16:36	07:31 08:03-08:08/5 15:45	08:04 08:48-08:57/9 15:38
26	04:58 05:29-05:44/15 20:56	05:49 06:17-06:22/5 19:56	06:42 17:53-18:14/21 18:42	06:36 16:34	07:32 08:05-08:09/4 15:44	08:04 08:49-08:58/9 15:39
27	05:00 05:30-05:44/14 20:55	05:51 06:18-06:20/2 19:54	06:44 17:53-18:12/19 18:40	06:38 16:32	07:34 08:07-08:10/3 15:43	08:04 08:50-08:58/8 15:40
28	05:01 05:32-05:44/12 20:53	05:53 06:28-06:40/12 19:51	06:46 17:52-18:09/17 18:38	06:40 16:30	07:35 08:09-08:11/2 15:42	08:04 08:50-08:58/8 15:41
29	05:03 05:33-05:43/10 20:52	05:55 06:27-06:41/14 19:49	06:47 17:52-18:07/15 18:35	06:41 16:28	07:37 08:16-08:18/2 15:41	08:04 08:51-08:58/7 15:42
30	05:04 05:34-05:43/9 20:50	05:56 06:26-06:41/15 19:47	06:49 17:52-18:05/13 18:33	06:43 16:26	07:39 08:15-08:21/6 15:40	08:04 08:52-08:58/6 15:43
31	05:06 05:36-05:43/7 20:48	05:58 06:25-06:42/17 19:45	06:45 18:21-18:34/13	06:45 16:24	15:40 15:43	08:05 08:54-08:57/3 15:43
Potential sun hours	507	457	382	330	263	238
Sum of minutes with flicker	179	281	878	20	66	208

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:

Pawlowo_Golancz_miasto_07102010

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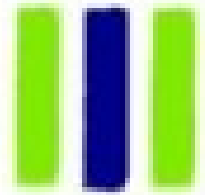
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 4 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	08:04	07:36	06:40 15:50-16:36/46	06:28 06:51-07:09/18	05:20	04:33
	15:45	16:34	17:28	19:24	20:18	21:06
2	08:04	07:34	06:38 15:52-16:35/43	06:25 06:50-07:08/18	05:18	04:32
	15:46	16:36	17:30	19:26	20:19	21:07
3	08:04	07:33	06:36 15:54-16:33/39	06:23 06:51-07:07/16	05:16	04:31
	15:47	16:38	17:32	19:28	20:21	21:08
4	08:04	07:31	06:34 15:56-16:14/18	06:20 06:52-07:06/14	05:15	04:30
	15:48	16:40	17:34 16:15-16:30/15	19:30	20:23	21:09
5	08:04	07:29	06:31 16:00-16:10/10	06:18 06:52-07:04/12	05:13	04:30
	15:49	16:42	17:36 16:19-16:26/7	19:32	20:25	21:10
6	08:03	07:27 16:03-16:11/8	06:29	06:16 06:55-07:01/6	05:11	04:29
	15:51	16:44	17:37	19:33	20:26	21:11
7	08:03	07:26 15:59-16:15/16	06:27	06:13	05:09	04:28
	15:52	16:46	17:39	19:35	20:28	21:12
8	08:02	07:24 15:56-16:17/21	06:24	06:11	05:07	04:28
	15:53	16:48	17:41	19:37	20:30	21:13
9	08:02	07:22 15:54-16:19/25	06:22	06:09	05:05	04:27
	15:55	16:50	17:43	19:39	20:31	21:14
10	08:01	07:20 15:53-16:21/28	06:20	06:06	05:03	04:27
	15:56	16:52	17:45	19:40	20:33	21:15
11	08:01	07:18 15:52-16:25/33	06:17	06:04	05:02	04:26
	15:58	16:54	17:47	19:42	20:35	21:15
12	08:00	07:16 15:51-16:27/36	06:15	06:02	05:00	04:26
	15:59	16:56	17:48	19:44	20:36	21:16
13	07:59	07:14 15:50-16:29/39	06:13	05:59	04:58	04:26
	16:01	16:58	17:50	19:46	20:38	21:17
14	07:58	07:12 15:49-16:31/42	06:10	05:57	04:57	04:26
	16:02	16:59	17:52	19:48	20:40	21:17
15	07:58	07:10 15:49-16:33/44	06:08	05:55	04:55	04:25
	16:04	17:01	17:54	19:49	20:41	21:18
16	07:57	07:08 15:47-16:35/48	06:06	05:53	04:53	04:25
	16:06	17:03	17:56	19:51	20:43	21:19
17	07:56	07:06 15:47-16:37/50	06:03	05:50	04:52	04:25
	16:07	17:05	17:58	19:53	20:45	21:19
18	07:55	07:04 15:47-16:39/52	06:01	05:48	04:50	04:25
	16:09	17:07	17:59	19:55	20:46	21:19
19	07:54	07:02 15:47-16:41/54	05:59	05:46 06:10-06:13/3	04:49	04:25
	16:11	17:09	18:01	19:56	20:48	21:20
20	07:53	07:00 15:47-16:44/57	05:56	05:44 06:08-06:14/6	04:47	04:25
	16:12	17:11	18:03	19:58	20:49	21:20
21	07:51	06:58 15:47-16:44/57	05:54 06:17-06:20/3	05:42 06:06-06:15/9	04:46	04:25
	16:14	17:13	18:05	20:00	20:51	21:20
22	07:50	06:56 15:46-16:43/57	05:51 06:15-06:22/7	05:39 06:03-06:14/11	04:44	04:25
	16:16	17:15	18:07	20:02	20:52	21:21
23	07:49	06:54 15:47-16:42/55	05:49 06:12-06:21/9	05:37 06:01-06:14/13	04:43	04:26
	16:18	17:17	18:08	20:04	20:54	21:21
24	07:48	06:52 15:47-16:41/54	05:47 06:10-06:22/12	05:35 05:59-06:14/15	04:42	04:26
	16:19	17:19	18:10	20:05	20:55	21:21
25	07:46	06:49 15:48-16:40/52	05:44 06:07-06:21/14	05:33 05:59-06:14/15	04:41	04:26
	16:21	17:21	18:12	20:07	20:57	21:21
26	07:45	06:47 15:48-16:39/51	05:42 06:06-06:20/14	05:31 05:59-06:13/14	04:39	04:27
	16:23	17:22	18:14	20:09	20:58	21:21
27	07:44	06:45 15:49-16:38/49	05:39 06:03-06:20/17	05:29 06:00-06:12/12	04:38	04:27
	16:25	17:24	18:16	20:11	20:59	21:21
28	07:42	06:43 15:50-16:38/48	05:37 06:00-06:17/17	05:27 06:01-06:10/9	04:37	04:28
	16:27	17:26	18:17	20:12	21:01	21:21
29	07:41		06:35 06:58-07:09/11	05:25 06:04-06:06/2	04:36	04:28
	16:29		19:19 07:10-07:14/4	20:14	21:02	21:21
30	07:39		06:32 06:55-07:08/13	05:22	04:35	04:29
	16:31		19:21	20:16	21:03	21:20
31	07:38		06:30 06:53-07:09/16		04:34	
	16:32		19:23		21:04	
Potential sun hours	254	275	367	418	490	505
Sum of minutes with flicker	0	976	315	193	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:

Pawlowo_Golancz_miasto_07102010

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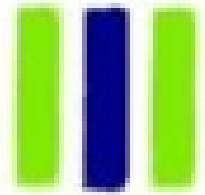
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 4 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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
 The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	04:29	05:08	06:00	06:51	06:47 15:23-15:50/27	07:40
	21:20	20:47	19:42	18:31	16:22	15:40
2	04:30	05:09	06:01	06:53	06:49 15:24-15:48/24	07:42
	21:20	20:45	19:40	18:28	16:20	15:39
3	04:31	05:11	06:03	06:54	06:51 15:26-15:47/21	07:43
	21:19	20:43	19:38	18:26	16:18	15:38
4	04:32	05:12	06:05	06:56	06:53 15:29-15:44/15	07:44
	21:19	20:41	19:35	18:23	16:16	15:38
5	04:33	05:14	06:07	06:58	06:54 15:33-15:39/6	07:46
	21:18	20:39	19:33	18:21	16:15	15:37
6	04:33	05:16	06:08 06:51-06:57/6	07:00	06:56	07:47
	21:18	20:38	19:30	18:19	16:13	15:37
7	04:34	05:17	06:10 06:48-06:59/11	07:01	06:58	07:48
	21:17	20:36	19:28	18:16	16:11	15:36
8	04:35	05:19	06:12 06:46-07:00/14	07:03	07:00	07:50
	21:16	20:34	19:26	18:14	16:09	15:36
9	04:36	05:21	06:13 06:45-07:01/16	07:05 16:33-16:48/15	07:02	07:51
	21:16	20:32	19:23	18:12 16:51-17:04/13	16:07	15:35
10	04:37	05:22	06:15 06:44-07:01/17	07:07 16:30-17:06/36	07:04	07:52
	21:15	20:30	19:21	18:09	16:06	15:35
11	04:38	05:24	06:17 06:43-07:01/18	07:08 16:27-17:08/41	07:06	07:53
	21:14	20:28	19:19	18:07	16:04	15:35
12	04:40	05:26	06:18 06:45-07:01/16	07:10 16:26-17:09/43	07:08	07:54
	21:13	20:26	19:16	18:05	16:03	15:35
13	04:41	05:27	06:20 06:46-07:00/14	07:12 16:23-17:09/46	07:09	07:55
	21:12	20:24	19:14	18:02	16:01	15:35
14	04:42	05:29 06:11-06:16/5	06:22 06:48-06:59/11	07:14 16:22-17:10/48	07:11	07:56
	21:11	20:22	19:11 07:02-07:04/2	18:00	15:59	15:35
15	04:43	05:31 06:08-06:18/10	06:23 06:50-07:07/17	07:16 16:21-17:11/50	07:13	07:57
	21:10	20:20	19:09	17:58	15:58	15:35
16	04:44	05:32 06:07-06:19/12	06:25 06:51-06:55/4	07:17 16:20-17:11/51	07:15	07:58
	21:09	20:18	19:07 06:56-07:08/12	17:56	15:56	15:35
17	04:46	05:34 06:05-06:20/15	06:27 06:55-07:09/14	07:19 16:19-17:12/53	07:17	07:59
	21:08	20:16	19:04	17:53	15:55	15:35
18	04:47	05:36 06:05-06:20/15	06:29 06:55-07:09/14	07:21 16:18-17:13/55	07:18	08:00
	21:07	20:13	19:02	17:51	15:54	15:35
19	04:48	05:38 06:06-06:21/15	06:30 06:56-07:08/12	07:23 16:18-17:14/56	07:20	08:00
	21:06	20:11	18:59	17:49	15:52	15:36
20	04:50	05:39 06:07-06:20/13	06:32 06:58-07:08/10	07:25 16:18-17:14/56	07:22	08:01
	21:05	20:09	18:57	17:47	15:51	15:36
21	04:51	05:41 06:09-06:20/11	06:34 07:00-07:07/7	07:27 16:17-17:14/57	07:24	08:02
	21:03	20:07	18:54	17:45	15:50	15:36
22	04:52	05:43 06:10-06:19/9	06:35 07:01-07:05/4	07:28 16:17-17:13/56	07:25	08:02
	21:02	20:05	18:52	17:43	15:48	15:37
23	04:54	05:44 06:12-06:18/6	06:37	07:30 16:17-17:11/54	07:27	08:03
	21:01	20:03	18:50	17:40	15:47	15:37
24	04:55	05:46 06:14-06:17/3	06:39	07:32 16:17-17:09/52	07:29	08:03
	20:59	20:00	18:47	17:38	15:46	15:38
25	04:57	05:48	06:41	06:34 15:18-16:07/49	07:31	08:03
	20:58	19:58	18:45	16:36	15:45	15:38
26	04:58	05:49	06:42	06:36 15:18-16:05/47	07:32	08:04
	20:56	19:56	18:42	16:34	15:44	15:39
27	05:00	05:51	06:44	06:38 15:18-16:02/44	07:34	08:04
	20:55	19:54	18:40	16:32	15:43	15:40
28	05:01	05:53	06:46	06:40 15:19-16:00/41	07:35	08:04
	20:53	19:51	18:38	16:30	15:42	15:41
29	05:03	05:55	06:47	06:41 15:20-15:58/38	07:37	08:04
	20:52	19:49	18:35	16:28	15:41	15:42
30	05:04	05:56	06:49	06:43 15:21-15:56/35	07:39	08:04
	20:50	19:47	18:33	16:26	15:40	15:43
31	05:06	05:58		06:45 15:22-15:52/30		08:04
	20:48	19:44		16:24		15:43
Potential sun hours	507	457	382	330	263	238
Sum of minutes with flicker	0	114	219	1066	93	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:

