

Kalax Vindkraftprojekt / Tuulivoimahanke



Vindkraftverk / Tuulivoimalaitos 33 st/kpl

Shadow Vestas V126; rd126m; hh137m

Skuggning / Varjostus

— 1 h/a

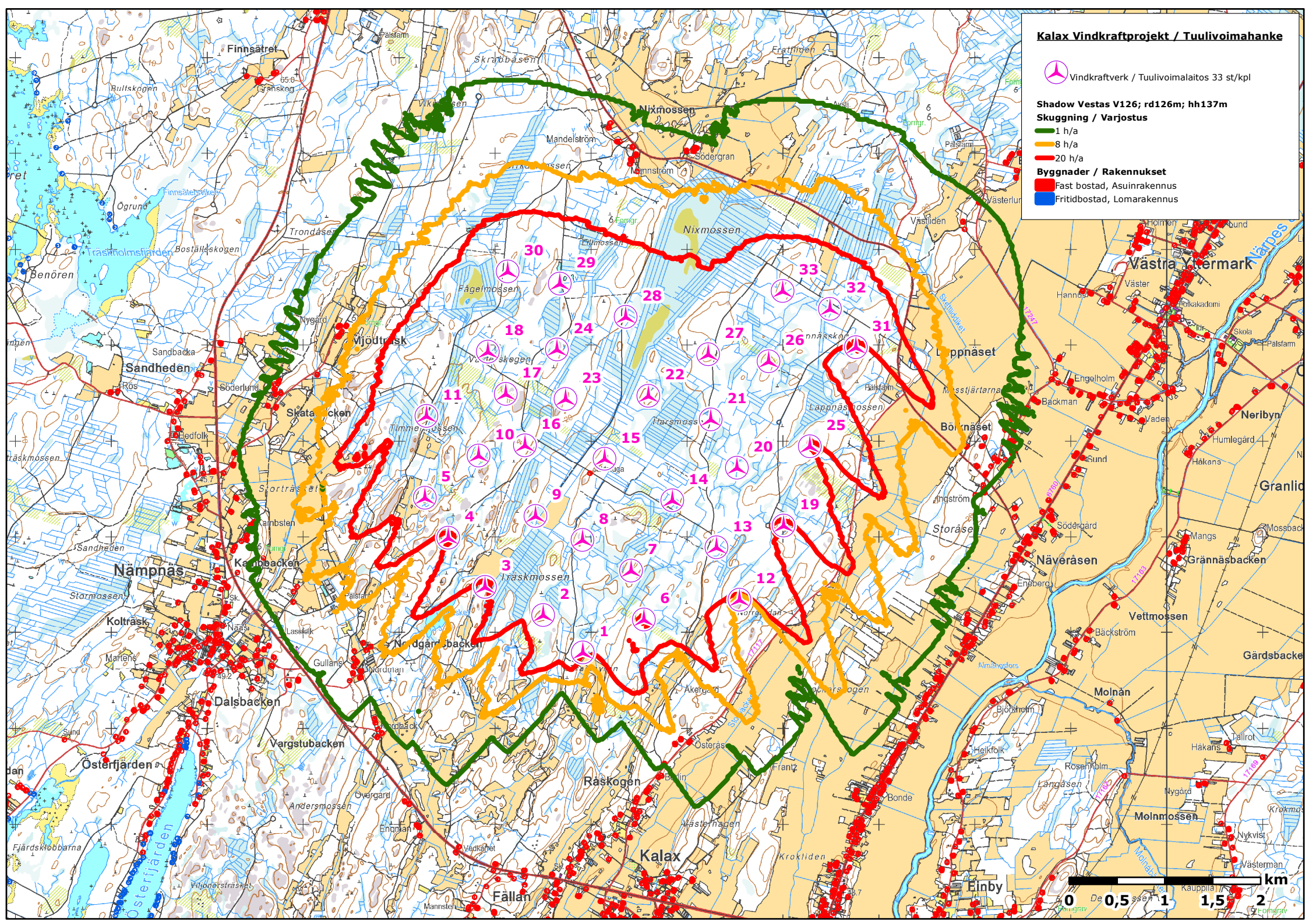
— 8 h/a

— 20 h/a

Byggnader / Rakennukset

■ Fast bostad, Asuinrakennus

■ Fritidbostad, Lomarakennus



Project:

Kalax, Närpes

Description:

VindIn Oy/Ab

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13.1.2014 14:37 / 1

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Calculated:

13.1.2014 13:27/2.8.579

SHADOW - Main Result

Calculation: Kalax Vestas V126 x 33 x hh137m

Assumptions for shadow calculations

Maximum distance for influence

Calculate only when more than 20 % of sun is covered by the blade

Please look in WTG table

Minimum sun height over horizon for influence

3 °

Day step for calculation

1 days

Time step for calculation

1 minutes

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,02	2,84	3,78	6,14	8,62	9,94	7,42	5,13	4,32	3,43	1,58	0,96

Operational hours are calculated from WTGs in calculation and wind distribution:

MERRA_basic_E21.335_N62.500

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	720	519	431	486	705	1 129	1 264	652	593	649	655	8 615

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

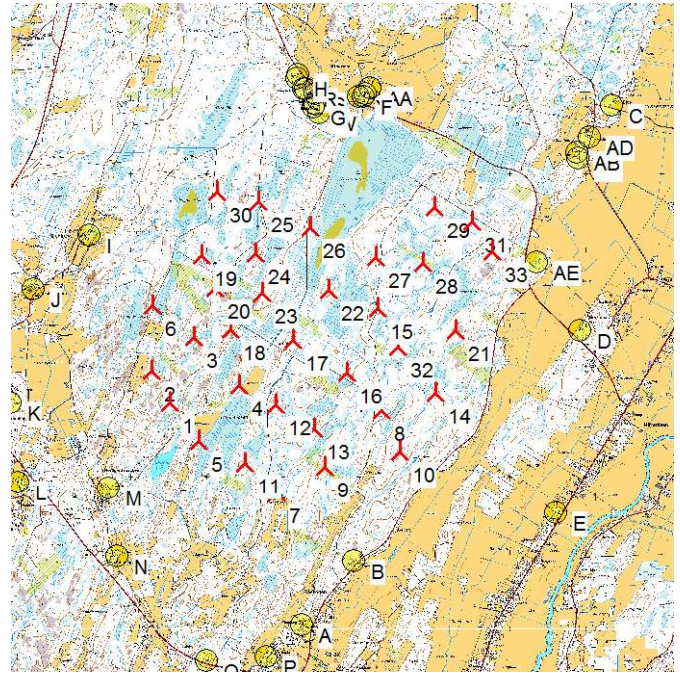
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

Height contours used: Height Contours: Närpes korkeuskäyrät(1).wpo (1)

Obstacles not used in calculation

Eye height: 1,5 m

Grid resolution: 25,0 m



New WTG

Scale 1:100 000

Shadow receptor

WTGs

Finish TM ETRS-TM35FIN-ETRS89				WTG type			Shadow data					
East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]	
		[m]										
1	204 512	6 944 993	20,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
2	204 266	6 945 410	15,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
3	204 828	6 945 852	22,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
4	205 423	6 945 221	15,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
5	204 896	6 944 481	17,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
6	204 283	6 946 265	16,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
7	205 915	6 943 796	15,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
8	207 308	6 944 892	22,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
9	206 551	6 944 139	22,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
10	207 550	6 944 346	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
11	205 503	6 944 187	20,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
12	205 913	6 944 969	20,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
13	206 419	6 944 649	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
14	208 010	6 945 120	27,2 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
15	207 250	6 946 229	22,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
16	206 849	6 945 384	20,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
17	206 141	6 945 816	22,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
18	205 310	6 945 958	23,6 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
19	204 925	6 946 935	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
20	205 111	6 946 495	26,1 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
21	208 282	6 945 946	27,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
22	206 600	6 946 474	20,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
23	205 735	6 946 441	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
24	205 646	6 946 958	27,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
25	205 674	6 947 646	27,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
26	206 363	6 947 298	19,6 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
27	207 223	6 946 908	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
28	207 853	6 946 833	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	
29	208 000	6 947 568	25,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0	

To be continued on next page...

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Calculated:

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SHADOW - Main Result

Calculation: Kalax Vestas V126 x 33 x hh137m

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Finish TM ETRS-TM35FIN-ETRS89					WTG type			Shadow data			
East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Calculation distance	RPM
		[m]					[kW]	[m]	[m]	[m]	[RPM]
30	205 131	6 947 773	27,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0
31	208 492	6 947 380	22,5 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0
32	207 523	6 945 724	23,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0
33	208 763	6 946 981	30,0 VESTAS V126-3.3 G...	Yes	VESTAS	V126-3.3 GridStreame-3 300	3 300	126,0	137,0	2 000	0,0

Shadow receptor-Input

Finish TM ETRS-TM35FIN-ETRS89											
No.	Name	East	North	Z	Width	Height	Height a.g.l.	Degrees from south cw	Slope of window	Direction mode	
				[m]	[m]	[m]	[m]	[°]	[°]		
A	Asuinrakennus Råskogvägen 71	206 246	6 942 056	12,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
B	Asuinrakennus Råskogvägen 181	206 937	6 942 891	13,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
C	Asuinrakennus Eide	210 331	6 948 906	16,9	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
D	Asuinrakennus Börknäset	209 917	6 945 940	19,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
E	Asuinrakennus Vasavägen 303b	209 601	6 943 532	10,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
F	Asuinrakennus Södergran	207 068	6 949 027	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
G	Asuinrakennus Mannström	206 407	6 948 891	25,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
H	Asuinrakennus Brädd	206 186	6 949 267	19,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
I	Asuinrakennus Skata-Mjödträskvägen 240	203 448	6 947 202	11,3	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
J	Asuinrakennus Skatatåget 7	202 707	6 946 489	7,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
K	Asuinrakennus Kambbackenvägen 24	202 402	6 944 985	11,7	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
L	Asuinrakennus Fallvägen 19	202 510	6 943 937	7,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
M	Asuinrakennus Nordgrådsvägen 86	203 702	6 943 856	14,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
N	Asuinrakennus Vargstubbäckvägen 78	203 817	6 942 961	16,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
O	Asuinrakennus Strandvägen 348	205 000	6 941 586	22,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
P	Asuinrakennus Norrtåget 14	205 777	6 941 641	7,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
Q	Asuinrakennus Nybackavägen 48	206 272	6 949 122	22,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
R	Asuinrakennus Nixmossvägen 679	206 300	6 949 124	20,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
S	Asuinrakennus Nixmossvägen 673	206 433	6 949 068	23,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
T	Asuinrakennus Nybackavägen 25	206 416	6 948 940	27,4	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
U	Asuinrakennus Nybackavägen 23	206 429	6 948 926	26,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
V	Asuinrakennus Nixmossvägen 667	206 468	6 948 985	23,7	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
W	Asuinrakennus Nybackavägen 13	206 481	6 948 812	20,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
X	Asuinrakennus Lidvägen 12a	207 087	6 949 062	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
Y	Asuinrakennus Lidvägen 7	206 995	6 949 025	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
Z	Asuinrakennus Nybackavägen 78	206 202	6 949 316	18,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AA	Asuinrakennus Lidvägen 20	207 151	6 949 145	16,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AB	Asuinrakennus Edsvägen 187	209 881	6 948 290	20,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AC	Asuinrakennus Edsvägen 169	209 896	6 948 210	19,3	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AD	Asuinrakennus Edsvägen 207	210 048	6 948 493	18,9	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AE	Loma-asunto Gamla Nixmossvägen 17	209 345	6 946 847	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	

Calculation Results

Shadow receptor

Shadow, expected values	
No.	Name
	Shadow hours per year [h/year]
A	Asuinrakennus Råskogvägen 71
B	Asuinrakennus Råskogvägen 181
C	Asuinrakennus Eide
D	Asuinrakennus Börknäset
E	Asuinrakennus Vasavägen 303b
F	Asuinrakennus Södergran
G	Asuinrakennus Mannström
H	Asuinrakennus Brädd
I	Asuinrakennus Skata-Mjödträskvägen 240

To be continued on next page...

