

Project:

Suurheika-pitkämatala-080514-2

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2008.11.10 10:13 / 1

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wpd Scandinavia AB

Ferkens Gränd 3

SE-111 30 Stockholm

+46 733 99 00 40

Calculated:

2008.11.08 22:31/2.6.0.140

**SHADOW - Main Result****Calculation:** base 80**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

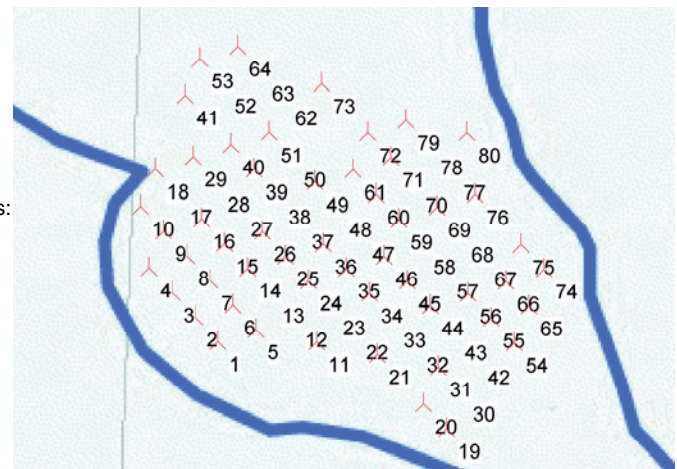
1 minutes

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



Scale 1:200 000

New WTG

**WTGs**

| KKJ Zone: 2 |           |           |                                        | WTG type |           |                |              | Shadow data    |            |                      |       |
|-------------|-----------|-----------|----------------------------------------|----------|-----------|----------------|--------------|----------------|------------|----------------------|-------|
| East        | North     | Z         | Row data/Description                   | Valid    | Manufact. | Type-generator | Power, rated | Rotor diameter | Hub height | Calculation distance | RPM   |
| KKJ Zone: 2 |           |           | [m]                                    |          |           |                | [kW]         | [m]            | [m]        | [m]                  | [RPM] |
| 1           | 2 525 988 | 7 240 433 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 2           | 2 525 346 | 7 241 060 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 3           | 2 524 703 | 7 241 686 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 4           | 2 524 060 | 7 242 312 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 5           | 2 526 978 | 7 240 804 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 6           | 2 526 336 | 7 241 430 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 7           | 2 525 693 | 7 242 056 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 8           | 2 525 050 | 7 242 682 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 9           | 2 524 408 | 7 243 309 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 10          | 2 523 765 | 7 243 935 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 11          | 2 528 610 | 7 240 546 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 12          | 2 527 967 | 7 241 173 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 13          | 2 527 325 | 7 241 799 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 14          | 2 526 682 | 7 242 425 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 15          | 2 526 039 | 7 243 051 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 16          | 2 525 397 | 7 243 678 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 17          | 2 524 754 | 7 244 304 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 18          | 2 524 111 | 7 244 930 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 19          | 2 532 165 | 7 238 406 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 20          | 2 531 523 | 7 239 033 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 21          | 2 530 241 | 7 240 289 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 22          | 2 529 599 | 7 240 915 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 23          | 2 528 956 | 7 241 542 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 24          | 2 528 313 | 7 242 168 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 25          | 2 527 671 | 7 242 794 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 26          | 2 527 028 | 7 243 420 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 27          | 2 526 385 | 7 244 047 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 28          | 2 525 743 | 7 244 673 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 29          | 2 525 100 | 7 245 299 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 30          | 2 532 514 | 7 239 404 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 31          | 2 531 871 | 7 240 031 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 32          | 2 531 229 | 7 240 657 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 33          | 2 530 586 | 7 241 283 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 34          | 2 529 944 | 7 241 909 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 35          | 2 529 301 | 7 242 536 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 36          | 2 528 658 | 7 243 162 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 37          | 2 528 016 | 7 243 788 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 38          | 2 527 373 | 7 244 414 | 0,0 REpower 5M 5000 126.0 !-! hub.:Yes | REpower  | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |

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Ferkens Gränd 3

SE-111 30 Stockholm

+46 733 99 00 40

Calculated:

2008.11.08 22:31/2.6.0.140

**SHADOW - Main Result**

Calculation: base 80

...continued from previous page

| KKJ Zone: 2 |             |           |     | WTG type                            |         |           | Shadow data    |              |                |            |                      |       |
|-------------|-------------|-----------|-----|-------------------------------------|---------|-----------|----------------|--------------|----------------|------------|----------------------|-------|
|             | East        | North     | Z   | Row data/Description                | Valid   | Manufact. | Type-generator | Power, rated | Rotor diameter | Hub height | Calculation distance | RPM   |
|             | KKJ Zone: 2 |           | [m] |                                     |         |           |                | [kW]         | [m]            | [m]        | [m]                  | [RPM] |
| 39          | 2 526 730   | 7 245 041 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 40          | 2 526 088   | 7 245 667 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 41          | 2 524 802   | 7 246 919 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 42          | 2 532 863   | 7 240 402 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 43          | 2 532 220   | 7 241 029 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 44          | 2 531 578   | 7 241 655 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 45          | 2 530 935   | 7 242 281 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 46          | 2 530 292   | 7 242 907 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 47          | 2 529 650   | 7 243 534 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 48          | 2 529 007   | 7 244 160 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 49          | 2 528 364   | 7 244 786 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 50          | 2 527 722   | 7 245 412 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 51          | 2 527 079   | 7 246 038 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 52          | 2 525 794   | 7 247 291 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 53          | 2 525 151   | 7 247 917 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 54          | 2 533 853   | 7 240 773 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 55          | 2 533 210   | 7 241 399 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 56          | 2 532 568   | 7 242 025 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 57          | 2 531 925   | 7 242 651 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 58          | 2 531 282   | 7 243 278 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 59          | 2 530 640   | 7 243 904 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 60          | 2 529 997   | 7 244 530 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 61          | 2 529 354   | 7 245 156 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 62          | 2 527 426   | 7 247 035 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 63          | 2 526 784   | 7 247 661 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 64          | 2 526 141   | 7 248 287 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 65          | 2 534 202   | 7 241 771 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 66          | 2 533 559   | 7 242 397 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 67          | 2 532 916   | 7 243 023 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 68          | 2 532 274   | 7 243 649 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 69          | 2 531 631   | 7 244 276 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 70          | 2 530 988   | 7 244 902 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 71          | 2 530 346   | 7 245 528 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 72          | 2 529 703   | 7 246 154 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 73          | 2 528 418   | 7 247 407 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 74          | 2 534 551   | 7 242 768 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 75          | 2 533 908   | 7 243 395 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 76          | 2 532 627   | 7 244 651 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 77          | 2 531 984   | 7 245 277 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 78          | 2 531 341   | 7 245 904 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 79          | 2 530 699   | 7 246 530 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |
| 80          | 2 532 334   | 7 246 277 | 0,0 | REpower 5M 5000 126.0 !-! hub:..Yes | REpower | 5M-5 000  | 5 000          | 126,0        | 90,0           | 1 489      | 12,1                 |       |

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

| No. | Name                                          | Worst case [h/year] |
|-----|-----------------------------------------------|---------------------|
| 1   | REpower 5M 5000 126.0 !-! hub: 90,0 m (864.1) | 0:00                |
| 2   | REpower 5M 5000 126.0 !-! hub: 90,0 m (864.2) | 0:00                |
| 3   | REpower 5M 5000 126.0 !-! hub: 90,0 m (864.3) | 0:00                |
| 4   | REpower 5M 5000 126.0 !-! hub: 90,0 m (864.4) | 0:00                |
| 5   | REpower 5M 5000 126.0 !-! hub: 90,0 m (865.1) | 0:00                |
| 6   | REpower 5M 5000 126.0 !-! hub: 90,0 m (865.2) | 0:00                |
| 7   | REpower 5M 5000 126.0 !-! hub: 90,0 m (865.3) | 0:00                |
| 8   | REpower 5M 5000 126.0 !-! hub: 90,0 m (865.4) | 0:00                |
| 9   | REpower 5M 5000 126.0 !-! hub: 90,0 m (865.5) | 0:00                |
| 10  | REpower 5M 5000 126.0 !-! hub: 90,0 m (865.6) | 0:00                |
| 11  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.1) | 0:00                |