Pawlowo_Golancz_miasto_07102010

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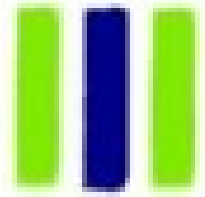
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 5 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June
1	08:04 13:56-15:01/65 15:45	07:36 06:40 16:34 17:28		06:28 06:51-06:56/5 19:24	05:20 20:18	04:33 21:06
2	08:04 13:57-15:02/65 15:46	07:34 06:38 16:36 17:30		06:25 06:48-06:56/8 19:26	05:18 20:19	04:32 21:07
3	08:04 13:58-15:03/65 15:47	07:33 06:36 16:38 17:32		06:23 06:46-06:56/10 19:28	05:16 20:21	04:31 21:08
4	08:04 13:58-15:03/65 15:48	07:31 06:34 16:40 17:34		06:20 06:44-06:56/12 19:30	05:15 20:23	04:31 21:09
5	08:04 13:59-15:04/65 15:49	07:29 06:31 16:42 17:36		06:18 06:41-06:55/14 19:32	05:13 20:25	04:30 21:10
6	08:03 13:59-15:04/65 15:51 15:13-15:15/2	07:27 06:29 06:53-06:55/2 16:44 17:37		06:16 06:42-06:54/12 19:33	05:11 20:26	04:29 21:11
7	08:03 14:00-14:32/32 15:14-15:17/3 15:52 14:33-15:05/32	07:26 06:27 06:50-06:54/4 16:46 17:39		06:13 06:43-06:53/10 19:35	05:09 20:28	04:28 21:12
8	08:02 14:01-14:32/31 15:13-15:18/5 15:53 14:33-15:05/32	07:24 06:24 06:48-06:55/7 16:48 17:41		06:11 06:45-06:49/4 19:37	05:07 20:30	04:28 21:13
9	08:02 14:01-14:32/31 15:13-15:19/6 15:55 14:33-15:05/32	07:22 06:22 06:46-06:55/9 16:50 17:43		06:09 19:39	05:05 20:31	04:27 21:14
10	08:01 14:02-14:32/30 15:13-15:21/8 15:56 14:33-15:05/32	07:20 06:20 06:43-06:54/11 16:52 17:45		06:06 19:40	05:03 20:33	04:27 21:15
11	08:01 14:04-14:32/28 15:13-15:23/10 15:58 14:35-15:06/31	07:18 06:17 06:41-06:53/12 16:54 17:47		06:04 19:42	05:02 20:35	04:26 21:15
12	08:00 14:05-14:32/27 15:13-15:25/12 15:59 14:35-15:06/31	07:16 06:15 06:39-06:52/13 16:56 17:48		06:02 19:44	05:00 20:36	04:26 21:16
13	07:59 14:06-14:32/26 15:13-15:26/13 16:01 14:35-15:06/31	07:14 06:13 06:36-06:49/13 16:58 17:50		05:59 19:46	04:58 20:38	04:26 21:17
14	07:58 14:07-14:31/24 15:13-15:28/15 16:02 14:36-15:06/30	07:12 06:10 06:34-06:48/14 16:59 17:52		05:57 19:48	04:57 20:40	04:26 21:17
15	07:58 14:08-14:31/23 15:14-15:30/16 16:04 14:37-15:07/30	07:10 06:08 06:32-06:47/15 17:01 17:54		05:55 19:49	04:55 20:41	04:25 21:18
16	07:57 14:10-14:30/20 15:14-15:32/18 16:06 14:38-15:07/29	07:08 06:06 06:33-06:46/13 17:03 17:56		05:53 19:51	04:53 20:43	04:25 21:19
17	07:56 14:11-14:28/17 15:13-15:33/20 16:07 14:38-15:06/28	07:06 06:03 06:35-06:45/10 17:05 17:58		05:50 19:53	04:52 20:45	04:25 21:19
18	07:55 14:13-14:27/14 15:14-15:35/21 16:09 14:39-15:06/27	07:04 06:01 06:36-06:41/5 17:07 17:59		05:48 19:55	04:50 20:46	04:25 21:19
19	07:54 14:17-14:25/8 15:14-15:37/23 16:11 14:40-15:06/26	07:02 05:59 17:09 18:01		05:46 19:56	04:49 20:48	04:25 21:20
20	07:53 14:41-15:06/25 16:12 15:15-15:38/23	07:00 05:56 17:11 18:03		05:44 19:58	04:47 20:49	04:25 21:20
21	07:51 14:42-15:05/23 16:14 15:15-15:37/22	06:58 05:54 17:13 18:05		05:42 20:00	04:46 20:51	04:25 21:20
22	07:50 14:43-15:04/21 16:16 15:15-15:38/23	06:56 05:51 17:15 18:07		05:39 20:02	04:44 20:52	04:25 21:21
23	07:49 14:44-15:03/19 16:18 15:15-15:37/22	06:54 05:49 17:17 18:08		05:37 20:04	04:43 20:54	04:26 21:21
24	07:48 14:47-15:02/15 16:19 15:17-15:38/21	06:52 05:47 17:19 18:10		05:35 20:05	04:42 20:55	04:26 21:21
25	07:46 14:49-14:59/10 16:21 15:17-15:37/20	06:49 05:44 17:21 18:12		05:33 20:07	04:41 20:57	04:26 21:21
26	07:45 15:19-15:37/18 16:23	06:47 05:42 17:22 18:14		05:31 20:09	04:39 20:58	04:27 21:21
27	07:44 15:19-15:36/17 16:25	06:45 05:39 17:24 18:16		05:29 20:11	04:38 20:59	04:27 21:21
28	07:42 15:21-15:35/14 16:27	06:43 05:37 17:26 18:17		05:27 20:12	04:37 21:01	04:28 21:21
29	07:41 15:23-15:34/11 16:29	06:35 19:19		05:25 20:14	04:36 21:02	04:28 21:21
30	07:39 15:27-15:30/3 16:31	06:32 19:21		05:22 20:16	04:35 21:03	04:29 21:20
31	07:38 16:32	06:30 06:53-06:55/2 19:23			04:34 21:04	
Potential sun hours	254	275	367	418	490	505
Sum of minutes with flicker	1571	0	130	75	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:

Pawlowo_Golancz_miasto_07102010

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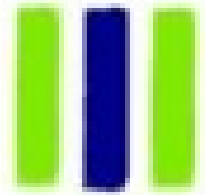
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 5 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	July	August	September	October	November	December
1	04:29 21:20	05:08 20:47	06:00 19:42	06:51 07:17-07:30/13 18:30	06:47 16:22	07:40 13:46-14:14/28 14:55-15:05/10 15:40 14:17-14:48/31
2	04:30 21:20	05:09 20:45	06:01 19:40	06:53 07:19-07:32/13 18:28	06:49 16:20	07:42 13:45-14:15/30 14:56-15:04/8 15:39 14:16-14:48/32
3	04:31 21:19	05:11 20:43	06:03 19:38	06:54 07:20-07:32/12 18:26	06:51 16:18	07:43 13:46-14:16/30 14:57-15:03/6 15:38 14:17-14:49/32
4	04:32 21:19	05:12 20:41	06:05 06:43-06:46/3 19:35	06:56 07:22-07:32/10 18:23	06:53 16:16	07:44 13:45-14:16/31 14:57-15:02/5 15:38 14:17-14:49/32
5	04:33 21:18	05:14 20:39	06:07 06:40-06:49/9 19:33	06:58 07:24-07:32/8 18:21	06:54 16:15	07:46 13:46-14:17/31 14:59-15:02/3 15:37 14:18-14:50/32
6	04:33 21:18	05:16 20:38	06:08 06:38-06:50/12 19:30	07:00 07:26-07:31/5 18:19	06:56 16:13	07:47 13:45-14:50/65 15:37 14:59-15:01/2
7	04:34 21:17	05:17 20:36	06:10 06:36-06:50/14 19:28	07:01 07:28-07:30/2 18:16	06:58 16:11	07:48 13:45-14:50/65 15:36
8	04:35 21:16	05:19 20:34	06:12 06:38-06:50/12 19:26	07:03 18:14	07:00 16:09	07:50 13:46-14:51/65 15:36
9	04:36 21:16	05:21 20:32	06:13 06:40-06:51/11 19:23	07:05 18:12	07:02 16:07	07:51 13:46-14:51/65 15:35
10	04:37 21:15	05:22 20:30	06:15 06:41-06:49/8 19:21	07:07 18:09	07:04 16:06	07:52 13:46-14:51/65 15:35
11	04:38 21:14	05:24 20:28	06:17 06:43-06:49/6 19:19	07:08 18:07	07:06 16:04	07:53 13:46-14:51/65 15:35
12	04:40 21:13	05:26 20:26	06:18 06:45-06:48/3 19:16	07:10 18:05	07:07 14:58-15:02/4 16:03	07:54 13:47-14:53/66 15:35
13	04:41 21:12	05:27 20:24	06:20 19:14	07:12 18:02	07:09 14:55-15:06/11 16:01	07:55 13:47-14:53/66 15:35
14	04:42 21:11	05:29 20:22	06:22 19:11	07:14 18:00	07:11 14:53-15:07/14 15:59	07:56 13:48-14:53/65 15:35
15	04:43 21:10	05:31 20:20	06:23 19:09	07:16 17:58	07:13 14:52-15:09/17 15:58	07:57 13:47-14:53/66 15:35
16	04:44 21:09	05:32 20:18	06:25 19:07	07:17 17:56	07:15 14:51-15:10/19 15:56	07:58 13:48-14:53/65 15:35
17	04:46 21:08	05:34 20:16	06:27 19:04	07:19 17:53	07:17 14:23-14:33/10 15:55 14:51-15:11/20	07:59 13:48-14:54/66 15:35
18	04:47 21:07	05:36 20:13	06:29 19:02	07:21 17:51	07:18 14:21-14:36/15 15:54 14:51-15:12/21	08:00 13:49-14:55/66 15:35
19	04:48 21:06	05:38 20:11	06:30 18:59	07:23 17:49	07:20 14:19-14:38/19 15:52 14:50-15:12/22	08:00 13:50-14:55/65 15:36
20	04:50 21:05	05:39 20:09	06:32 18:57	07:25 17:47	07:22 14:18-14:39/21 15:51 14:50-15:13/23	08:01 13:50-14:55/65 15:36
21	04:51 21:03	05:41 20:07	06:34 18:54	07:27 17:45	07:24 14:18-14:41/23 15:50 14:51-15:13/22	08:02 13:51-14:56/65 15:36
22	04:52 21:02	05:43 20:05	06:35 18:52	07:28 17:43	07:25 14:17-14:42/25 15:48 14:51-15:14/23	08:02 13:51-14:56/65 15:37
23	04:54 21:01	05:44 20:03	06:37 18:50	07:30 17:40	07:27 13:54-14:01/7 14:51-15:14/23 15:47 14:17-14:43/26	08:03 13:52-14:57/65 15:37
24	04:55 20:59	05:46 20:00	06:39 18:47	07:32 17:38	07:29 13:51-14:04/13 14:51-15:12/21 15:46 14:16-14:43/27	08:03 13:52-14:57/65 15:38
25	04:57 20:58	05:48 19:58	06:41 18:45	06:34 16:36	07:31 13:49-14:06/17 14:51-15:11/20 15:45 14:16-14:44/28	08:03 13:52-14:58/66 15:38
26	04:58 20:56	05:49 19:56	06:42 07:17-07:26/9 18:42	06:36 16:34	07:32 13:48-14:08/20 14:52-15:10/18 15:44 14:16-14:45/29	08:04 13:52-14:58/66 15:39
27	05:00 20:55	05:51 19:54	06:44 07:15-07:28/13 18:40	06:38 16:32	07:34 13:48-14:10/22 14:53-15:09/16 15:43 14:16-14:46/30	08:04 13:54-14:59/65 15:40
28	05:01 20:53	05:53 19:51	06:46 07:14-07:29/15 18:38	06:40 16:30	07:35 13:47-14:11/24 14:52-15:07/15 15:42 14:16-14:46/30	08:04 13:54-15:00/66 15:41
29	05:03 20:51	05:55 19:49	06:47 07:13-07:28/15 18:35	06:41 16:28	07:37 13:46-14:12/26 14:53-15:06/13 15:41 14:16-14:46/30	08:04 13:55-15:00/65 15:42
30	05:04 20:50	05:56 19:47	06:49 07:15-07:28/13 18:33	06:43 16:26	07:39 13:46-14:13/27 14:54-15:06/12 15:40 14:16-14:47/31	08:04 13:55-15:01/66 15:43
31	05:06 20:48	05:58 19:44		06:45 16:24		08:04 13:55-15:00/65 15:43
Potential sun hours	507	457	382	330	263	238
Sum of minutes with flicker	0	0	143	63	834	2042