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13.1.2014 13:27/2.8.579

SHADOW - Main Result**Calculation:** Kalax Vestas V126 x 33 x hh137m

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No.	Name	Shadow, expected values	
		Shadow hours	per year
			[h/year]
J	Asuinrakennus Skatatåget 7		1:49
K	Asuinrakennus Kambbackenvägen 24		0:47
L	Asuinrakennus Fallvägen 19		0:00
M	Asuinrakennus Nordgrådsvägen 86		5:04
N	Asuinrakennus Vargstubbäckvägen 78		0:00
O	Asuinrakennus Strandvägen 348		0:00
P	Asuinrakennus Norrtåget 14		0:00
Q	Asuinrakennus Nybackavägen 48		4:21
R	Asuinrakennus Nixmossvägen 679		4:14
S	Asuinrakennus Nixmossvägen 673		3:56
T	Asuinrakennus Nybackavägen 25		4:27
U	Asuinrakennus Nybackavägen 23		4:33
V	Asuinrakennus Nixmossvägen 667		4:10
W	Asuinrakennus Nybackavägen 13		5:53
X	Asuinrakennus Lidvägen 12a		2:57
Y	Asuinrakennus Lidvägen 7		3:26
Z	Asuinrakennus Nybackavägen 78		2:45
AA	Asuinrakennus Lidvägen 20		0:56
AB	Asuinrakennus Edsvägen 187		2:08
AC	Asuinrakennus Edsvägen 169		2:51
AD	Asuinrakennus Edsvägen 207		1:28
AE	Loma-asunto Gamla Nixmossvägen 17		23:34

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

No.	Name	Worst case	Expected
		[h/year]	[h/year]
1	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (263)	0:00	0:00
2	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (264)	13:16	2:18
3	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (265)	4:05	0:51
4	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (266)	0:00	0:00
5	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (267)	16:11	4:12
6	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (270)	16:02	3:11
7	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (271)	23:00	6:29
8	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (273)	0:00	0:00
9	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (274)	0:00	0:00
10	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (275)	0:00	0:00
11	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (276)	11:27	2:47
12	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (277)	0:00	0:00
13	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (278)	0:00	0:00
14	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (279)	0:00	0:00
15	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (282)	0:00	0:00
16	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (283)	0:00	0:00
17	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (284)	0:00	0:00
18	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (285)	0:00	0:00
19	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (286)	6:20	1:10
20	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (287)	4:14	0:46
21	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (288)	13:55	2:36
22	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (289)	0:00	0:00
23	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (290)	0:00	0:00
24	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (291)	0:00	0:00
25	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (292)	68:58	9:19
26	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (293)	70:25	8:55
27	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (294)	0:00	0:00
28	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (295)	6:23	1:09
29	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (297)	32:16	5:47
30	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (299)	37:17	6:19
31	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (300)	39:10	9:09
32	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (301)	0:00	0:00
33	VESTAS V126-3.3 GridStreame 3300 126.0 !O! hub: 137,0 m (TOT: 200,0 m) (303)	82:36	18:50

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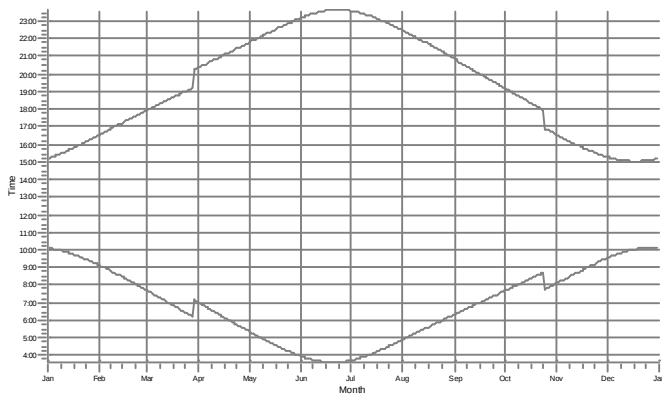
Calculated:

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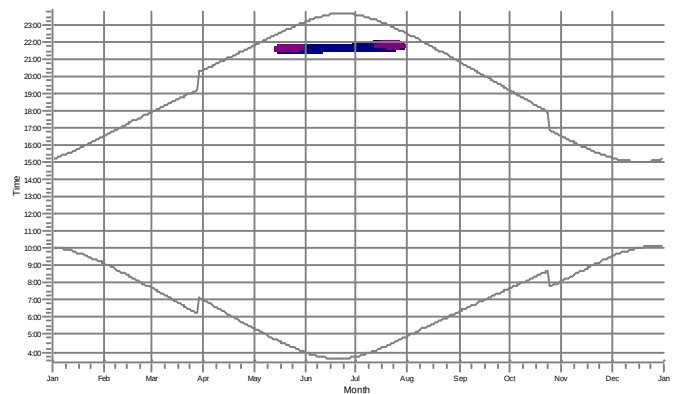
SHADOW - Calendar, graphical

Calculation: Kalax Vestas V126 x 33 x hh137m

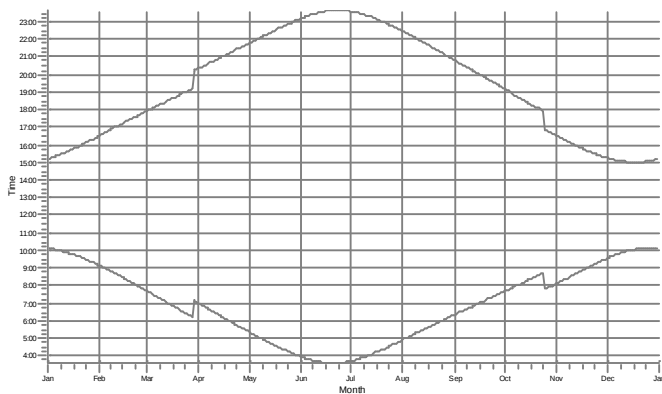
A: Asuinrakennus Råskogvägen 71



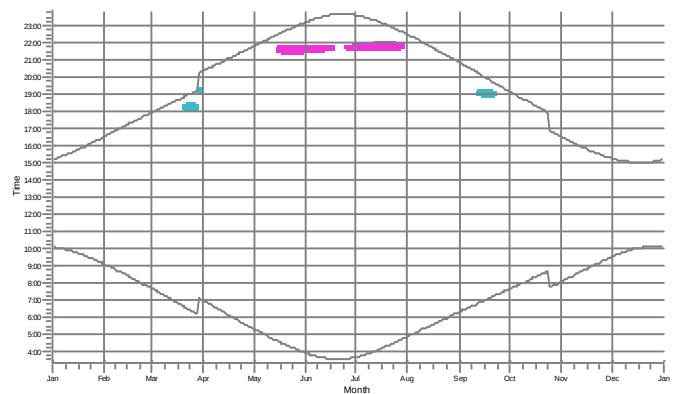
B: Asuinrakennus Råskogvägen 181



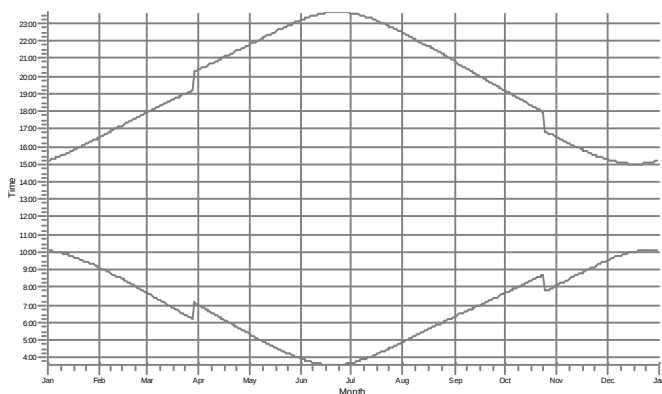
C: Asuinrakennus Eide



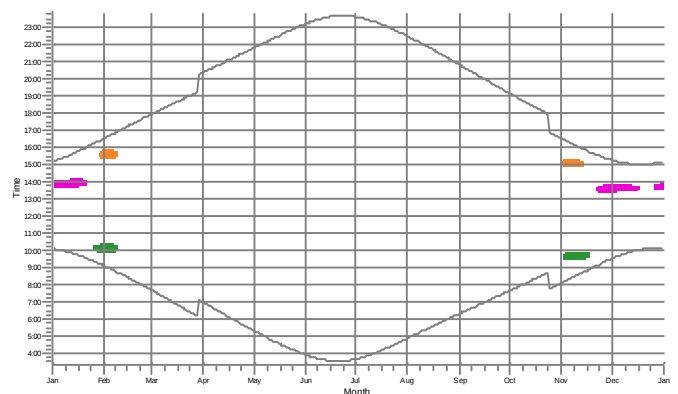
D: Asuinrakennus Börknäset



E: Asuinrakennus Vasavägen 303b



F: Asuinrakennus Södergran



WTGs

7: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (271)

11: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (276)

21: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (288)

25: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (292)

26: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (293)

29: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (297)

33: VESTAS V126-3.3 GridStream 3300 126.0 l'OI hub: 137.0 m (TOT: 200.0 m) (303)

Project:

Kalax, Närpes

Description:

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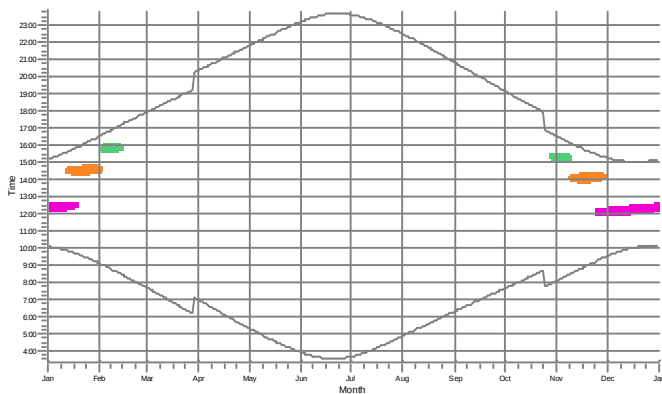
Calculated:

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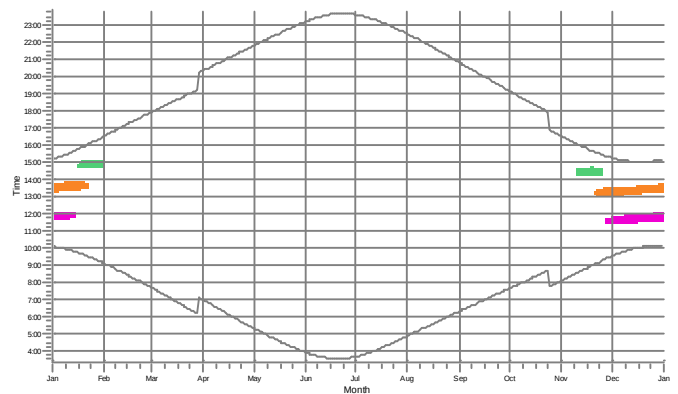
SHADOW - Calendar, graphical

Calculation: Kalax Vestas V126 x 33 x hh137m

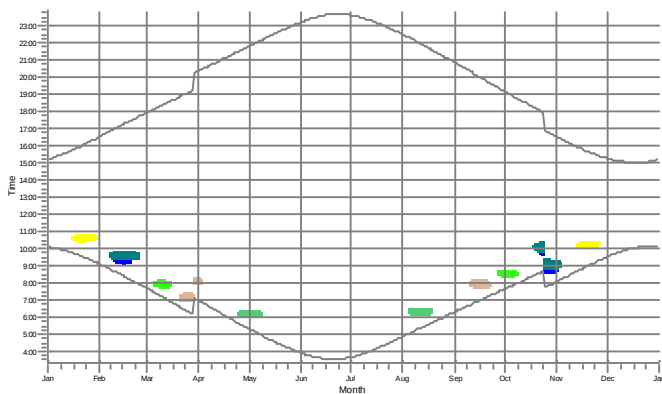
G: Asuinrakennus Mannström



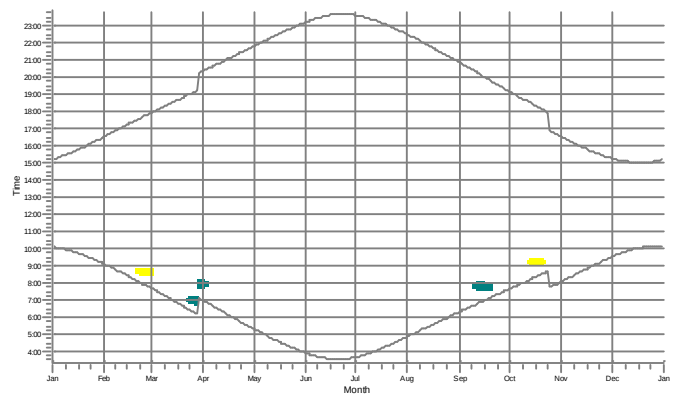
H: Asuinrakennus Brådd



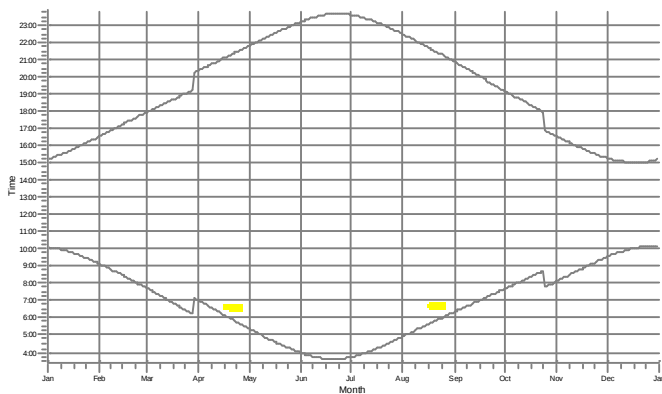
I: Asuinrakennus Skata-Mjödträskvägen 240