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:

Pawlowo_Golancz_miasto_07102010

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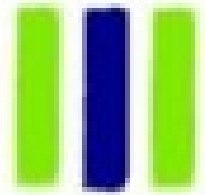
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 6 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:04 15:45	07:36 16:34	06:40 07:04-07:09/5 17:28	06:28 19:24	05:20 20:18	04:33 21:06	04:29 21:20	05:08 20:46	06:00 19:42	06:51 18:30	06:47 16:22	07:40 15:40
2	08:04 15:46	07:34 16:36	06:38 07:02-07:08/6 17:30	06:25 19:26	05:18 20:19	04:32 21:07	04:30 21:20	05:09 20:45	06:01 19:40	06:53 18:28	06:49 16:20	07:41 15:39
3	08:04 15:47	07:33 16:38	06:36 07:00-07:08/8 17:32	06:23 19:28	05:16 20:21	04:31 21:08	04:31 21:19	05:11 20:43	06:03 19:37	06:54 18:26	06:51 16:18	07:43 15:38
4	08:04 15:48	07:31 16:40	06:34 06:57-07:06/9 17:34	06:20 19:30	05:15 20:23	04:30 21:09	04:32 21:19	05:12 20:41	06:05 19:35	06:56 18:23	06:53 16:16	07:44 15:38
5	08:04 15:49	07:29 16:42	06:31 06:55-07:05/10 17:36	06:18 19:32	05:13 20:25	04:30 21:10	04:33 21:18	05:14 20:39	06:06 19:33	06:58 18:21	06:54 16:15	07:46 15:37
6	08:03 15:51	07:27 16:44	06:29 06:53-07:04/11 17:37	06:16 19:33	05:11 20:26	04:29 21:11	04:33 21:18	05:16 20:38	06:08 19:30	07:00 07:32-07:37/5 18:19	06:56 16:13	07:47 15:37
7	08:03 15:52	07:26 16:46	06:27 06:54-07:02/8 17:39	06:13 19:35	05:09 20:28	04:28 21:12	04:34 21:17	05:17 20:36	06:10 19:28	07:01 07:30-07:40/10 18:16	06:58 16:11	07:48 15:36
8	08:02 15:53	07:24 16:48	06:24 17:41	06:11 19:37	05:07 20:30	04:28 21:13	04:35 21:16	05:19 20:34	06:12 19:26	07:03 07:29-07:40/11 18:14	07:00 16:09	07:50 15:36
9	08:02 15:55	07:22 16:50	06:22 17:43	06:09 19:39	05:05 20:31	04:27 21:14	04:36 21:16	05:21 20:32	06:13 19:23	07:05 07:31-07:40/9 18:12	07:02 16:07	07:51 15:35
10	08:01 15:56	07:20 16:52	06:20 17:45	06:06 19:40	05:03 20:33	04:27 21:15	04:37 21:15	05:22 20:30	06:15 19:21	07:07 07:33-07:41/8 18:09	07:04 16:06	07:52 15:35
11	08:01 15:58	07:18 16:54	06:17 17:47	06:04 19:42	05:02 20:35	04:26 21:15	04:38 21:14	05:24 20:28	06:17 19:19	07:08 07:35-07:42/7 18:07	07:06 16:04	07:53 15:35
12	08:00 15:59	07:16 16:56	06:15 17:48	06:02 19:44	05:00 20:36	04:26 21:16	04:40 21:13	05:26 20:26	06:18 19:16	07:10 07:37-07:43/6 18:05	07:07 16:03	07:54 15:35
13	07:59 16:01	07:14 16:58	06:13 17:50	05:59 19:46	04:58 20:38	04:26 21:17	04:41 21:12	05:27 20:24	06:20 19:14	07:12 07:39-07:43/4 18:02	07:09 16:01	07:55 15:35
14	07:58 16:02	07:12 16:59	06:10 17:52	05:57 19:48	04:57 20:40	04:26 21:17	04:42 21:11	05:29 20:22	06:22 19:11	07:14 07:40-07:42/2 18:00	07:11 15:59	07:56 15:35
15	07:58 16:04	07:10 17:01	06:08 17:54	05:55 19:49	04:55 20:41	04:25 21:18	04:43 21:10	05:31 20:20	06:23 19:09	07:16 17:58	07:13 15:58	07:57 15:35
16	07:57 16:06	07:08 17:03	06:06 17:56	05:53 19:51	04:53 20:43	04:25 21:19	04:44 21:09	05:32 20:18	06:25 19:07	07:17 17:56	07:15 15:56	07:58 15:35
17	07:56 16:07	07:06 17:05	06:03 17:58	05:50 19:53	04:52 20:45	04:25 21:19	04:46 21:08	05:34 20:16	06:27 19:04	07:19 17:53	07:17 15:55	07:59 15:35
18	07:55 16:09	07:04 17:07	06:01 17:59	05:48 19:55	04:50 20:46	04:25 21:19	04:47 21:07	05:36 20:13	06:29 06:58-07:05/7 19:02	07:21 17:51	07:18 15:54	08:00 15:35
19	07:54 16:11	07:02 17:09	05:59 18:01	05:46 19:56	04:49 20:48	04:25 21:20	04:48 21:06	05:38 20:11	06:30 06:56-07:06/10 18:59	07:23 17:49	07:20 15:52	08:00 15:36
20	07:52 16:12	07:00 17:11	05:56 06:19-06:21/2 18:03	05:44 19:58	04:47 20:49	04:25 21:20	04:50 21:05	05:39 20:09	06:32 06:58-07:07/9 18:57	07:25 17:47	07:22 15:51	08:01 15:36
21	07:51 16:14	06:58 17:13	05:54 06:17-06:21/4 18:05	05:42 20:00	04:46 20:51	04:25 21:20	04:51 21:03	05:41 20:07	06:34 07:00-07:07/7 18:54	07:27 17:45	07:24 15:50	08:02 15:36
22	07:50 16:16	06:56 17:15	05:51 06:15-06:21/6 18:07	05:39 20:02	04:44 20:52	04:25 21:21	04:52 21:02	05:43 20:05	06:35 07:01-07:06/5 18:52	07:28 17:42	07:25 15:48	08:02 15:37
23	07:49 16:18	06:54 17:17	05:49 06:12-06:20/8 18:08	05:37 20:04	04:43 20:54	04:26 21:21	04:54 21:01	05:44 20:03	06:37 07:03-07:05/2 18:50	07:30 17:40	07:27 15:47	08:03 15:37
24	07:48 16:19	06:52 17:19	05:47 06:10-06:20/10 18:10	05:35 20:05	04:42 20:55	04:26 21:21	04:55 20:59	05:46 20:00	06:39 18:47	07:32 17:38	07:29 15:46	08:03 15:38
25	07:46 16:21	06:49 17:21	05:44 06:09-06:17/8 18:12	05:33 20:07	04:41 20:56	04:26 21:21	04:57 20:58	05:48 19:58	06:41 18:45	06:34 16:36	07:30 15:45	08:03 15:38
26	07:45 16:23	06:47 17:22	05:42 06:12-06:15/3 18:14	05:31 20:09	04:39 20:58	04:27 21:21	04:58 20:56	05:49 19:56	06:42 18:42	06:36 16:34	07:32 15:44	08:04 15:39
27	07:44 16:25	06:45 17:24	05:39 18:15	05:29 20:11	04:38 20:59	04:27 21:21	05:00 20:55	05:51 19:54	06:44 18:40	06:38 16:32	07:34 15:43	08:04 15:40
28	07:42 16:27	06:43 07:07-07:09/2 17:26	05:37 18:17	05:27 20:12	04:37 21:01	04:28 21:21	05:01 20:53	05:53 19:51	06:46 18:38	06:39 16:30	07:35 15:42	08:04 15:41
29	07:41 16:29		06:35 19:19	05:25 20:14	04:36 21:02	04:28 21:21	05:03 20:51	05:55 19:49	06:47 18:35	06:41 16:28	07:37 15:41	08:04 15:42
30	07:39 16:31		06:32 19:21	05:22 20:16	04:35 21:03	04:29 21:20	05:04 20:50	05:56 19:47	06:49 18:33	06:43 16:26	07:38 15:40	08:04 15:43
31	07:37 16:32		06:30 19:23		04:34 21:04		05:06 20:48	05:58 19:44		06:45 16:24		08:04 15:43
Potential sun hours	254	275	367	418	490	505	507	457	382	330	263	238
Sum of minutes with flicker	0	2	98	0	0	0	0	0	40	62	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:

Pawlowo_Golancz_miasto_07102010

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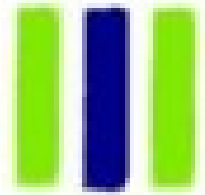
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal**WTG:** 7 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:05	07:36	06:41	06:28	05:21	04:33	04:30	05:08	06:00	06:51	06:47	07:40
	15:45	16:34	17:28	19:25	20:18	21:06	21:20	20:47	19:42	18:31	16:22	15:40
2	08:04	07:34	16:04-16:06/2	06:38	06:25	05:19	04:32	04:30	05:09	06:02	06:53	06:49
	15:46	16:36	17:30	19:26	20:20	21:07	21:20	20:45	19:40	18:28	16:20	15:39
3	08:04	07:33	16:04-16:07/3	06:36	06:23	05:17	04:31	04:31	05:11	06:03	06:55	06:51
	15:47	16:38	17:32	19:28	20:21	21:08	21:19	20:43	19:38	18:26	16:18	15:38
4	08:04	07:31	16:06-16:10/4	06:34	06:21	05:15	04:31	04:32	05:13	06:05	06:56	06:53
	15:48	16:40	17:34	19:30	20:23	21:09	21:19	20:41	19:35	18:24	16:16	15:38
5	08:04	07:29	16:07-16:12/5	06:32	06:18	05:13	04:30	04:33	05:14	06:07	06:58	06:55
	15:50	16:42	17:36	19:32	20:25	21:10	21:18	20:40	19:33	18:21	16:15	15:37
6	08:03	07:28	16:09-16:13/4	06:29	06:16	05:11	04:29	04:34	05:16	06:08	07:00	06:56
	15:51	16:44	17:38	19:33	20:26	21:11	21:18	20:38	19:31	18:19	16:13	15:37
7	08:03	07:26	06:27	06:14	05:09	04:29	04:34	05:18	06:10	07:02	06:58	15:36-15:40/4
	15:52	16:46	17:39	19:35	20:28	21:12	21:17	20:36	19:28	18:16	16:11	15:36
8	08:03	07:24	06:25	06:11	05:07	04:28	04:35	05:19	06:12	07:03	07:00	15:35-15:38/3
	15:53	16:48	17:41	19:37	20:30	21:13	21:17	20:34	19:26	18:14	16:09	15:36
9	08:02	07:22	06:22	06:09	05:05	04:27	04:36	05:21	06:13	07:05	07:02	15:35-15:37/2
	15:55	16:50	17:43	19:39	20:32	21:14	21:16	20:32	19:23	18:12	16:08	15:36
10	08:01	07:20	06:20	06:07	05:04	04:27	04:37	05:23	06:15	07:07	07:04	15:36
	15:56	16:52	17:45	19:41	20:33	21:15	21:15	20:30	19:21	18:09	16:06	15:35
11	08:01	07:18	06:18	06:04	05:02	04:27	04:39	05:24	06:17	07:09	07:06	15:35
	15:58	16:54	17:47	19:42	20:35	21:16	21:14	20:28	19:19	18:07	16:04	15:35
12	08:00	07:16	06:15	06:02	05:00	04:26	04:40	05:26	06:19	07:10	07:08	15:35
	15:59	16:56	17:49	19:44	20:37	21:16	21:13	20:26	19:16	18:05	16:03	15:35
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	16:01	16:58	17:50	19:46	20:38	21:17	21:13	20:24	19:14	18:03	16:01	15:35
14	07:59	07:13	06:11	05:57	04:57	04:26	04:42	05:29	06:22	07:14	07:11	15:35
	16:02	17:00	17:52	19:48	20:40	21:18	21:12	20:22	19:11	18:00	16:00	15:35
15	07:58	07:11	06:08	05:55	04:55	04:25	04:43	05:31	06:24	07:16	07:13	15:35
	16:04	17:02	17:54	19:49	20:42	21:18	21:11	20:20	19:09	17:58	15:58	15:35
16	07:57	07:09	06:06	05:53	04:53	04:25	04:44	05:33	06:25	07:18	07:15	15:35
	16:06	17:03	17:56	19:51	20:43	21:19	21:09	20:18	19:07	17:56	15:57	15:35
17	07:56	07:06	06:03	05:51	04:52	04:25	04:46	05:34	06:27	07:19	07:17	15:35
	16:07	17:05	17:58	19:53	20:45	21:19	21:08	20:16	19:04	17:54	15:55	15:35
18	07:55	07:04	06:01	05:48	04:50	04:25	04:47	05:36	06:29	07:21	07:19	15:35
	16:09	17:07	18:00	19:55	20:46	21:20	21:07	20:14	19:02	17:51	15:54	15:35
19	07:54	07:02	05:59	05:46	04:49	04:25	04:48	05:38	06:30	07:23	07:20	15:35
	16:11	17:09	18:01	19:57	20:48	21:20	21:06	20:11	18:59	17:49	15:52	15:36
20	07:53	07:00	05:56	05:44	04:47	04:25	04:50	05:39	06:32	07:25	07:22	15:36
	16:12	17:11	18:03	19:58	20:49	21:20	21:05	20:09	18:57	17:47	15:51	15:36
21	07:52	06:58	05:54	05:42	04:46	04:25	04:51	05:41	06:34	07:27	07:24	15:36
	16:14	17:13	18:05	20:00	20:51	21:21	21:03	20:07	18:55	17:45	15:50	15:36
22	07:50	06:56	05:52	05:39	04:45	04:26	04:53	05:43	06:36	07:29	07:26	15:36
	16:16	17:15	18:07	20:02	20:52	21:21	21:02	20:05	18:52	17:43	15:49	15:37
23	07:49	06:54	05:49	05:37	04:43	04:26	04:54	05:44	06:37	07:30	07:27	15:37
	16:18	17:17	18:08	20:04	20:54	21:21	21:01	20:03	18:50	17:40	15:47	15:37
24	07:48	06:52	05:47	05:35	04:42	04:26	04:55	05:46	06:39	07:32	07:29	15:37
	16:20	17:19	18:10	20:05	20:55	21:21	20:59	20:01	18:47	17:38	15:46	15:38
25	07:46	06:49	05:44	05:33	04:41	04:26	04:57	05:48	06:41	07:34	07:31	15:38
	16:21	17:21	18:12	20:07	20:57	21:21	20:58	19:58	18:45	17:36	15:45	15:39
26	07:45	06:47	05:42	05:31	04:39	04:27	04:58	05:50	06:42	07:36	07:32	15:39
	16:23	17:23	18:14	20:09	20:58	21:21	20:56	19:56	18:43	17:34	15:44	15:40
27	07:44	06:45	05:40	05:29	04:38	04:27	05:00	05:51	06:44	07:38	07:34	15:40
	16:25	17:24	18:16	20:11	20:59	21:21	20:55	19:54	18:40	17:32	15:43	15:40
28	07:42	06:43	05:37	05:27	04:37	04:28	05:01	05:53	06:46	07:40	07:36	15:40
	16:27	17:26	18:17	20:13	21:01	21:21	20:53	19:52	18:38	17:30	15:42	15:41
29	07:41		06:35	05:25	04:36	04:28	05:03	05:55	06:48	07:42	07:37	15:41
	16:29		19:19	20:14	21:02	21:21	20:52	19:49	18:35	17:28	15:41	15:42
30	07:39		06:32	05:23	04:35	04:29	05:05	05:56	06:49	07:43	07:39	15:42
	16:31		19:21	20:16	21:03	21:20	20:50	19:47	18:33	17:26	15:41	15:43
31	07:38		06:30		04:34		05:06	05:58		06:45		15:43
	16:33		19:23		21:05		20:48	19:45		16:24		15:44
Potential sun hours	254	275	367	418	490	505	507	457	382	330	263	238
Sum of minutes with flicker	0	18	0	0	0	0	0	0	0	0	20	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:

Pawlowo_Golancz_miasto_07102010

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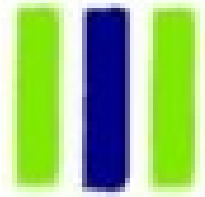
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal**WTG:** 8 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:05	07:36	06:41	06:28	05:21	04:33	04:30	05:08	06:00	06:51	06:47	07:40
15:45	16:34	17:28	19:25	20:18	21:06	21:20	20:47	19:42	18:31	16:22	15:40	15:40
2	08:04	07:34	06:38	06:25	05:19	04:32	04:30	05:09	06:02	06:53	06:49	07:42
15:46	16:36	17:30	19:26	20:20	21:07	21:20	20:45	19:40	18:28	16:20	15:39	15:39
3	08:04	07:33	06:36	06:23	05:17	04:31	04:31	05:11	06:03	06:55	06:51	07:43
15:47	16:38	17:32	19:28	20:21	21:08	21:19	20:43	19:38	18:26	16:18	15:38	15:38
4	08:04	07:31	06:34	06:21	05:15	04:31	04:32	05:13	06:05	06:56	06:53	07:45
15:48	16:40	17:34	19:30	20:23	21:09	21:19	20:41	19:35	18:24	16:16	15:38	15:38
5	08:04	07:29	06:31	06:18	05:13	04:30	04:33	05:14	06:07	06:58	06:55	07:46
15:50	16:42	17:36	19:32	20:25	21:10	21:18	20:40	19:33	18:21	16:15	15:37	15:37
6	08:03	07:28	06:29	06:16	05:11	04:29	04:34	05:16	06:08	07:00	06:56	07:47
15:51	16:44	17:38	19:33	20:26	21:11	21:18	20:38	19:31	18:19	16:13	15:37	15:37
7	08:03	07:26	06:27	06:14	05:09	04:29	04:34	05:18	06:10	07:02	06:58	07:49
15:52	16:46	17:39	19:35	20:28	21:12	21:17	20:36	19:28	18:16	16:11	15:36	15:36
8	08:03	07:24	06:25	06:11	05:07	04:28	04:35	05:19	06:12	07:03	07:00	07:50
15:54	16:48	17:41	19:37	20:30	21:13	21:17	20:34	19:26	18:14	16:09	15:36	15:36
9	08:02	07:22	06:22	06:09	05:05	04:27	04:36	05:21	06:13	07:05	07:02	07:51
15:55	16:50	17:43	19:39	20:32	21:14	21:16	20:32	19:23	18:12	16:08	15:36	15:36
10	08:01	07:20	06:20	06:07	05:04	04:27	04:37	05:23	06:15	07:07	07:04	07:52
15:56	16:52	17:45	19:41	20:33	21:15	21:15	20:30	19:21	18:09	16:06	15:35	15:35
11	08:01	07:18	06:18	06:04	05:02	04:27	04:39	05:24	06:17	07:09	07:06	07:53
15:58	16:54	17:47	19:42	20:35	21:16	21:14	20:28	19:19	18:07	16:04	15:35	15:35
12	08:00	07:16	06:15	06:02	05:00	04:26	04:40	05:26	06:19	07:10	07:08	07:54
15:59	16:56	17:49	19:44	20:37	21:16	21:13	20:26	19:16	18:05	16:03	15:35	15:35
13	07:59	07:14	06:13	06:00	04:58	04:26	04:41	05:28	06:20	07:12	07:09	07:55
16:01	16:58	17:50	19:46	20:38	21:17	21:12	20:24	19:14	18:03	16:01	15:35	15:35
14	07:59	07:13	06:11	05:57	04:57	04:26	04:42	05:29	06:22	07:14	07:11	07:56
16:02	17:00	17:52	19:48	20:40	21:18	21:12	20:22	19:11	18:00	16:00	15:35	15:35
15	07:58	07:11	06:08	05:55	04:55	04:25	04:43	05:31	06:24	07:16	07:13	07:57
16:04	17:02	17:54	19:49	20:41	21:18	21:10	20:20	19:09	17:58	15:58	15:35	15:35
16	07:57	07:09	06:06	05:53	04:53	04:25	04:44	05:33	06:25	07:18	07:15	07:58
16:06	17:03	17:56	19:51	20:43	21:19	21:09	20:18	19:07	17:56	15:57	15:35	15:35
17	07:56	15:32-15:34/2	07:06	06:03	05:51	04:52	04:25	04:46	05:34	06:27	07:19	07:17
16:07	17:05	17:58	19:53	20:45	21:19	21:08	20:16	19:04	17:54	15:55	15:35	15:35
18	07:55	15:33-15:35/2	07:04	06:01	05:48	04:50	04:25	04:47	05:36	06:29	07:21	07:19
16:09	17:07	17:59	19:55	20:46	21:20	21:07	20:14	19:02	17:51	15:54	15:35	15:35
19	07:54	15:34-15:37/3	07:02	05:59	05:46	04:49	04:25	04:48	05:38	06:30	07:23	07:20
16:11	17:09	18:01	19:57	20:48	21:20	21:06	20:11	18:59	17:49	15:52	15:36	15:36
20	07:53	15:35-15:39/4	07:00	05:56	05:44	04:47	04:25	04:50	05:39	06:32	07:25	07:22
16:12	17:11	18:03	19:58	20:49	21:20	21:05	20:09	18:57	17:47	15:51	15:36	15:36
21	07:51	15:36-15:40/4	06:58	05:54	05:42	04:46	04:25	04:51	05:41	06:34	07:27	07:24
16:14	17:13	18:05	20:00	20:51	21:21	21:03	20:07	18:55	17:45	15:50	15:36	15:36
22	07:50	06:56	05:52	05:39	04:45	04:26	04:53	05:43	06:36	07:29	07:26	15:11-15:15/4
16:16	17:15	18:07	20:02	20:52	21:21	21:02	20:05	18:52	17:43	15:49	15:37	15:37
23	07:49	06:54	05:49	05:37	04:43	04:26	04:54	05:44	06:37	07:30	07:27	15:11-15:14/3
16:18	17:17	18:08	20:04	20:54	21:21	21:01	20:03	18:50	17:40	15:47	15:37	15:37
24	07:48	06:52	05:47	05:35	04:42	04:26	04:55	05:46	06:39	07:32	07:29	15:11-15:13/2
16:20	17:19	18:10	20:05	20:55	21:21	20:59	20:01	18:47	17:38	15:46	15:38	15:38
25	07:46	06:49	05:44	05:33	04:41	04:26	04:57	05:48	06:41	06:34	07:31	15:10-15:12/2
16:21	17:21	18:12	20:07	20:57	21:21	20:58	19:58	18:45	16:36	15:45	15:39	15:39
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16:29		19:19	20:14	21:02	21:21	20:52	19:49	18:35	16:28	15:41	15:42	15:42
30	07:39		06:32	05:23	04:35	04:29	05:05	05:56	06:49	06:43	07:39	08:05
16:31		19:21	20:16	21:03	21:20	20:50	19:47	18:33	16:26	15:41	15:43	15:43
31	07:38		06:30		04:34		05:06	05:58		06:45		08:05
16:33		19:23		21:05		20:48	19:45		16:24		15:44	15:44
Potential sun hours	254	275	367	418	490	505	507	457	382	330	263	238
Sum of minutes with flicker	15	0	0	0	0	0	0	0	0	0	15	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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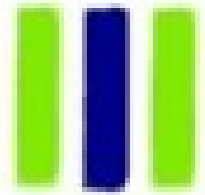
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 9 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !OI! hub: 80.0 m (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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:05 15:45	07:36 16:34	06:41 17:28	06:28 19:24	05:20 20:18	04:33 21:06	04:29 21:20	05:07 20:47	06:00 19:42	06:51 18:30	07:17-07:24/7 17:54-18:03/9	06:47 16:22	07:40 15:39
2	08:05 15:46	07:34 16:36	06:38 17:30	06:25 19:26	05:18 20:19	04:32 21:07	04:30 21:20	05:09 20:45	06:01 19:40	06:53 18:28	07:19-07:24/5 17:55-17:59/4	06:49 16:20	07:42 15:39
3	08:04 15:47	07:33 16:38	06:36 17:32	06:23 19:28	05:16 20:21	04:31 21:08	04:31 21:19	05:11 20:43	06:03 19:38	06:54 18:26	07:20-07:23/3	06:51 16:18	07:43 15:38
4	08:04 15:48	07:31 16:40	06:34 17:34	06:20 19:30	05:14 20:23	04:30 21:09	04:32 21:19	05:12 20:41	06:05 19:35	06:56 18:23		06:53 16:16	07:45 15:37
5	08:04 15:49	07:29 16:42	06:31 17:36	06:18 19:32	05:13 20:25	04:30 21:10	04:32 21:19	05:14 20:40	06:06 19:33	06:58 18:21		06:55 16:14	07:46 15:37
6	08:03 15:51	07:28 16:44	06:29 17:37	06:16 19:33	05:11 20:26	04:29 21:11	04:33 21:18	05:16 20:38	06:08 19:30	07:00 18:19		06:56 16:13	07:47 15:36
7	08:03 15:52	07:26 16:46	06:27 17:39	06:13 19:35	05:09 20:28	04:28 21:12	04:34 21:17	05:17 20:36	06:10 19:28	07:01 18:16		06:58 16:11	07:49 15:36
8	08:03 15:53	07:24 16:48	06:24 17:41	06:11 19:37	05:07 20:30	04:28 21:13	04:35 21:17	05:19 20:34	06:12 19:26	07:03 18:14		07:00 16:09	07:50 15:36
9	08:02 15:55	07:22 16:50	06:22 17:43	06:09 19:39	05:05 20:32	04:27 21:14	04:36 21:16	05:21 20:32	06:13 19:23	07:05 18:12		07:02 16:07	07:51 15:35
10	08:01 15:56	07:20 16:52	06:20 17:45	06:06 19:41	05:03 20:33	04:27 21:15	04:37 21:15	05:22 20:30	06:15 19:21	07:07 18:09		07:04 16:06	07:52 15:35
11	08:01 15:58	07:18 16:54	06:17 17:47	06:04 19:42	05:02 20:35	04:26 21:16	04:38 21:14	05:24 20:28	06:17 19:19	07:09 18:07		07:06 16:04	07:53 15:35
12	08:00 15:59	07:16 16:56	06:15 17:48	06:02 19:44	05:00 20:37	04:26 21:16	04:39 21:13	05:26 20:26	06:18 19:16	07:10 18:05		07:08 16:02	07:54 15:35
13	07:59 16:01	07:14 16:57	06:13 17:50	06:06 19:46	04:58 20:38	04:26 21:17	04:41 21:13	05:27 20:24	06:20 19:14	07:12 18:02		07:09 16:01	07:55 15:35
14	07:59 16:02	07:12 16:59	06:10 17:52	06:04 19:48	04:56 20:40	04:25 21:18	04:42 21:12	05:29 20:22	06:22 19:11	07:14 18:00		07:11 15:59	07:56 15:35
15	07:58 16:04	07:10 17:01	06:08 17:54	06:32-06:41/9 19:18-19:22/4	05:55 20:42	04:43 21:18	04:35 21:11	05:19 20:20	06:23 19:09	07:16 17:58		07:13 15:58	07:57 15:35
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17	07:56 16:07	07:06 17:05	06:03 17:58	06:03-17:11-17:31/20 19:14-19:25/11	05:50 20:45	04:45 21:19	04:45 21:08	05:34 20:16	06:27 19:04	07:19 17:53		07:17 15:55	07:59 15:35
18	07:55 16:09	07:04 17:07	06:01 17:59	06:01-17:12-17:30/18 19:13-19:27/14	05:48 20:46	04:45 21:20	04:47 21:07	05:36 20:14	06:29 19:02	07:21 17:51		07:19 15:53	08:00 15:35
19	07:54 16:10	07:02 17:09	05:59 18:01	06:02-17:12-17:30/18 19:12-19:29/17	05:46 19:57	04:45 21:20	04:48 21:06	05:37 20:11	06:30 18:59	07:23 17:49		07:20 15:52	08:01 15:35
20	07:53 16:12	07:00 17:11	05:56 18:03	06:02-17:12-17:28/16 19:11-19:30/19	05:44 19:58	04:47 21:20	04:49 21:05	05:39 20:09	06:32 18:57	07:25 17:47		07:22 15:51	08:01 15:36
21	07:52 16:14	06:58 17:13	05:54 18:05	06:02-17:14-17:27/13 19:10-19:32/22	05:41 20:00	04:46 20:51	04:45 21:21	05:41 20:07	06:34 18:55	18:03-18:07/4 17:45		07:27 15:50	08:02 15:36
22	07:50 16:16	06:56 17:15	05:51 18:07	06:02-17:16-17:23/7 19:10-19:32/22	05:39 20:02	04:44 20:52	04:45 21:21	05:43 20:05	06:35 18:52	17:59-18:11/12 17:42		07:28 15:48	08:02 15:37
23	07:49 16:17	06:54 17:17	05:49 18:08	06:02-17:17-18:08 19:10-19:32/22	05:37 20:04	04:43 20:54	04:45 21:21	05:44 20:03	06:37 18:50	17:57-18:12/15 17:40		07:30 15:47	08:03 15:37
24	07:48 16:19	06:52 17:19	05:47 18:10	06:02-17:18-18:08 19:10-19:31/21	05:35 20:05	04:42 20:55	04:46 21:21	05:46 20:00	06:39 18:47	17:56-18:13/17 17:38		07:32 15:46	08:03 15:38
25	07:46 16:21	06:49 17:21	05:44 18:12	06:02-17:19-18:12 19:10-19:31/21	05:33 20:07	04:40 20:57	04:46 21:21	05:48 19:58	06:41 18:45	17:54-18:13/19 16:36		07:31 15:45	08:04 15:38
26	07:45 16:23	06:47 17:22	05:42 18:14	06:02-17:21-18:14 19:11-19:30/19	05:31 20:09	04:39 20:58	04:47 21:21	05:49 19:56	06:42 18:42	17:54-18:13/19 16:34		07:32 15:44	08:04 15:39
27	07:44 16:25	06:45 17:24	05:39 18:16	06:02-17:22-18:16 19:12-19:29/17	05:29 20:11	04:38 20:59	04:47 21:21	05:00 19:54	06:44 18:40	17:54-18:12/18 16:32		07:34 15:43	08:04 15:40
28	07:42 16:27	06:43 17:26	05:37 18:17	06:02-17:23-18:17 19:13-19:27/14	05:26 20:12	04:37 21:01	04:27 21:21	05:01 20:53	06:46 18:38	07:15-07:22/7 17:53-18:09/16		07:36 15:42	08:04 15:41
29	07:41 16:29		06:35 19:19	06:02-17:24-18:18 19:14-19:26/12	05:24 20:14	04:36 21:02	04:28 21:21	05:03 20:52	06:47 18:35	07:13-07:23/10 17:53-18:07/14		06:41 15:41	08:05 15:41
30	07:39 16:30		06:32 19:21	06:02-17:25-18:19 19:17-19:22/5	05:22 20:16	04:35 21:03	04:29 21:21	05:04 20:50	06:49 18:33	07:15-07:24/9 17:53-18:05/12		06:43 15:40	08:05 15:42
31	07:38 16:32		06:30 19:23			04:34 21:05		05:06 20:48		06:45 16:24			08:05 15:43
Potential sun hours	254	275	367	418	490	505	507	457	382	330	28	262	238
Sum of minutes with flicker	0	0	200	248	0	0	0	250	172	30	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:

Pawlowo_Golancz_miasto_07102010

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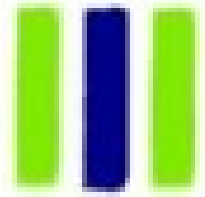
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal**WTG:** 10 - Acciona AW 82/1500 IEC IIIb 1500 82.0 IO! hub: 80.0 m (10)**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
 The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:05 15:45	07:36 16:34	06:41 17:28	06:28 19:24	18:45-18:57/12 20:18	05:20 20:18	19:31-19:42/11 21:06	04:33 21:20	04:29 21:20	05:08 20:47	06:00 19:42	06:51 18:31	06:47 16:22	07:40 15:39
2	08:05 15:46	07:34 16:36	06:38 17:30	06:25 19:26	18:45-18:55/10 20:20	05:18 20:20	19:32-19:40/8 21:07	04:32 21:20	04:30 21:20	05:09 20:45	06:01 19:40	06:53 18:28	06:49 16:20	07:42 15:39
3	08:04 15:47	07:33 16:38	06:36 17:32	06:23 19:28	18:48-18:52/4 20:21	05:16 20:21	04:31 21:08	04:31 21:20	05:11 20:43	06:03 20:43	06:03 19:38	06:54 18:26	06:51 16:18	07:43 15:38
4	08:04 15:48	07:31 16:40	06:34 17:34	06:20 19:30	05:14 20:23	05:14 20:23	04:30 21:09	04:32 21:19	05:12 20:41	06:05 19:35	06:05 19:35	06:56 18:23	06:53 16:16	07:45 15:37
5	08:04 15:49	07:29 16:42	06:31 17:36	06:18 19:32	05:13 20:25	05:13 20:25	04:30 21:10	04:32 21:19	05:14 20:40	06:06 19:33	06:06 19:33	06:58 18:21	06:55 16:14	07:46 15:37
6	08:03 15:51	07:28 16:44	06:29 17:37	06:16 19:33	05:11 20:26	05:11 20:26	04:29 21:11	04:33 21:18	05:16 20:38	06:08 19:31	06:08 19:31	07:00 18:19	06:56 16:13	07:47 15:36
7	08:03 15:52	07:26 16:46	06:27 17:39	06:13 19:35	05:09 20:28	05:09 20:28	04:28 21:12	04:34 21:17	05:17 20:36	06:10 19:28	06:10 19:28	07:01 18:16	06:58 16:11	07:49 15:36
8	08:03 15:53	07:24 16:48	06:25 17:41	06:11 19:37	05:07 20:30	05:07 20:30	04:28 21:13	04:35 21:17	05:19 20:34	06:12 19:26	06:12 19:26	07:03 18:14	07:00 16:09	07:50 15:36
9	08:02 15:55	07:22 16:50	06:22 17:43	06:09 19:39	05:05 20:32	05:05 20:32	04:27 21:14	04:36 21:16	05:21 20:32	06:13 19:23	06:13 18:42-18:45/3	07:05 18:12	07:02 16:07	07:51 15:35
10	08:01 15:56	07:20 16:52	06:20 17:45	06:06 19:41	05:03 20:33	05:03 20:33	04:27 21:15	04:37 21:15	05:22 20:30	19:44-19:47/3 19:21	06:15 18:38-18:48/10	07:07 18:09	07:04 16:06	07:52 15:35
11	08:01 15:58	07:18 16:54	06:18 17:47	06:04 19:42	05:02 20:35	05:02 20:35	04:26 21:16	04:38 21:14	05:24 20:28	19:41-19:50/9 19:19	06:17 18:37-18:49/12	07:09 18:07	07:06 16:04	07:53 15:35
12	08:00 15:59	07:16 16:56	06:15 17:48	06:02 19:44	05:00 20:37	05:00 20:37	04:26 21:16	04:39 21:13	05:26 20:26	19:39-19:51/12 19:16	06:18 18:35-18:48/13	07:10 18:05	07:08 16:02	07:54 15:35
13	07:59 16:01	07:14 16:57	06:13 17:50	05:59 19:46	04:58 20:38	04:58 20:38	04:26 21:17	04:41 21:13	05:27 20:24	19:38-19:52/14 19:14	06:20 18:35-18:46/11	07:12 18:02	07:09 16:01	07:55 15:35
14	07:59 16:02	07:13 16:59	06:10 17:52	05:57 19:48	04:56 20:40	04:56 20:40	04:25 21:18	04:42 21:12	05:29 20:22	19:37-19:52/15 19:11	06:22 18:34-18:44/10	07:14 18:00	07:11 15:59	07:56 15:35
15	07:58 16:04	07:11 17:01	06:08 17:54	05:55 19:49	04:55 20:42	04:55 20:42	04:25 21:18	04:43 21:11	05:31 20:20	19:37-19:51/14 19:09	06:23 07:02-07:10/8	07:16 17:58	07:13 15:58	07:57 15:35
16	07:57 16:05	07:08 17:03	06:06 17:56	05:53 19:51	04:53 20:43	04:53 20:43	04:25 21:19	04:44 21:09	05:32 20:18	19:37-19:49/12 19:07	06:25 06:59-07:11/12	07:18 17:56	07:15 15:56	07:58 15:35
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19	07:54 16:10	07:02 17:09	05:59 18:01	05:46 19:57	04:49 20:48	04:49 20:48	04:25 21:20	04:48 21:06	05:37 20:11	19:36-19:42/6 18:59	06:30 06:56-07:13/17	07:23 17:49	07:20 15:52	08:01 15:35
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21	07:52 16:14	06:58 17:13	05:54 18:05	05:41 20:00	04:46 20:51	04:46 20:51	04:25 21:21	04:51 21:03	05:41 20:07	06:34 18:55	07:00-07:12/12 17:45	07:27 17:45	07:24 15:50	08:02 15:36
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24	07:48 16:19	06:52 17:19	05:47 18:10	05:35 20:05	19:31-19:37/6 20:55	04:42 20:55	04:26 21:21	04:55 20:59	05:46 20:00	06:39 18:47	07:05-07:09/4 17:38	07:32 17:38	07:29 15:46	08:03 15:38
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27	07:44 16:25	06:45 17:24	05:39 18:16	05:29 20:11	19:29-19:42/13 20:59	04:38 20:59	04:27 21:21	05:00 20:55	05:51 19:54	06:44 18:40	06:38 16:32	07:34 15:43	08:04 15:40	08:04 15:40
28	07:42 16:27	06:43 17:26	05:37 18:17	05:26 20:12	19:29-19:44/15 21:01	04:37 21:01	04:27 21:21	05:01 20:53	05:53 19:51	06:46 18:38	06:40 16:30	07:36 15:42	08:04 15:41	08:04 15:41
29	07:41 16:29		06:35 19:19	05:24 21:02	19:30-19:44/14 20:14	04:36 21:02	04:28 21:21	05:03 20:52	05:55 19:49	06:47 18:35	06:41 16:28	07:37 15:41	08:05 15:41	08:05 15:41
30	07:39 16:30		06:32 19:21	05:22 21:03	18:43-18:54/11 20:16	04:35 21:03	04:29 21:21	05:04 20:50	05:56 19:47	06:49 18:33	06:43 16:26	07:39 15:40	08:05 15:42	08:05 15:42
31	07:38 16:32		06:30 19:23		18:44-18:57/13 21:05	04:34 21:05		05:06 20:48	05:58 19:45		06:45 16:24		08:05 15:43	08:05 15:43
Potential sun hours	254	275	367	418	490	505	507	457	382	189	330	262	238	0
Sum of minutes with flicker	0	0	159	111	19	0	0	107	189	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:

Pawlowo_Golancz_miasto_07102010

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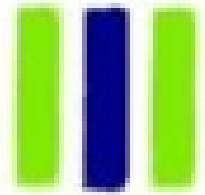
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznań