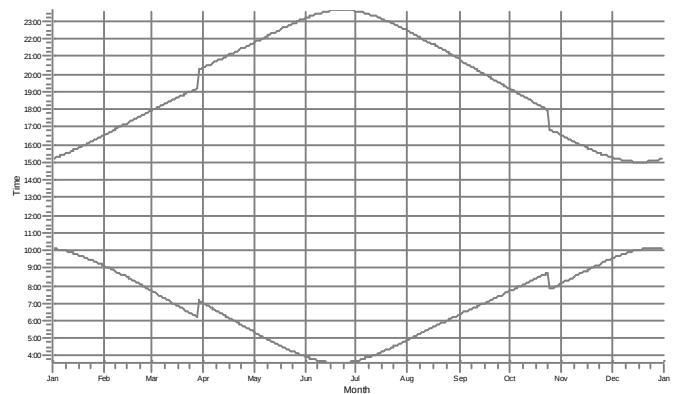
J: Asuinrakennus Skatatåget 7



K: Asuinrakennus Kambackenvägen 24



L: Asuinrakennus Fallvägen 19



WTGs

2: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (264)
 3: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (265)
 6: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (270)

19: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (286)
 20: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (287)
 25: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (292)

26: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (293)
 30: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (299)

Project:

Kalax, Närpes

Description:

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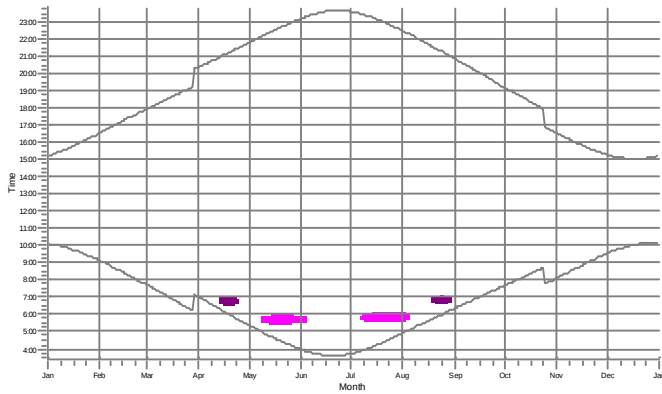
Calculated:

13.1.2014 13:27/2.8.579

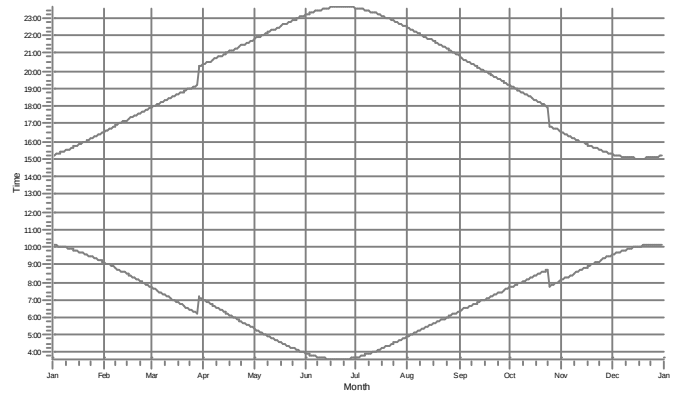
SHADOW - Calendar, graphical

Calculation: Kalax Vestas V126 x 33 x hh137m

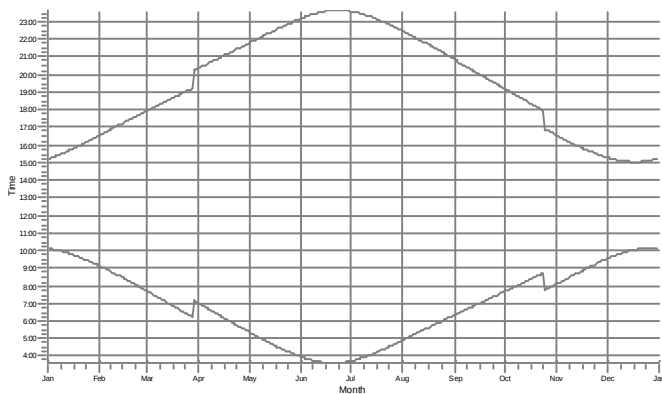
M: Asuinrakennus Nordgrådsvägen 86



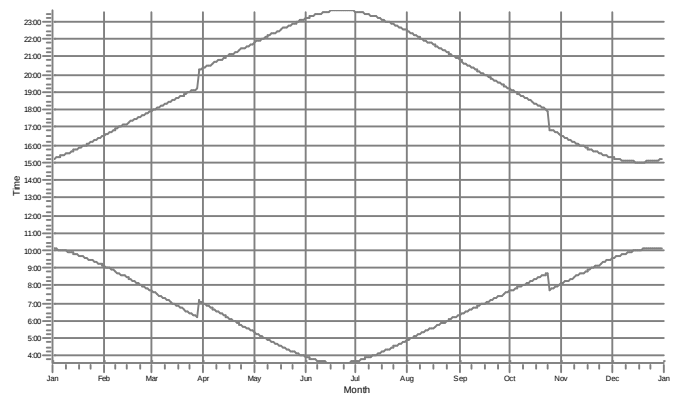
N: Asuinrakennus Vargstubbäckvägen 78



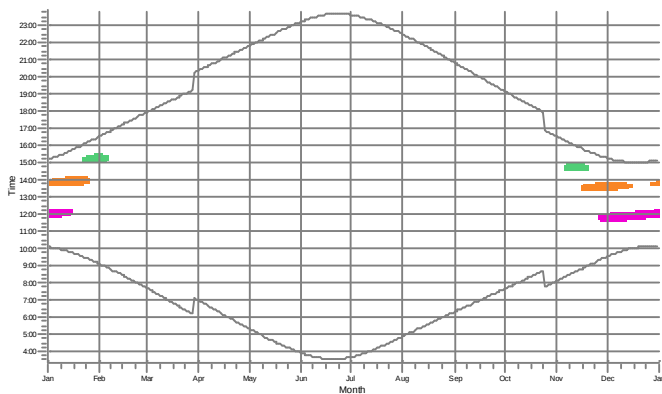
O: Asuinrakennus Strandvägen 348



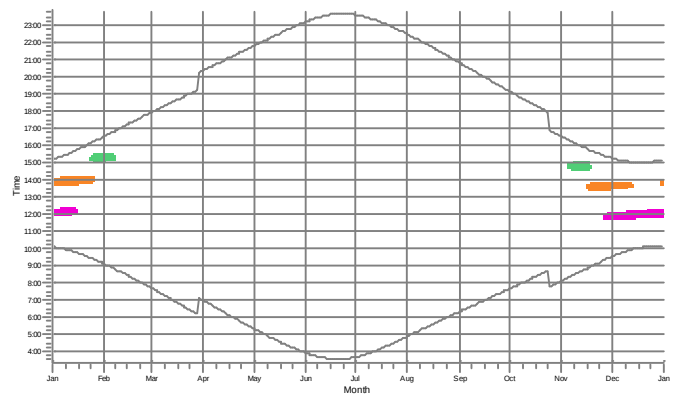
P: Asuinrakennus Norrtåget 14



Q: Asuinrakennus Nybackavägen 48



R: Asuinrakennus Nixmossvägen 679



WTGs

5: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (267)

25: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (292)

30: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (299)

11: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (276)

26: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (293)

Project:

Kalax, Närpes

Description:

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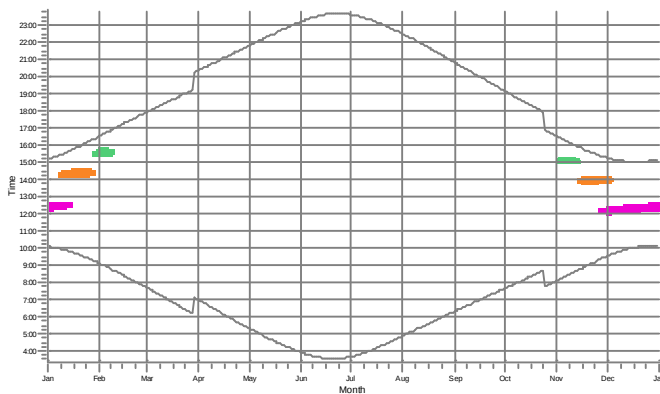
Calculated:

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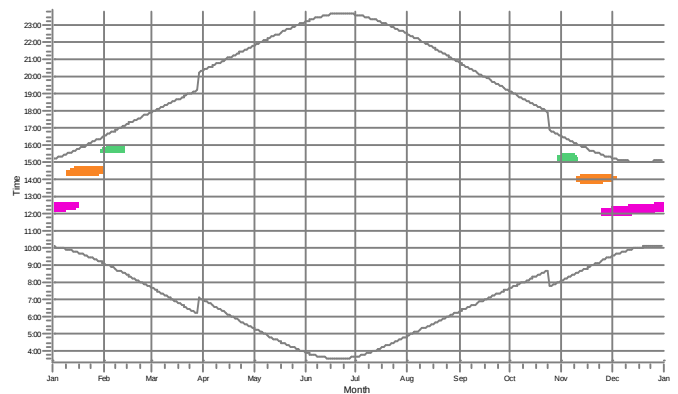
SHADOW - Calendar, graphical

Calculation: Kalax Vestas V126 x 33 x hh137m

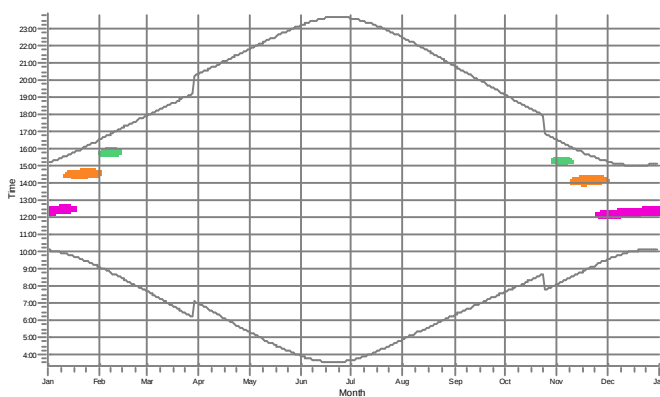
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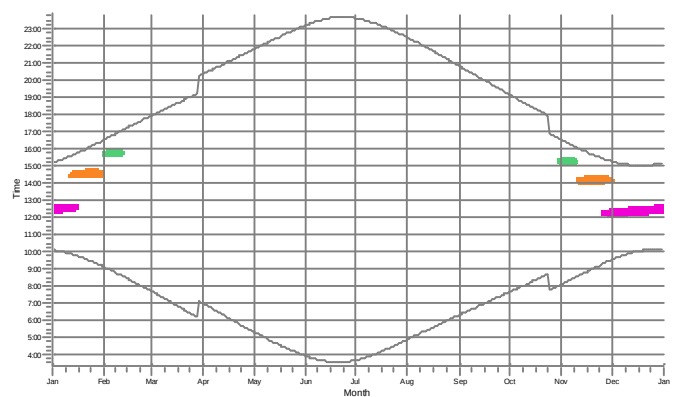
T: Asuinrakennus Nybackavägen 25



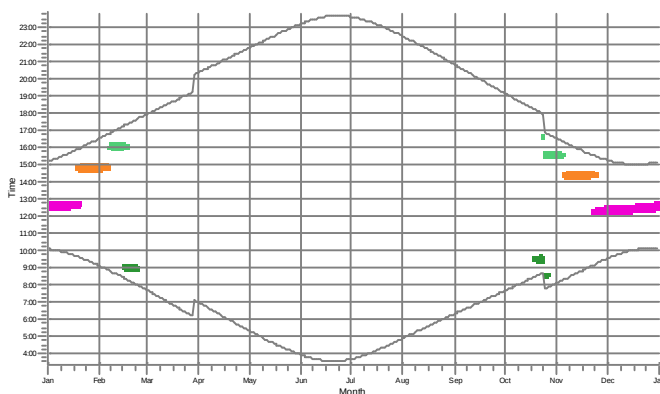
U: Asuinrakennus Nybackavägen 23



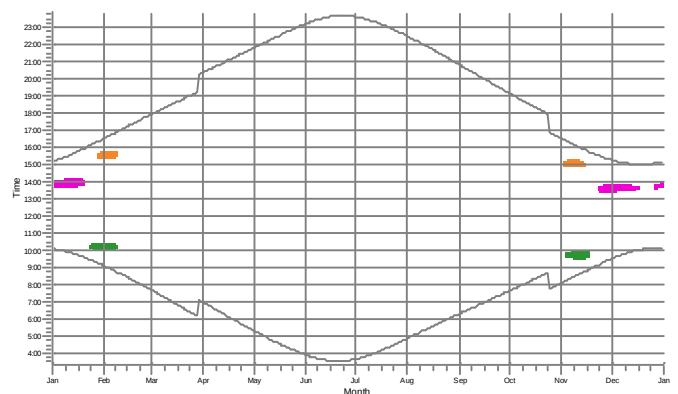
V: Asuinrakennus Nixmossvägen 667



W: Asuinrakennus Nybackavägen 13



X: Asuinrakennus Lidvägen 12a



WTGs

25: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (292)

26: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (293)

29: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (297)

30: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (299)

Project:

Kalax, Närpes

Description:

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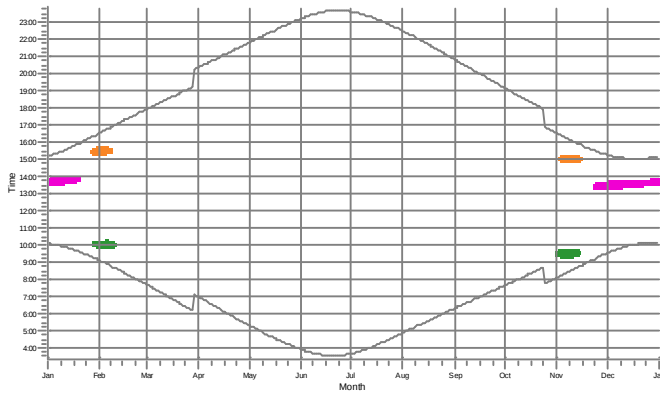
Calculated:

13.1.2014 13:27/2.8.579

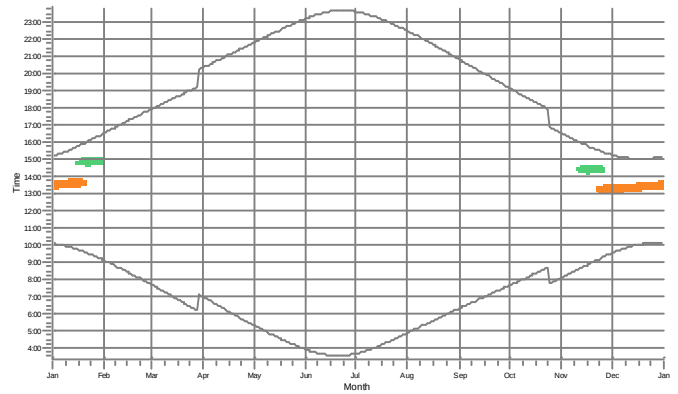
SHADOW - Calendar, graphical

Calculation: Kalax Vestas V126 x 33 x hh137m

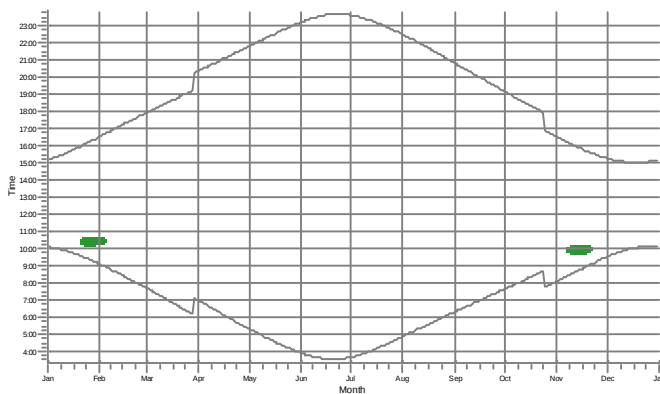
Y: Asuinrakennus Lidvågen 7



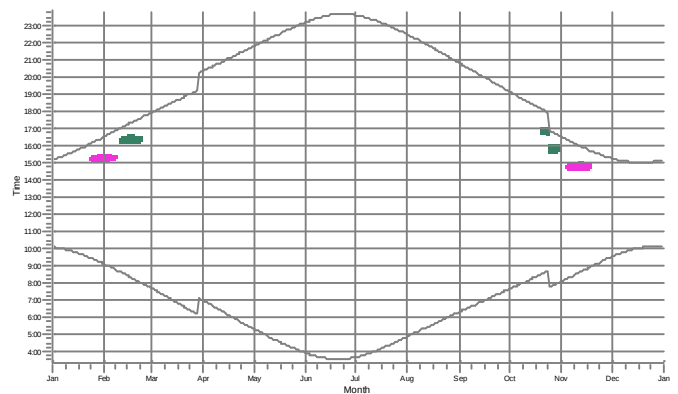
Z: Asuinrakennus Nybackavågen 78



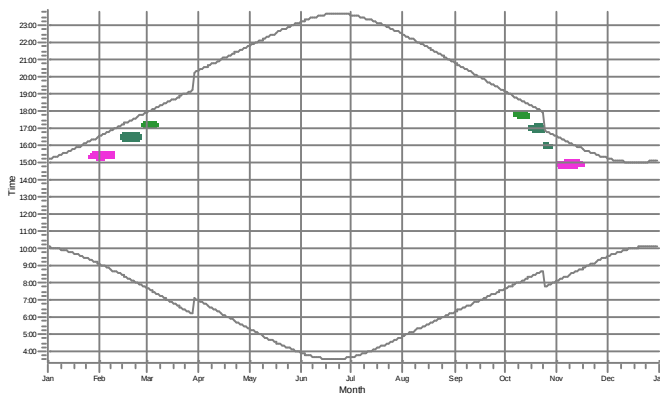
AA: Asuinrakennus Lidvågen 20



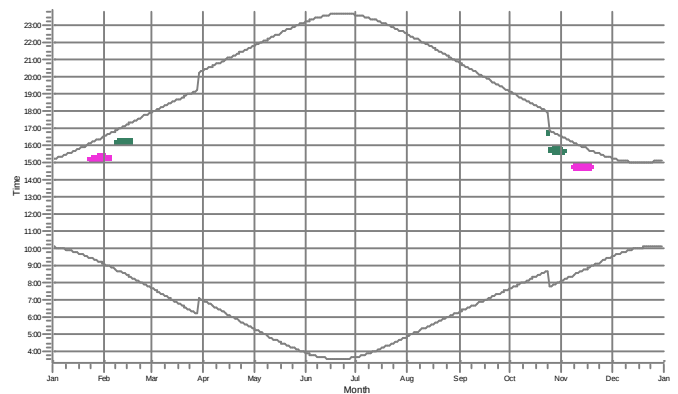
AB: Asuinrakennus Edsvågen 187



AC: Asuinrakennus Edsvågen 169



AD: Asuinrakennus Edsvågen 207



WTGs

25: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (292)
 26: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (293)

29: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (297)
 30: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (299)

31: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (300)
 33: VESTAS V126-3.3 GridStream 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (303)

Project:

Kalax, Närpes

Description:

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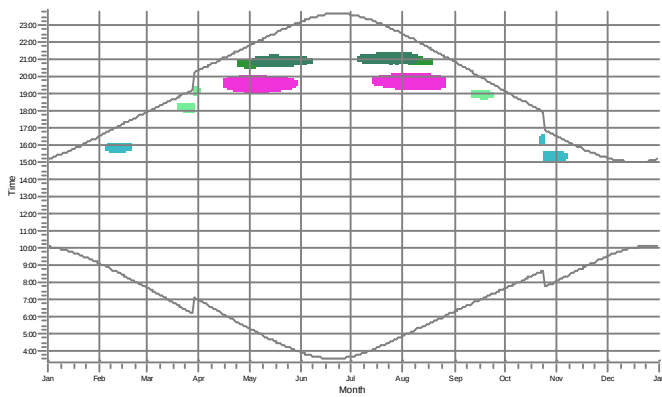
Calculated:

13.1.2014 13:27/2.8.579

SHADOW - Calendar, graphical

Calculation: Kalax Vestas V126 x 33 x hh137m

AE: Loma-asunto Gamla Nixmossvägen 17



WTGs

21: VESTAS V126-3.3 GridStreame 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (288)

28: VESTAS V126-3.3 GridStreame 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (295)

29: VESTAS V126-3.3 GridStreame 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (297)

31: VESTAS V126-3.3 GridStreame 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (300)

33: VESTAS V126-3.3 GridStreame 3300 126.0 lOI hub: 137.0 m (TOT: 200.0 m) (303)

Project:

Kalax, Närpes

Description:

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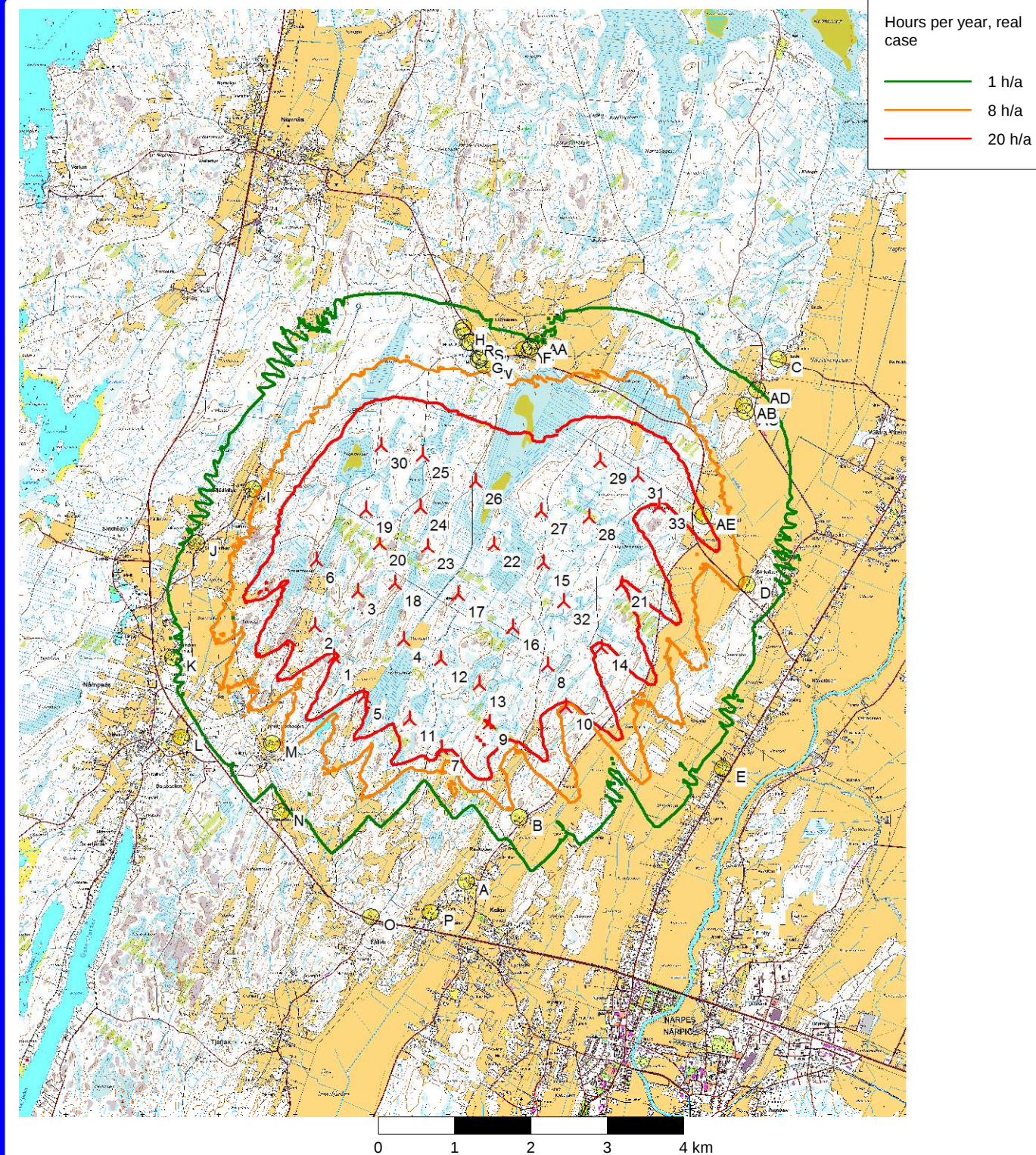
Janne Märsylä / janne.marsyla@fcg.fi