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal**WTG:** 11 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (11)**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
 The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December			
1	08:05 15:45	07:36 16:34	06:41 17:28	06:28 19:24	06:51-06:54/3 20:18	05:20 21:06	19:39-19:48/9 21:20	04:33 21:20	04:29 21:20	05:08 20:47	06:00 19:42	06:36-06:57/21 18:31	06:51 16:22	06:47 15:39	07:40 15:39
2	08:05 15:46	07:34 16:36	06:38 17:30	06:25 19:26	06:48-06:56/8 20:20	05:18 21:07	19:39-19:50/11 21:20	04:32 21:20	04:30 21:20	05:09 20:45	06:01 19:40	06:34-06:57/23 18:28	06:53 16:20	06:49 15:39	07:42 15:39
3	08:04 15:47	07:33 16:38	06:36 17:32	06:23 19:28	06:46-06:58/12 20:21	05:16 21:08	19:41-19:50/9 21:20	04:31 21:20	04:31 21:20	05:11 20:43	06:03 19:38	06:34-06:57/23 19:01-19:06/5	06:54 18:26	06:51 16:18	07:43 15:38
4	08:04 15:48	07:31 16:40	06:34 17:34	06:20 19:30	06:44-06:59/15 19:00-19:03/3	05:14 20:23	19:43-19:48/5 21:09	04:30 21:19	04:32 21:19	05:12 20:41	06:05 19:35	06:33-06:56/23 18:58-19:07/9	06:56 18:23	06:53 16:16	07:45 15:37
5	08:04 15:49	07:29 16:42	06:31 17:36	06:18 19:32	06:41-06:59/18 19:00-19:05/5	05:13 20:25	04:30 21:10	04:32 21:19	05:14 20:40	06:06 19:33	06:33-06:56/23 18:57-19:05/8	06:58 18:21	06:55 16:14	07:46 15:37	
6	08:03 15:51	07:28 16:44	06:29 17:37	06:16 19:33	06:39-06:59/20 19:00-19:07/7	05:11 20:26	04:29 21:11	04:33 21:18	05:16 20:38	06:08 19:31	06:35-06:56/21 18:56-19:03/7	07:00 18:19	06:56 16:13	07:47 15:36	
7	08:03 15:52	07:26 16:46	06:27 17:39	06:13 19:35	06:37-07:00/23 19:00-19:08/8	05:09 20:28	04:28 21:12	04:34 21:17	05:17 20:36	06:10 19:28	06:36-06:54/18 18:55-19:00/5	07:01 18:16	06:58 16:11	07:49 15:36	
8	08:03 15:53	07:24 16:48	06:25 17:41	06:11 19:37	06:36-06:59/23 19:01-19:10/9	05:07 20:30	04:28 21:13	04:35 21:17	05:19 20:34	06:12 19:26	06:38-06:53/15 18:55-18:58/3	07:03 18:14	07:00 16:09	07:50 15:36	
9	08:02 15:55	07:22 16:50	06:22 17:43	06:09 19:39	06:36-06:59/23 19:03-19:08/5	05:05 20:32	04:27 21:14	04:36 21:16	05:21 20:32	19:51-19:57/6 19:49-19:59/10	06:13 06:41-06:49/8	07:05 18:12	07:02 16:07	07:51 15:35	
10	08:01 15:56	07:20 16:52	06:20 17:45	06:06 19:41	06:37-06:59/22 20:33	05:03 20:33	04:27 21:15	04:37 21:15	05:22 20:30	19:49-19:59/10 19:21	06:15 06:43-06:47/4	07:07 18:09	07:04 16:06	07:52 15:35	
11	08:01 15:58	07:18 16:54	06:18 17:47	06:04 19:42	06:36-06:57/21 20:35	05:02 20:35	04:26 21:16	04:38 21:14	05:24 20:28	19:49-19:59/10 19:19	06:17 18:07	06:43-06:47/4 16:04	07:09 15:35	07:06 15:35	07:53 15:35
12	08:00 15:59	07:16 16:56	06:15 17:49	06:02 19:44	06:37-06:56/19 20:37	05:00 20:37	04:26 21:16	04:39 21:14	05:26 20:26	19:47-19:56/9 19:16	06:18 18:05	07:10 16:02	07:08 15:35	07:54 15:35	
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14	07:59 16:02	07:13 16:59	06:10 17:52	05:57 19:48	06:39-06:54/15 20:40	04:56 20:40	04:25 21:18	04:42 21:12	05:29 20:22	19:47-19:52/5 19:11	06:22 18:00	07:14 15:59	07:11 15:35	07:56 15:35	
15	07:58 16:04	07:11 17:01	06:08 17:54	05:55 19:49	06:40-06:50/10 20:42	04:55 20:42	04:25 21:18	04:43 21:11	05:31 20:20	19:47-19:51/4 19:09	06:23 17:58	07:16 15:58	07:13 15:35	07:57 15:35	
16	07:57 16:05	07:08 17:03	06:06 17:56	05:53 19:51	04:53 20:43	04:53 20:43	04:25 21:19	04:44 21:10	05:32 20:18	19:48-19:50/2 19:07	06:25 17:56	07:18 15:56	07:15 15:35	07:58 15:35	
17	07:56 16:07	07:06 17:05	06:03 17:58	05:50 19:53	04:52 20:45	04:52 20:45	04:25 21:19	04:45 21:08	05:34 20:16	06:27 19:04	07:19 17:53	07:17 15:55	07:59 15:35		
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20	07:53 16:12	07:00 17:11	05:56 18:03	05:44 19:58	04:47 20:49	04:47 20:49	04:25 21:20	04:49 21:05	05:39 20:09	06:32 18:57	07:25 17:47	07:22 15:51	08:01 15:36		
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22	07:50 16:16	06:56 17:15	05:51 18:07	05:39 20:02	04:44 20:52	04:44 20:52	04:25 21:21	04:52 21:02	05:43 20:05	06:35 18:52	07:28 17:42	07:26 15:48	08:02 15:37		
23	07:49 16:17	06:54 17:17	05:49 18:08	05:37 20:04	04:43 20:54	04:43 20:54	04:25 21:21	04:54 21:01	05:44 20:03	06:37 18:50	07:30 17:40	07:27 15:47	08:03 15:37		
24	07:48 16:19	06:52 17:19	05:47 18:10	05:35 20:05	04:42 20:55	04:42 20:55	04:26 21:21	04:55 20:59	05:46 20:01	06:39 18:47	07:32 17:38	07:29 15:46	08:03 15:38		
25	07:46 16:21	06:49 17:21	05:44 18:12	05:33 20:07	04:40 20:57	04:40 20:57	04:26 21:21	04:57 20:58	05:48 19:58	06:41 18:45	07:34 16:36	07:31 15:45	08:04 15:38		
26	07:45 16:23	06:47 17:22	05:42 18:14	05:31 20:09	04:39 20:58	04:39 20:58	04:27 21:21	04:58 20:56	05:49 19:56	06:42 18:42	07:36 16:34	07:32 15:44	08:04 15:39		
27	07:44 16:25	06:45 17:24	05:39 18:16	05:29 20:11	19:40-19:42/2 20:59	04:38 20:59	04:27 21:21	05:00 20:55	05:51 19:54	06:44 18:40	07:38 16:32	07:34 15:43	08:04 15:40		
28	07:42 16:27	06:43 17:26	05:37 18:17	05:27 20:13	19:39-19:44/5 21:01	04:37 21:01	04:27 21:21	05:01 20:53	05:53 19:51	06:42-06:52/10 18:38	06:46 16:30	07:36 15:42	08:04 15:41		
29	07:41 16:29		06:35 19:19	05:24 20:14	19:39-19:45/6 21:02	04:36 21:02	04:28 21:21	05:03 20:52	05:55 19:49	06:40-06:55/15 18:35	06:47 16:28	07:37 15:41	08:05 15:41		
30	07:39 16:30		06:32 19:21	05:22 20:16	19:39-19:47/8 21:03	04:35 21:03	04:29 21:21	05:04 20:50	05:56 19:47	06:38-06:55/17 18:33	06:49 16:26	07:39 15:40	08:05 15:42		
31	07:38 16:32		06:30 19:23		04:34 21:05	04:34 21:05		05:06 20:48	05:58 19:45	06:37-06:56/19 19:45		06:45 16:24	08:05 15:43		
Potential sun hours	254	275	367	418	490	505	507	457	382	330	262	238			
Sum of minutes with flicker	0	0	0	307	34	0	0	115	228	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:

Pawlowo_Golancz_miasto_07102010

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EMPEKO

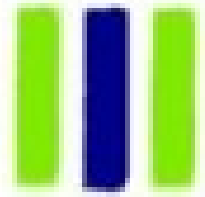
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 12 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (12)**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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:05	07:36	06:41	06:28	05:20 05:45-05:59/14	04:33	04:29	05:08 05:47-06:12/25	06:00	06:51	06:47	07:40
	15:45	16:34	17:28	19:24	20:18	21:06	21:20	20:47 20:08-20:15/7	19:42	18:31	16:22	15:39
2	08:05	07:34	06:38	06:25	05:18 05:44-06:01/17	04:32	04:30	05:09 05:48-06:13/25	06:01	06:53	06:49	07:42
	15:46	16:36	17:30	19:26	20:20	21:07	21:20	20:45 20:08-20:14/6	19:40	18:28	16:20	15:39
3	08:04	07:33	06:36	06:23	05:16 05:42-06:02/20	04:31	04:31	05:11 05:47-06:13/26	06:03	06:54	06:51	07:43
	15:47	16:38	17:32	19:28	20:21	21:08	21:20	20:43 20:07-20:12/5	19:38	18:26	16:18	15:38
4	08:04	07:31	06:34	06:20	05:14 05:40-06:02/22	04:30	04:32	05:12 05:47-06:13/26	06:05	06:56	06:53	07:45
	15:48	16:40	17:34	19:30	20:23	21:09	21:19	20:41 20:07-20:11/4	19:35	18:23	16:16	15:37
5	08:04	07:29	06:31	06:18	05:13 05:38-06:02/24	04:30	04:32	05:14 05:47-06:12/25	06:06	06:58	06:55	07:46
	15:49	16:42	17:36	19:32	20:25	21:10	21:19	20:40 20:07-20:09/2	19:33	18:21	16:14	15:37
6	08:04	07:28	06:29	06:16	05:11 05:37-06:02/25	04:29	04:33	05:16 05:47-06:13/26	06:08	07:00	06:57	07:47
	15:51	16:44	17:37	19:33	20:26	21:11	21:18	20:38 20:07-20:09/2	19:31	18:19	16:13	15:36
7	08:03	07:26	06:27	06:13	05:09 05:38-06:03/25	04:28	04:34	05:17 05:47-06:12/25	06:10	07:01	06:58	07:49
	15:52	16:46	17:39	19:35	20:28	21:12	21:17	20:36	19:28	18:16	16:11	15:36
8	08:03	07:24	06:25	06:11	05:07 05:37-06:03/26	04:28	04:35	05:19 05:48-06:12/24	06:12	07:03	07:00	07:50
	15:53	16:48	17:41	19:37	20:30	21:13	21:17	20:34	19:26	18:14	16:09	15:36
9	08:02	07:22	06:22	06:09	05:05 05:37-06:03/26	04:27	04:36	05:21 05:50-06:11/21	06:13	07:05	07:02	07:51
	15:55	16:50	17:43	19:39	20:32	21:14	21:16	20:32	19:23	18:12	16:07	15:35
10	08:02	07:20	06:20	06:06	05:03 05:38-06:03/25	04:27	04:37	05:22 05:51-06:10/19	06:15	07:07	07:04	07:52
	15:56	16:52	17:45	19:41	20:33	21:15	21:15	20:30	19:21	18:09	16:06	15:35
11	08:01	07:18	06:18	06:04	05:02 05:37-06:03/26	04:26	04:38	05:24 05:53-06:09/16	06:17	07:09	07:06	07:53
	15:58	16:54	17:47	19:42	20:35	21:16	21:14	20:28	19:19	18:07	16:04	15:35
12	08:00	07:16	06:15	06:02	05:00 05:37-06:02/25	04:26	04:39	05:26 05:54-06:07/13	06:18	07:10	07:08	07:54
	15:59	16:56	17:49	19:44	20:37	21:16	21:14	20:26	19:16	18:05	16:02	15:35
13	07:59	07:15	06:13	05:59	04:58 05:38-06:02/24	04:26	04:41	05:27 05:56-06:06/10	06:20	07:12	07:10	07:55
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	16:02	16:59	17:52	19:48	20:40	21:19	21:12	20:22	19:11	18:00	15:59	15:35
15	07:58	07:11	06:08	05:55	19:19-19:22/3	04:55	05:39-06:01/22	04:25	05:31	06:23	07:16	07:13
	16:04	17:01	17:54	19:49	20:42	21:18	21:11	20:20	19:09	17:58	15:58	15:35
16	07:57	07:09	06:06	05:53	19:19-19:24/5	04:53	05:39-06:00/21	04:25	05:32	06:25	07:18	07:15
	16:05	17:03	17:56	19:51	20:43	21:19	21:10	20:18	19:07	17:56	15:56	15:35
17	07:56	07:06	06:03	05:50	19:20-19:25/5	04:52	05:40-05:59/19	04:25	05:34	06:27	07:19	07:17
	16:07	17:05	17:58	19:53	20:45	21:19	21:08	20:16	19:04	17:53	15:55	15:35
18	07:55	07:04	06:01	05:48	19:21-19:27/6	04:50	05:42-05:59/17	04:25	05:36	06:29	07:21	07:19
	16:09	17:07	17:59	19:55	20:46	21:20	21:07	20:14	19:02	17:51	15:53	15:35
19	07:54	07:02	05:59	05:46	19:23-19:27/4	04:49	05:42-05:57/15	04:25	05:38	06:30	07:23	07:20
	16:10	17:09	18:01	19:57	20:48	21:20	21:06	20:11	18:59	17:49	15:52	15:35
20	07:53	07:00	05:56	05:44	19:24	04:47	05:44-05:56/12	04:25	05:39	06:32	07:25	07:22
	16:12	17:11	18:03	19:58	20:49	21:20	21:05	20:09	18:57	17:47	15:51	15:36
21	07:52	06:58	05:54	05:41	19:25	04:46	05:46-05:54/8	04:25	05:41	06:34	07:27	07:24
	16:14	17:13	18:05	20:00	20:51	21:21	21:03	20:07	18:55	17:45	15:50	15:36
22	07:50	06:56	05:51	05:39	19:26	04:44	05:42 05:58-06:01/3	04:25	05:43	06:35	07:29	07:26
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	16:19	17:19	18:10	20:05	20:55	21:21	20:59	20:01	18:47	17:38	15:46	15:38
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	16:23	17:22	18:14	20:09	20:58	21:21	20:56	20:10	18:42	16:34	15:44	15:39
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	16:25	17:24	18:16	20:11	21:00	21:21	20:55	20:11	18:40	16:32	15:43	15:40
28	07:42	06:43	05:37	05:27	19:32	04:37	05:51 05:49-06:10/21	04:25	05:53	19:21-19:23/2	06:46	06:40
	16:27	17:26	18:17	20:13	21:01	21:21	20:53	20:12	18:38	16:30	15:42	15:41
29	07:41		06:35	05:24	05:49-05:56/7	04:36	05:53 05:49-06:12/23	04:25	05:55	06:47	06:42	07:37
	16:29		19:19	20:14	21:02	21:21	20:52	20:13	18:35	16:28	15:41	15:41
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	16:30		19:21	20:16	21:03	21:21	20:50	20:14	18:33	16:26	15:40	15:42
31	07:38		06:30		21:04	04:34	05:56 05:48-06:12/24	04:25	05:58		06:45	08:05
	16:32		19:23		21:05	20:48	20:10-20:17/7	04:25	19:45		16:24	15:43
Potential sun hours	254	275	367	418	490	505	508	457	382	330	262	238
Sum of minutes with flicker	0	0	0	41	471	0	179	336	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:

Pawlowo_Golancz_miasto_07102010

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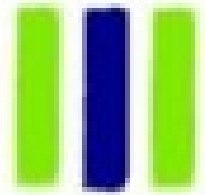
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 13 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (13)**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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:05	07:36	06:41	06:28	05:20	04:33	04:29	05:08	06:00	06:51	06:47	07:40
	15:45	16:34	17:28	19:25	20:18	21:06	21:20	20:47	19:42	18:31	16:22	15:40
2	08:05	07:35	06:38	06:25	05:18	04:32	04:30	05:09	06:01	06:53	06:49	07:42
	15:46	16:36	17:30	19:26	20:20	21:07	21:20	20:45	19:40	18:28	16:20	15:39
3	08:04	07:33	06:36	06:23	05:16	04:31	04:31	05:11	06:03	06:54	06:51	07:43
	15:47	16:38	17:32	19:28	20:21	21:08	21:20	20:43	19:38	18:26	16:18	15:38
4	08:04	07:31	06:34	06:20	05:14	04:30	04:32	05:12	06:05	06:56	06:53	07:45
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	15:55	16:50	17:43	19:39	20:32	21:14	21:16	20:32	19:23	18:12	16:07	15:35
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	15:59	16:56	17:49	19:44	20:37	21:16	21:14	20:26	19:16	18:05	16:02	15:35
13	07:59	07:15	06:13	05:59	04:58	04:26	04:41	05:27	06:20	07:12	07:10	07:56
	16:01	16:58	17:50	19:46	20:38	21:17	21:13	20:24	19:14	18:02	16:01	15:35
14	07:59	07:13	06:10	05:57	04:56	04:25	04:42	05:29	06:22	07:14	07:11	07:57
	16:02	16:59	17:52	19:48	20:40	21:18	21:12	20:22	19:11	18:00	15:59	15:35
15	07:58	07:11	06:08	05:55	04:55	04:25	04:43	05:31	06:24	07:16	07:13	07:57
	16:04	17:01	17:54	19:49	20:42	21:18	21:11	20:20	19:09	17:58	15:58	15:35
16	07:57	07:09	06:06	05:53	04:53	04:25	04:44	05:32	06:25	07:18	07:15	07:58
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	16:07	17:05	17:58	19:53	20:45	21:19	21:08	20:16	19:04	17:53	15:55	15:35
18	07:55	07:04	06:01	05:48	04:50	04:25	04:47	05:36	06:29	07:21	07:19	08:00
	16:09	17:07	17:59	19:55	20:46	21:20	21:07	20:14	19:02	17:51	15:53	15:35
19	07:54	07:02	05:59	05:46	04:49	04:25	04:48	05:38	06:30	07:23	07:20	08:01
	16:10	17:09	18:01	19:57	20:48	21:20	21:06	20:12	18:59	17:49	15:52	15:35
20	07:53	07:00	05:56	05:44	04:47	04:25	04:50	05:39	06:32	07:25	07:22	08:01
	16:12	17:11	18:03	19:58	20:49	21:20	21:05	20:09	18:57	17:47	15:51	15:36
21	07:52	06:58	05:54	05:41	04:46	04:25	04:51	05:41	06:34	07:27	07:24	08:02
	16:14	17:13	18:05	20:00	20:51	21:21	21:04	20:07	18:55	17:45	15:50	15:36
22	07:50	06:56	05:51	05:39	04:44	04:25	04:52	05:43	06:35	07:29	07:26	08:02
	16:16	17:15	18:07	20:02	20:52	21:21	21:02	20:05	18:52	17:43	15:48	15:37
23	07:49	06:54	05:49	05:37	04:43	04:26	04:54	05:44	06:37	07:30	07:27	08:03
	16:18	17:17	18:08	20:04	20:54	21:21	21:01	20:03	18:50	17:40	15:47	15:37
24	07:48	06:52	05:47	05:35	04:42	04:26	04:55	05:46	06:39	07:32	07:29	08:03
	16:19	17:19	18:10	20:05	20:55	21:21	20:59	20:01	18:47	17:38	15:46	15:38
25	07:47	06:49	05:44	05:33	04:40	04:26	04:57	05:48	06:41	07:34	07:31	08:04
	16:21	17:21	18:12	20:07	20:57	21:21	20:58	19:58	18:45	17:36	15:45	15:38
26	07:45	06:47	05:42	05:31	04:39	04:27	04:58	05:49	06:42	07:36	07:32	08:04
	16:23	17:22	18:14	20:09	20:58	21:21	20:56	19:56	18:43	17:34	15:44	15:39
27	07:44	06:45	05:39	05:29	04:38	04:27	05:00	05:51	06:44	07:38	07:34	08:04
	16:25	17:24	18:16	20:11	21:00	21:21	20:55	19:54	18:40	17:32	15:43	15:40
28	07:42	06:43	05:37	05:27	04:37	04:27	05:01	05:53	06:46	07:40	07:36	08:05
	16:27	17:26	18:17	20:13	21:01	21:21	20:53	19:52	18:38	17:30	15:42	15:41
29	07:41		06:35	05:24	04:36	04:28	05:03	05:55	06:48	07:42	07:37	08:05
	16:29		19:19	20:14	21:02	21:21	20:52	19:49	18:35	17:28	15:41	15:41
30	07:39		06:32	05:22	04:35	04:29	05:04	05:56	06:49	07:43	07:39	08:05
	16:30		19:21	20:16	21:03	21:21	20:50	19:47	18:33	17:26	15:40	15:42
31	07:38		06:30		04:34		05:06	05:58		06:45		08:05
	16:32		19:23		21:05		20:48	19:45		16:24		15:43
Potential sun hours	254	275	367	418	490	505	508	457	382	330	262	238
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:

Pawlowo_Golancz_miasto_07102010

Printed/Page

10/08/2010 5:47 PM / 19

Licensed user:

EMPEKO

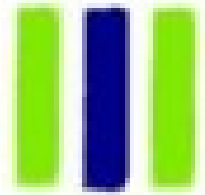
Os. Bolesława Chrobrego 24/45

PL-60 681 Poznan

+4861 670 74 08

Calculated:

10/08/2010 5:29 PM/2.6.1.252

**SHADOW - Calendar per WTG****Calculation:** Miasto Golancz - Shadow Flickering - 08.10.2010 - Normal **WTG:** 14 - Acciona AW 82/1500 IEC IIIb 1500 82.0 !O! hub: 80.0 m (14)**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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:05	07:36	06:41	06:28	05:20	04:33	04:29	05:08	06:00	06:51	06:47	07:40
	15:45	16:34	17:28	19:25	20:18	21:06	21:20	20:47	19:42	18:31	16:22	15:40
2	08:05	07:35	06:38	06:25	05:18	04:32	04:30	05:09	06:01	06:53	06:49	07:42
	15:46	16:36	17:30	19:26	20:20	21:07	21:20	20:45	19:40	18:28	16:20	15:39
3	08:04	07:33	06:36	06:23	05:16	04:31	04:31	05:11	06:03	06:54	06:51	07:43
	15:47	16:38	17:32	19:28	20:21	21:08	21:20	20:43	19:38	18:26	16:18	15:38
4	08:04	07:31	06:34	06:20	05:14	04:30	04:32	05:12	06:05	06:56	06:53	07:45
	15:48	16:40	17:34	19:30	20:23	21:09	21:19	20:41	19:35	18:23	16:16	15:38
5	08:04	07:29	06:32	06:18	05:13	04:30	04:32	05:14	06:07	06:58	06:55	07:46
	15:49	16:42	17:36	19:32	20:25	21:10	21:19	20:40	19:33	18:21	16:14	15:37
6	08:04	07:28	06:29	06:16	05:11	04:29	04:33	05:16	06:08	07:00	06:57	07:47
	15:51	16:44	17:37	19:33	20:27	21:11	21:18	20:38	19:31	18:19	16:13	15:36
7	08:03	07:26	06:27	06:13	05:09	04:28	04:34	05:17	06:10	07:02	06:58	07:49
	15:52	16:46	17:39	19:35	20:28	21:12	21:17	20:36	19:28	18:16	16:11	15:36
8	08:03	07:24	06:25	06:11	05:07	04:28	04:35	05:19	06:12	07:03	07:00	07:50
	15:53	16:48	17:41	19:37	20:30	21:13	21:17	20:34	19:26	18:14	16:09	15:36
9	08:02	07:22	06:22	06:09	05:05	04:27	04:36	05:21	06:13	07:05	07:02	07:51
	15:55	16:50	17:43	19:39	20:32	21:14	21:16	20:32	19:23	18:12	16:07	15:35
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	15:56	16:52	17:45	19:41	20:33	21:15	21:15	20:30	19:21	18:09	16:06	15:35
11	08:01	07:18	06:18	06:04	05:02	04:26	04:38	05:24	06:17	07:09	07:06	07:53
	15:58	16:54	17:47	19:42	20:35	21:16	21:14	20:28	19:19	18:07	16:04	15:35
12	08:00	07:17	06:15	06:02	05:00	04:26	04:39	05:26	06:18	07:10	07:08	07:55
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	16:14	17:13	18:05	20:00	20:51	21:21	21:04	20:07	18:55	17:45	15:50	15:36
22	07:50	06:56	05:51	05:39	04:44	04:25	04:52	05:43	06:35	07:29	07:26	08:02
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	16:32		19:23		21:05		20:48	19:45		16:24		15:43
Potential sun hours	254	275	367	418	490	505	508	457	382	330	262	238
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