Calculated:

13.1.2014 13:27/2.8.579

SHADOW - Map

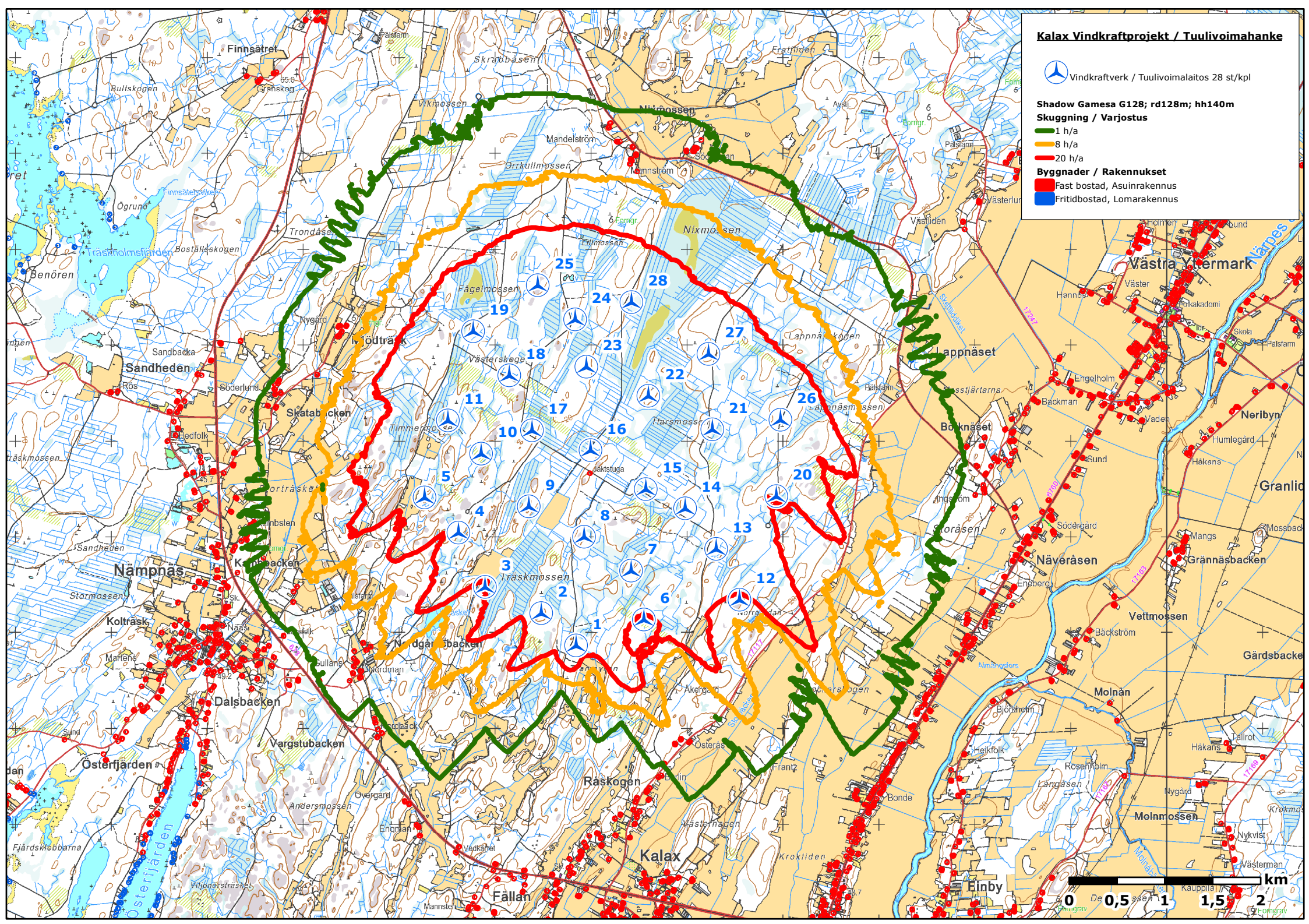
Calculation: Kalax Vestas V126 x 33 x hh137m



New WTG

Shadow receptor

Flicker map level: Height Contours: Närpes korkeuskäyrät(1).wpo (1)



Project:

Kalax, Närpes

Description:

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Calculated:

10.2.2014 13:07/2.8.579

SHADOW - Main Result

Calculation: Kalax Gamesa G128 x 28 x hh140m

Assumptions for shadow calculations

Maximum distance for influence

Calculate only when more than 20 % of sun is covered by the blade

Please look in WTG table

Minimum sun height over horizon for influence

3 °

Day step for calculation

1 days

Time step for calculation

1 minutes

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1,02	2,84	3,78	6,14	8,62	9,94	7,42	5,13	4,32	3,43	1,58	0,96

Operational hours are calculated from WTGs in calculation and wind distribution:

MERRA_basic_E21.335_N62.500

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
814	720	519	431	486	705	1130	1264	652	593	650	656	8622

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

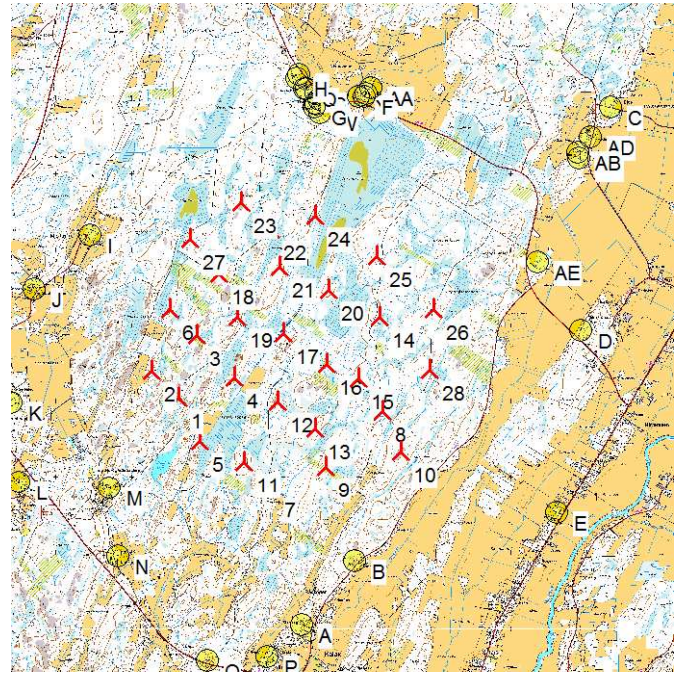
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

Height contours used: Height Contours: Närpes korkeuskäyrät(1).wpo (1)

Obstacles not used in calculation

Eye height: 1,5 m

Grid resolution: 25,0 m



Scale 1:100 000

Scale 1:100 000

Shadow receptor

WTGs

Finish TM ETRS-TM35FIN-ETRS89				WTG type				Shadow data			
East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
[m]											
1	204 618	6 945 047	22,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
2	204 264	6 945 414	15,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
3	204 856	6 945 872	22,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
4	205 351	6 945 321	19,8 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
5	204 896	6 944 481	17,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
6	204 507	6 946 217	20,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
7	205 845	6 943 870	17,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
8	207 306	6 944 876	22,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
9	206 551	6 944 139	22,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
10	207 550	6 944 346	25,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
11	205 481	6 944 207	20,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
12	205 927	6 945 005	20,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
13	206 419	6 944 649	25,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
14	207 266	6 946 123	22,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
15	206 983	6 945 300	21,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
16	206 573	6 945 501	18,7 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
17	205 994	6 945 906	15,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
18	205 149	6 946 687	26,4 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
19	205 385	6 946 115	22,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
20	206 600	6 946 474	20,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
21	205 951	6 946 777	21,6 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
22	205 834	6 947 272	24,7 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
23	205 446	6 947 628	31,4 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
24	206 423	6 947 452	18,3 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
25	207 225	6 946 912	25,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
26	207 976	6 946 224	26,6 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
27	204 771	6 947 147	25,0 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0
28	207 933	6 945 426	24,5 GAMESA G128 5000 128.0 !O! h...	Yes	GAMESA	G128-5 000	5 000	128,0	140,0	2 000	12,0

Project:

Kalax, Närpes

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Calculated:

10.2.2014 13:07/2.8.579

SHADOW - Main Result**Calculation:** Kalax Gamesa G128 x 28 x hh140m**Shadow receptor-Input**

		Finish TM ETRS-TM35FIN-ETRS89									
No.	Name	East	North	Z	Width	Height	Height a.g.l.	Degrees from south cw	Slope of window	Direction mode	
				[m]	[m]	[m]	[m]	[°]	[°]		
A	Asuinrakennus Råskogvägen 71	206 246	6 942 056	12,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
B	Asuinrakennus Råskogsvägen 181	206 937	6 942 891	13,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
C	Asuinrakennus Edsbackvägen	210 311	6 948 890	16,7	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
D	Asuinrakennus Börknäset	209 917	6 945 940	19,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
E	Asuinrakennus Vasavägen 303b	209 601	6 943 532	10,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
F	Asuinrakennus Lidvägen 12b	207 068	6 949 027	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
G	Asuinrakennus Nybackavägen 21	206 407	6 948 891	25,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
H	Asuinrakennus Nybackavägen 74	206 182	6 949 269	19,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
I	Asuinrakennus Skata-Mjödträskvägen 240	203 448	6 947 202	11,3	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
J	Asuinrakennus Skatatåget 7	202 707	6 946 489	7,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
K	Asuinrakennus Kambbackenvägen 24	202 402	6 944 985	11,7	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
L	Asuinrakennus Fallvägen 19	202 510	6 943 937	7,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
M	Asuinrakennus Nordgrådsvägen 86	203 702	6 943 856	14,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
N	Asuinrakennus Vargstubbäckvägen 78	203 817	6 942 961	16,2	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
O	Asuinrakennus Strandvägen 348	205 000	6 941 586	22,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
P	Asuinrakennus Norrtåget 14	205 777	6 941 641	7,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
Q	Asuinrakennus Nybackavägen 48	206 272	6 949 122	22,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
R	Asuinrakennus Nixmossvägen 679	206 300	6 949 124	20,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
S	Asuinrakennus Nixmossvägen 673	206 433	6 949 068	23,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
T	Asuinrakennus Nybackavägen 25	206 416	6 948 940	27,4	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
U	Asuinrakennus Nybackavägen 23	206 429	6 948 926	26,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
V	Asuinrakennus Nixmossvägen 667	206 468	6 948 985	23,7	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
W	Asuinrakennus Nybackavägen 13	206 481	6 948 812	20,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
X	Asuinrakennus Lidvägen 12a	207 087	6 949 062	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
Y	Asuinrakennus Lidvägen 7	206 995	6 949 025	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
Z	Asuinrakennus Nybackavägen 78	206 202	6 949 316	18,1	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AA	Asuinrakennus Lidvägen 20	207 151	6 949 145	16,8	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AB	Asuinrakennus Edsvägen 187	209 881	6 948 290	20,0	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AC	Asuinrakennus Edsvägen 169	209 896	6 948 210	19,3	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AD	Asuinrakennus Edsvägen 207	210 048	6 948 493	18,9	1,0	1,0	1,0	0,0	90,0	"Green house mode"	
AE	Loma-asunto Gamla Nixmossvägen 17	209 345	6 946 847	17,5	1,0	1,0	1,0	0,0	90,0	"Green house mode"	

Calculation Results

Shadow receptor

Shadow, expected values

No.	Name	Shadow hours per year [h/year]
A	Asuinrakennus Råskogsvägen 71	0:00
B	Asuinrakennus Råskogsvägen 181	5:53
C	Asuinrakennus Edsbackvägen	0:00
D	Asuinrakennus Börknäset	0:41
E	Asuinrakennus Vasavägen 303b	0:00
F	Asuinrakennus Lidvägen 12b	1:36
G	Asuinrakennus Nybackavägen 21	5:58
H	Asuinrakennus Nybackavägen 74	3:10
I	Asuinrakennus Skata-Mjödträskvägen 240	5:15
J	Asuinrakennus Skatatåget 7	1:36
K	Asuinrakennus Kambbackenvägen 24	0:51
L	Asuinrakennus Fallvägen 19	0:00
M	Asuinrakennus Nordgrådsvägen 86	5:22
N	Asuinrakennus Vargstubbäckvägen 78	0:00
O	Asuinrakennus Strandvägen 348	0:00
P	Asuinrakennus Norrtåget 14	0:00
Q	Asuinrakennus Nybackavägen 48	4:59
R	Asuinrakennus Nixmossvägen 679	4:58
S	Asuinrakennus Nixmossvägen 673	4:55
T	Asuinrakennus Nybackavägen 25	5:36

To be continued on next page...

Project: Kalax, Närpes
Description: VindIn Oy/Ab

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SHADOW - Main Result

Calculation: Kalax Gamesa G128 x 28 x hh140m

...continued from previous page

No.	Name	Shadow, expected values	
		Shadow hours	per year
			[h/year]
	U Asuinrakennus Nybackavägen 23		5:39
	V Asuinrakennus Nixmossvägen 667		5:13
	W Asuinrakennus Nybackavägen 13		5:56
	X Asuinrakennus Lidvägen 12a		1:31
	Y Asuinrakennus Lidvägen 7		1:59
	Z Asuinrakennus Nybackavägen 78		3:01
	AA Asuinrakennus Lidvägen 20		1:18
	AB Asuinrakennus Edsvägen 187		0:00
	AC Asuinrakennus Edsvägen 169		0:00
	AD Asuinrakennus Edsvägen 207		0:00
	AE Loma-asunto Gamla Nixmossvägen 17		1:19

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

No.	Name	Worst case	Expected
		[h/year]	[h/year]
1	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (385)	0:00	0:00
2	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (386)	14:03	2:26
3	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (387)	4:11	0:52
4	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (388)	0:00	0:00
5	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (389)	16:59	4:25
6	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (390)	12:07	2:25
7	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (391)	20:29	5:46
8	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (392)	0:00	0:00
9	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (393)	0:00	0:00
10	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (394)	0:00	0:00
11	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (395)	11:58	2:54
12	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (396)	0:00	0:00
13	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (397)	0:00	0:00
14	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (399)	0:00	0:00
15	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (400)	0:00	0:00
16	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (401)	0:00	0:00
17	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (402)	0:00	0:00
18	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (403)	4:31	0:48
19	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (404)	0:00	0:00
20	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (406)	0:00	0:00
21	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (407)	0:00	0:00
22	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (408)	46:09	5:54
23	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (409)	44:50	6:13
24	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (410)	87:40	11:10
25	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (411)	0:00	0:00
26	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (412)	10:09	2:01
27	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (414)	8:45	1:48
28	GAMESA G128 5000 128.0 !O! hub: 140,0 m (TOT: 204,0 m) (416)	0:00	0:00

Project:

Kalax, Närpes

Description:

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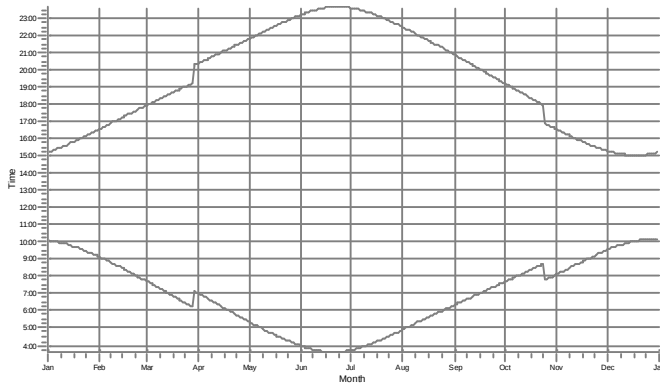
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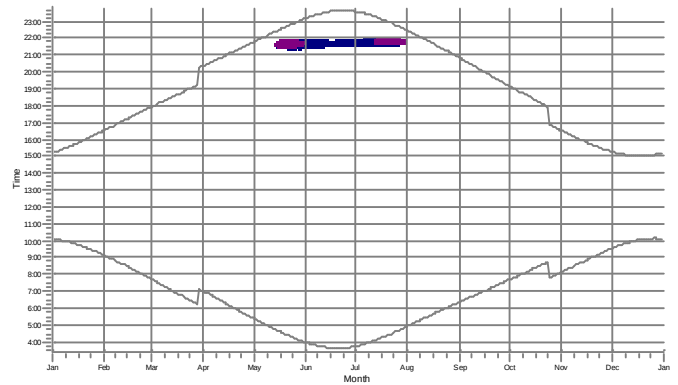
SHADOW - Calendar, graphical

Calculation: Kalax Gamesa G128 x 28 x hh140m

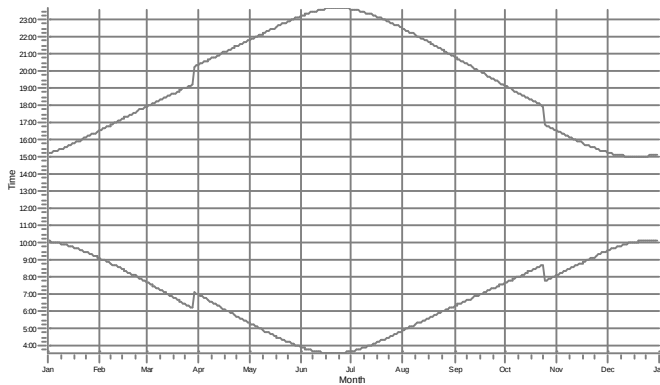
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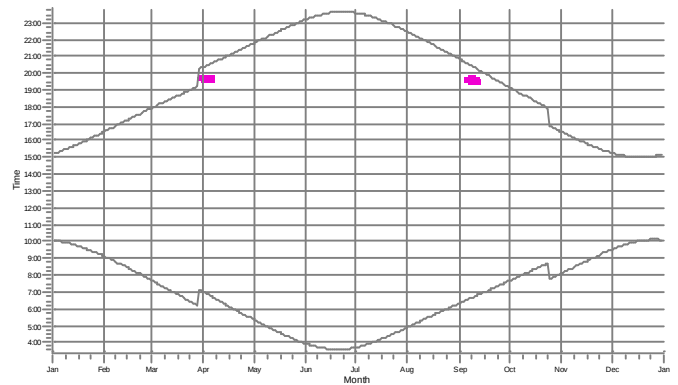
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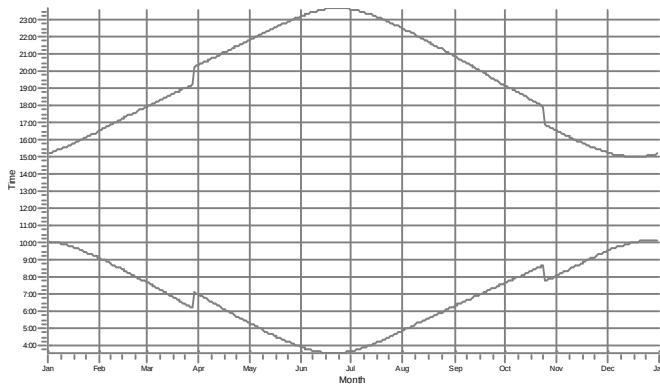
C: Asuinrakennus Edsbackvägen



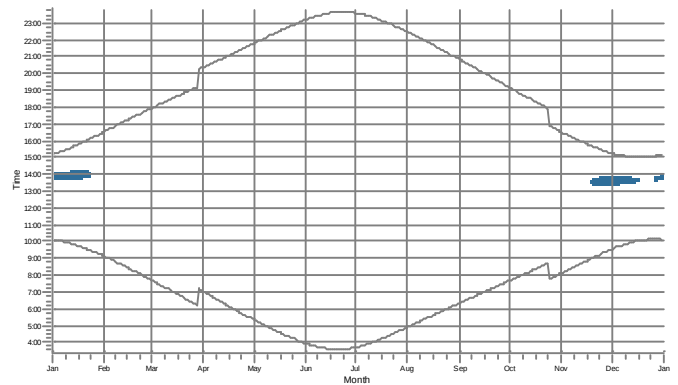
D: Asuinrakennus Börknäset



E: Asuinrakennus Vasavägen 303b



F: Asuinrakennus Lidvägen 12b



WTGs

 7: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (391)
 11: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (395)

 24: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (410)
 26: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (412)

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Kalax, Närpes

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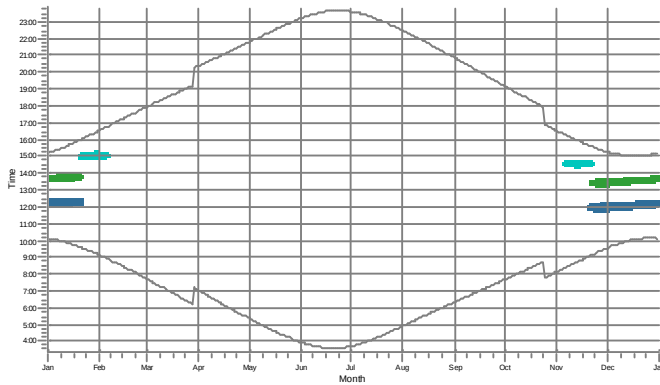
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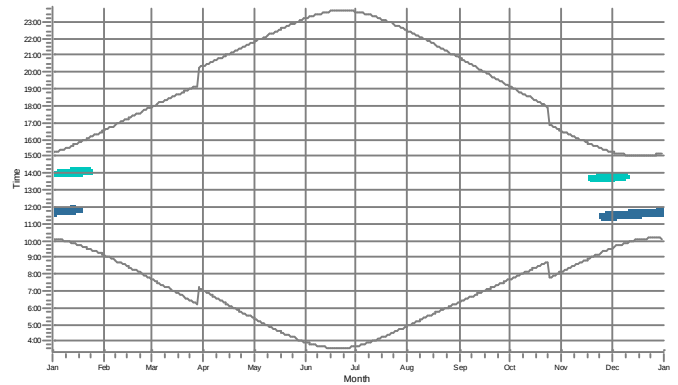
SHADOW - Calendar, graphical

Calculation: Kalax Gamesa G128 x 28 x hh140m

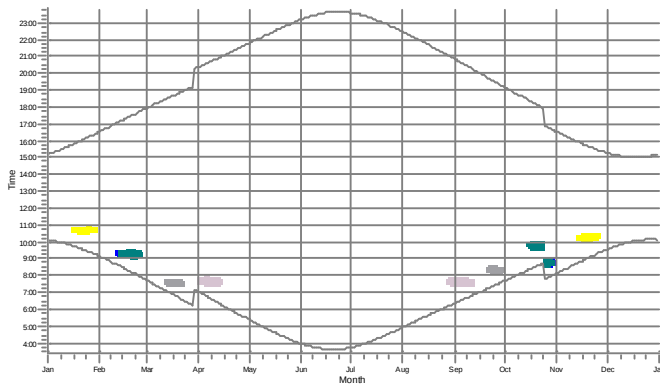
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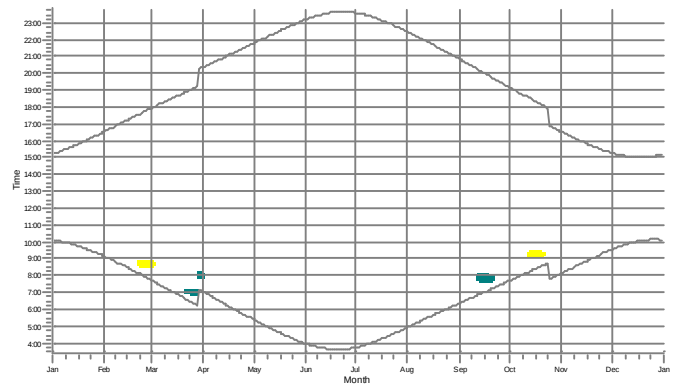
H: Asuinrakennus Nybackavägen 74



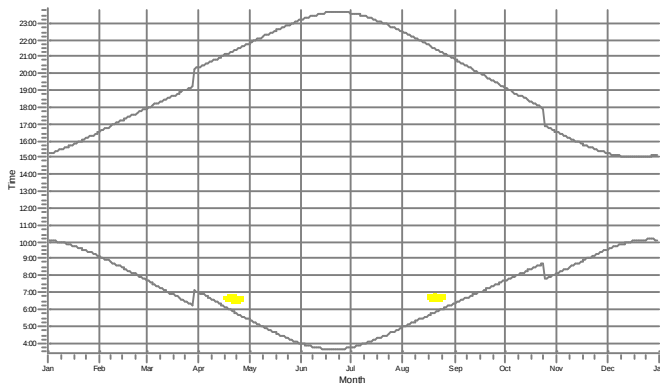
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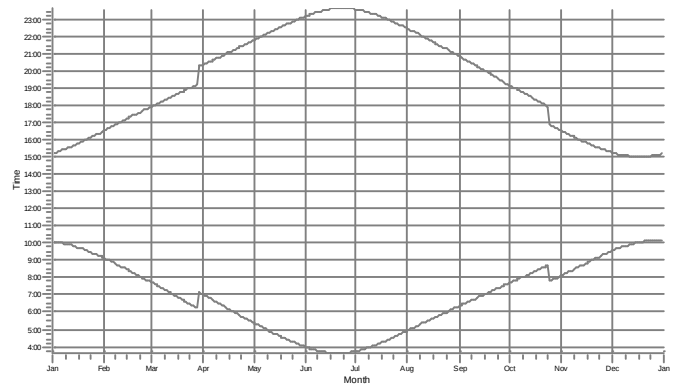
J: Asuinrakennus Skatatåget 7



K: Asuinrakennus Kambackenvägen 24



L: Asuinrakennus Fallvägen 19



WTGs

2: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (386)	18: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (403)	24: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (410)
3: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (387)	22: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (408)	27: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (414)
6: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (390)	23: GAMESA G128 5000 128.0 !OI! hub: 140,0 m (TOT: 204,0 m) (409)	

Project:

Kalax, Närpes

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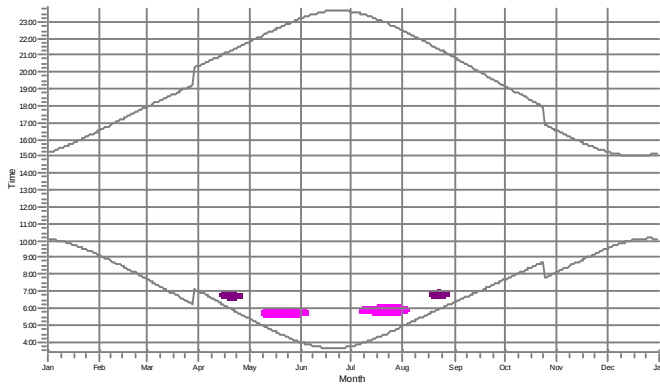
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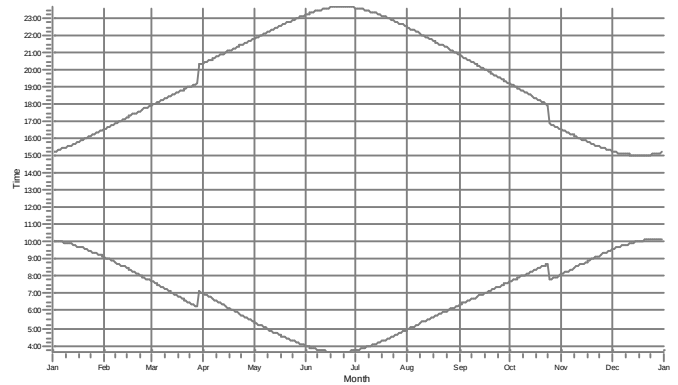
SHADOW - Calendar, graphical

Calculation: Kalax Gamesa G128 x 28 x hh140m

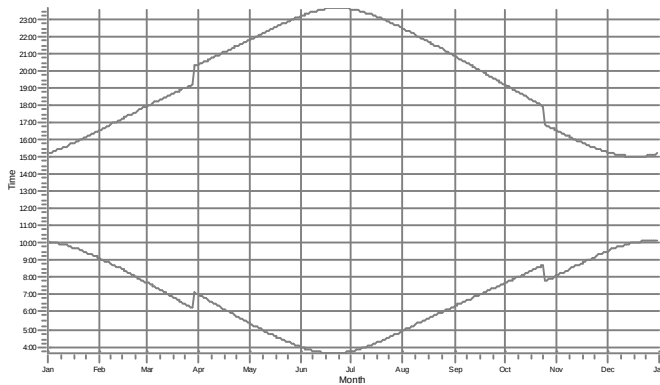
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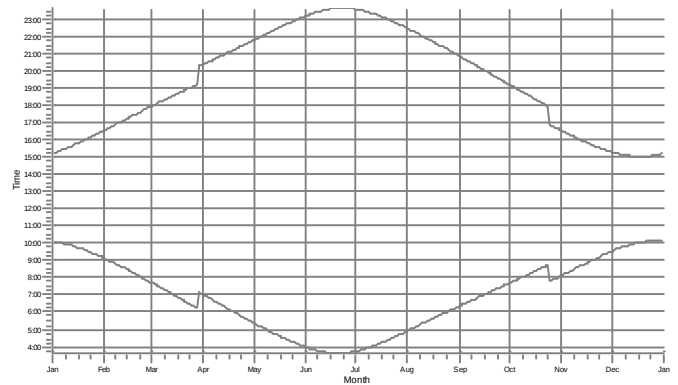
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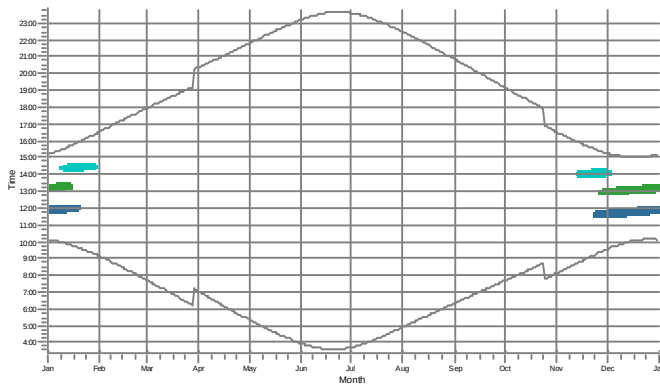
O: Asuinrakennus Strandvägen 348



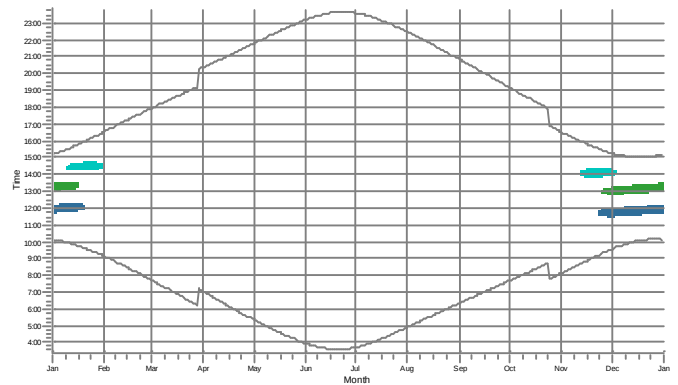
P: Asuinrakennus Norrtåget 14



Q: Asuinrakennus Nybackavägen 48



R: Asuinrakennus Nixmossvägen 679



WTGs

5: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (389)	22: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (408)	24: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (410)
11: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (395)	23: GAMESA G128 5000 128.0 !OI! hub: 140.0 m (TOT: 204.0 m) (409)	

Project:

Kalax, Närpes

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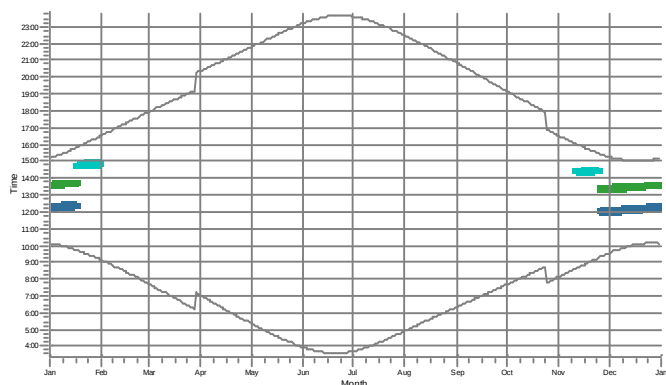
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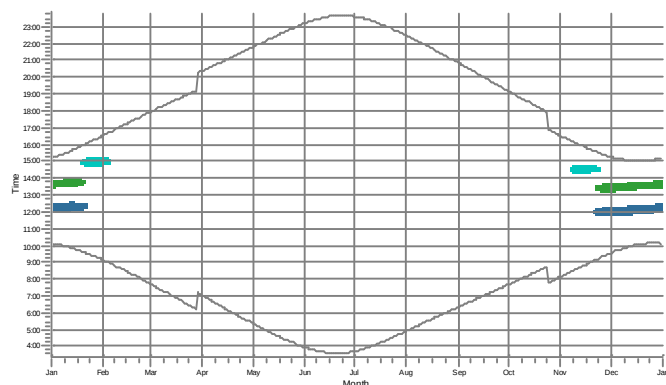
SHADOW - Calendar, graphical

Calculation: Kalax Gamesa G128 x 28 x hh140m

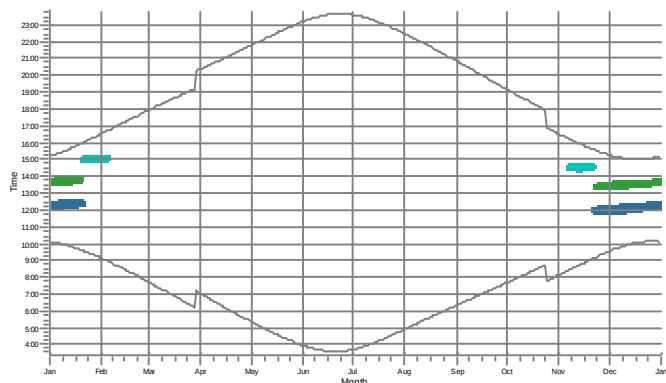
S: Asuinrakennus Nixmossvägen 673



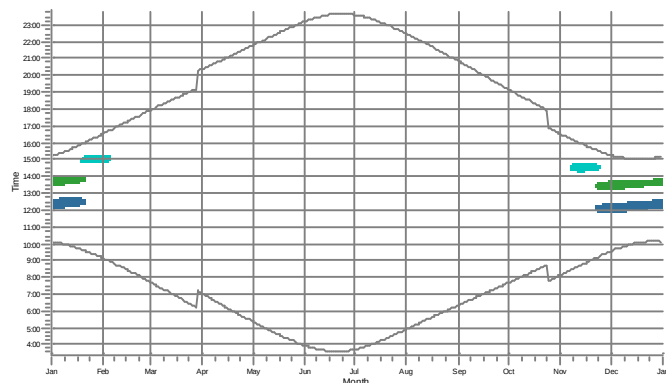
T: Asuinrakennus Nybackavägen 25



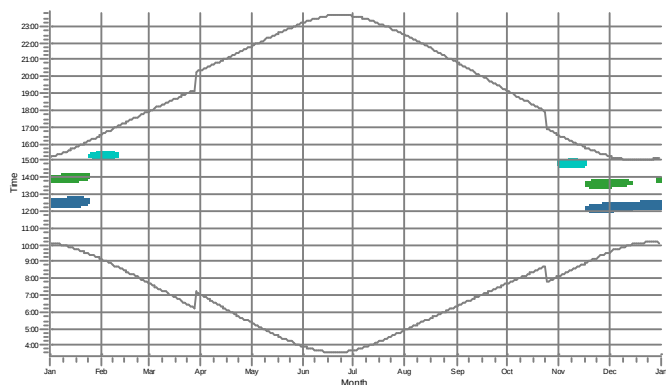
U: Asuinrakennus Nybackavägen 23



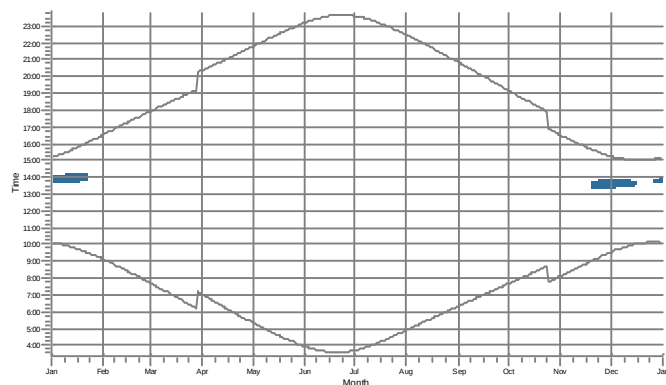
V: Asuinrakennus Nixmossvägen 667



W: Asuinrakennus Nybackavägen 13



X: Asuinrakennus Lidvägen 12a



WTGs

22: GAMESA G128 5000 128.0 l'OI' hub: 140,0 m (TOT: 204,0 m) (408)

23: GAMESA G128 5000 128.0 l'OI' hub: 140,0 m (TOT: 204,0 m) (409)

24: GAMESA G128 5000 128.0 l'OI' hub: 140,0 m (TOT: 204,0 m) (410)

Project:

Kalax, Närpes

Description:

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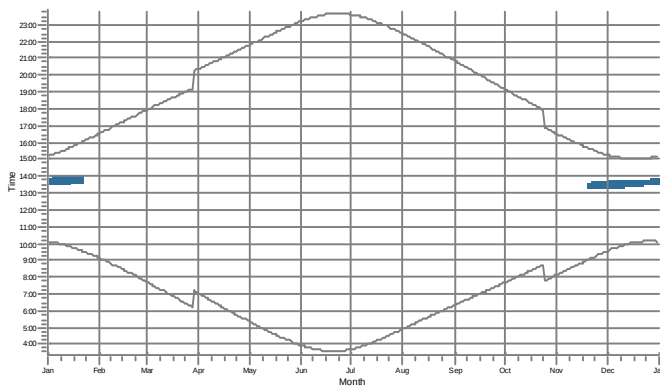
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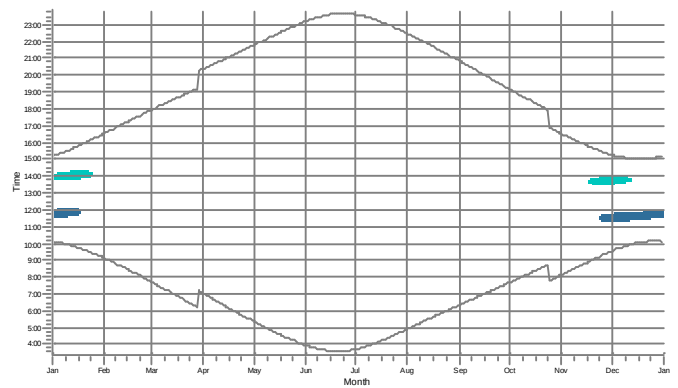
SHADOW - Calendar, graphical

Calculation: Kalax Gamesa G128 x 28 x hh140m

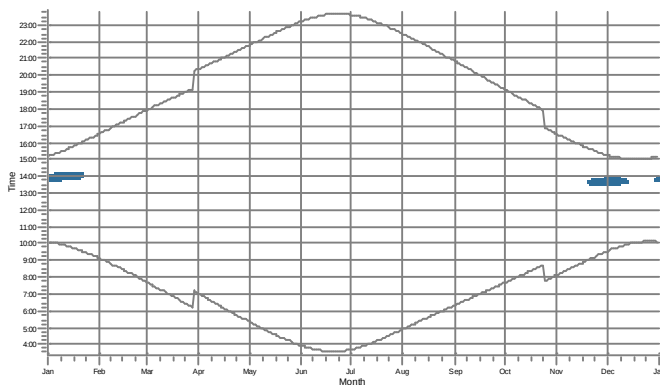
Y: Asuinrakennus Lidvågen 7



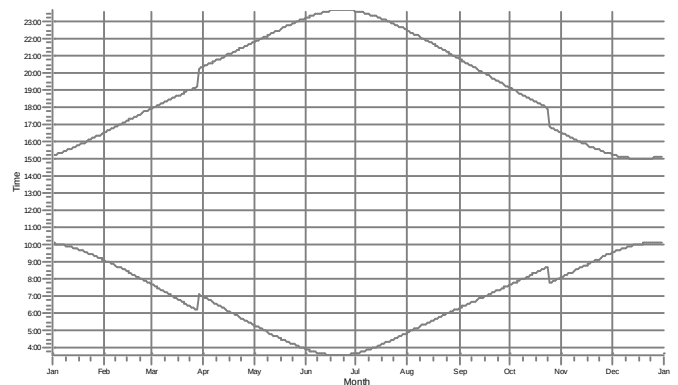
Z: Asuinrakennus Nybackavågen 78



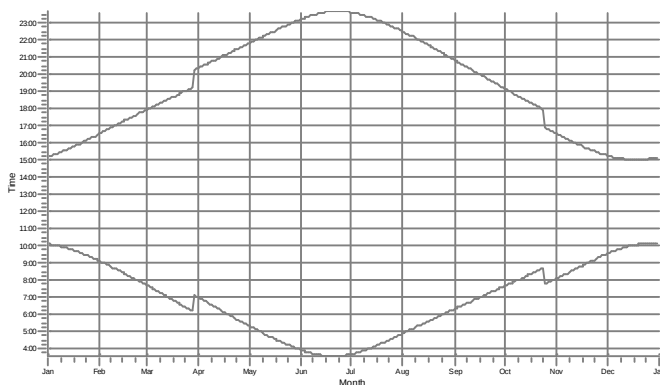
AA: Asuinrakennus Lidvågen 20



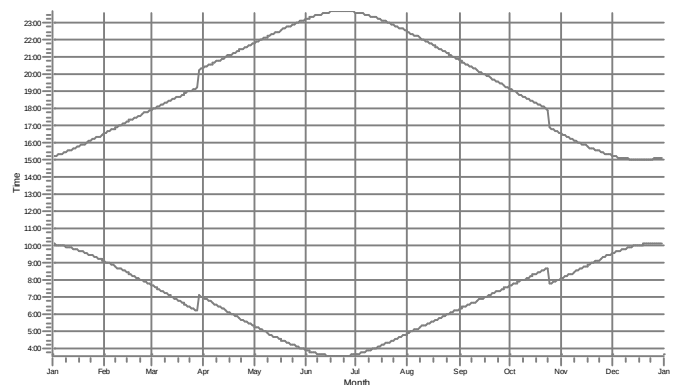
AB: Asuinrakennus Edsvågen 187



AC: Asuinrakennus Edsvågen 169



AD: Asuinrakennus Edsvågen 207



WTGs

23: GAMESA G128 5000 128.0 l/O! hub: 140,0 m (TOT: 204,0 m) (409)

24: GAMESA G128 5000 128.0 l/O! hub: 140,0 m (TOT: 204,0 m) (410)

Project:

Kalax, Närpes

Description:

VindIn Oy/Ab

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13.2.2014 8:37 / 9

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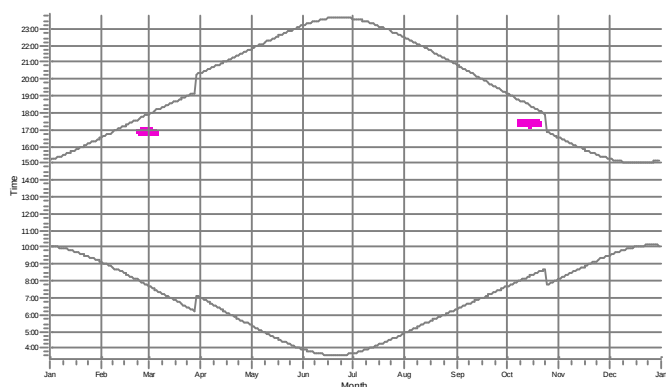
Calculated:

10.2.2014 13:07/2.8.579

SHADOW - Calendar, graphical

Calculation: Kalax Gamesa G128 x 28 x hh140m

AE Loma-asunto Gamla Nixmossvägen 17



WTGs

26: GAMESA G128 5000 128.0 l/O! hub: 140,0 m (TOT: 204,0 m) (412)

Project:

Kalax, Närpes

Description:

VindIn Oy/Ab

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+358104095666

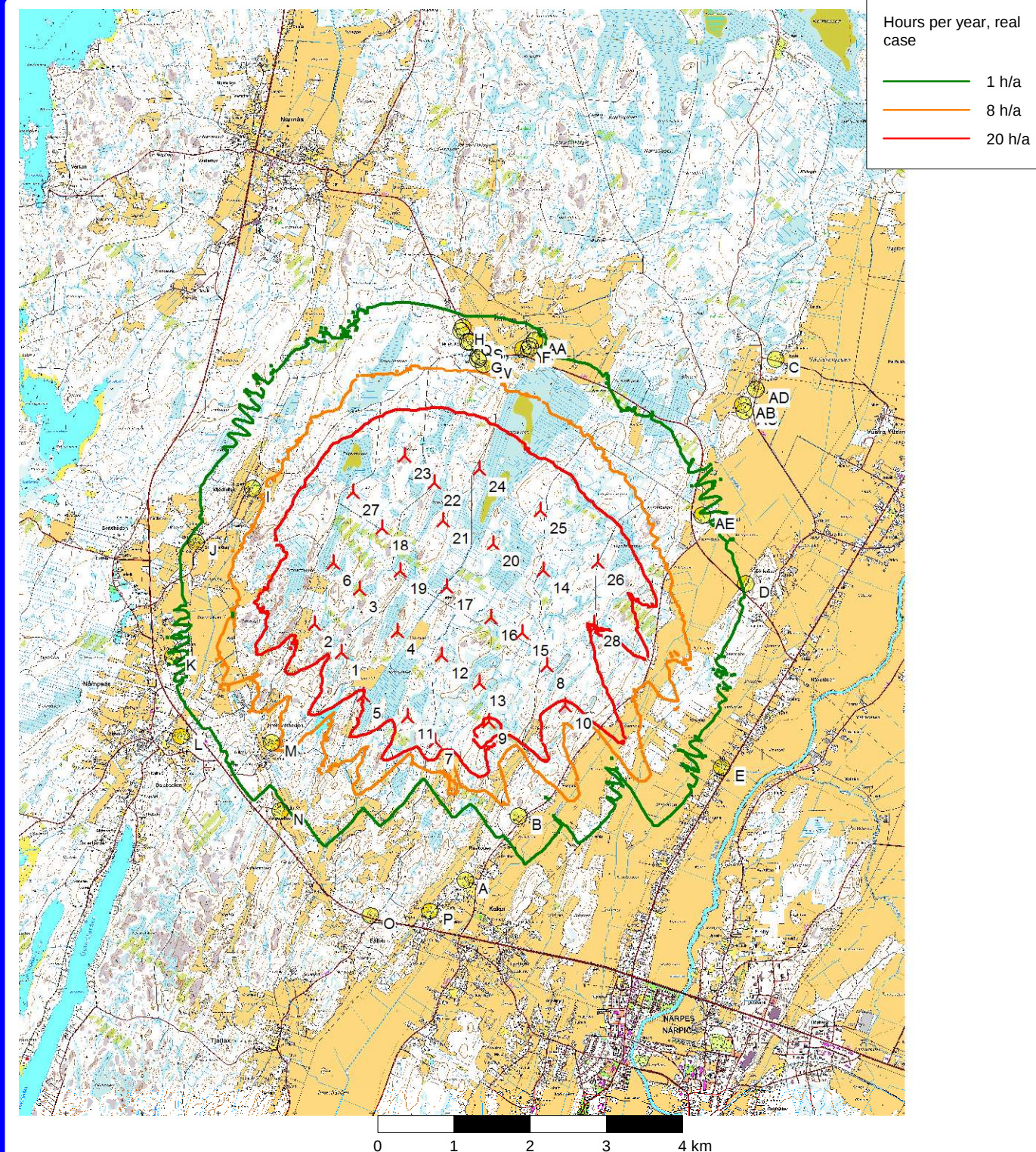
Janne Märsylä / janne.marsyla@fcg.fi

Calculated:

10.2.2014 13:07/2.8.579

SHADOW - Map

Calculation: Kalax Gamesa G128 x 28 x hh140m



New WTG

Shadow receptor

Flicker map level: Height Contours: Närpes korkeuskäyrät(1).wpo (1)