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Project:

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Ferkens Gränd 3

SE-111 30 Stockholm

+46 733 99 00 40

Calculated:

2008.11.08 22:31/2.6.0.140

**SHADOW - Main Result****Calculation:** base 80

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| No. | Name                                           | Worst case<br>[h/year] |
|-----|------------------------------------------------|------------------------|
| 12  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.2)  | 0:00                   |
| 13  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.3)  | 0:00                   |
| 14  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.4)  | 0:00                   |
| 15  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.5)  | 0:00                   |
| 16  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.6)  | 0:00                   |
| 17  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.7)  | 0:00                   |
| 18  | REpower 5M 5000 126.0 !-! hub: 90,0 m (866.8)  | 0:00                   |
| 19  | REpower 5M 5000 126.0 !-! hub: 90,0 m (867.1)  | 0:00                   |
| 20  | REpower 5M 5000 126.0 !-! hub: 90,0 m (867.2)  | 0:00                   |
| 21  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.1)  | 0:00                   |
| 22  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.2)  | 0:00                   |
| 23  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.3)  | 0:00                   |
| 24  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.4)  | 0:00                   |
| 25  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.5)  | 0:00                   |
| 26  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.6)  | 0:00                   |
| 27  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.7)  | 0:00                   |
| 28  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.8)  | 0:00                   |
| 29  | REpower 5M 5000 126.0 !-! hub: 90,0 m (868.9)  | 0:00                   |
| 30  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.1)  | 0:00                   |
| 31  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.2)  | 0:00                   |
| 32  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.3)  | 0:00                   |
| 33  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.4)  | 0:00                   |
| 34  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.5)  | 0:00                   |
| 35  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.6)  | 0:00                   |
| 36  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.7)  | 0:00                   |
| 37  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.8)  | 0:00                   |
| 38  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.9)  | 0:00                   |
| 39  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.10) | 0:00                   |
| 40  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.11) | 0:00                   |
| 41  | REpower 5M 5000 126.0 !-! hub: 90,0 m (869.13) | 0:00                   |
| 42  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.1)  | 0:00                   |
| 43  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.2)  | 0:00                   |
| 44  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.3)  | 0:00                   |
| 45  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.4)  | 0:00                   |
| 46  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.5)  | 0:00                   |
| 47  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.6)  | 0:00                   |
| 48  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.7)  | 0:00                   |
| 49  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.8)  | 0:00                   |
| 50  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.9)  | 0:00                   |
| 51  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.10) | 0:00                   |
| 52  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.12) | 0:00                   |
| 53  | REpower 5M 5000 126.0 !-! hub: 90,0 m (870.13) | 0:00                   |
| 54  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.1)  | 0:00                   |
| 55  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.2)  | 0:00                   |
| 56  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.3)  | 0:00                   |
| 57  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.4)  | 0:00                   |
| 58  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.5)  | 0:00                   |
| 59  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.6)  | 0:00                   |
| 60  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.7)  | 0:00                   |
| 61  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.8)  | 0:00                   |
| 62  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.11) | 0:00                   |
| 63  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.12) | 0:00                   |
| 64  | REpower 5M 5000 126.0 !-! hub: 90,0 m (871.13) | 0:00                   |
| 65  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.1)  | 0:00                   |
| 66  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.2)  | 0:00                   |
| 67  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.3)  | 0:00                   |
| 68  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.4)  | 0:00                   |
| 69  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.5)  | 0:00                   |
| 70  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.6)  | 0:00                   |
| 71  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.7)  | 0:00                   |
| 72  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.8)  | 0:00                   |

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**SHADOW - Main Result****Calculation:** base 80

...continued from previous page

| No. | Name                                           | Worst case<br>[h/year] |
|-----|------------------------------------------------|------------------------|
| 73  | REpower 5M 5000 126.0 !-! hub: 90,0 m (872.10) | 0:00                   |
| 74  | REpower 5M 5000 126.0 !-! hub: 90,0 m (873.1)  | 0:00                   |
| 75  | REpower 5M 5000 126.0 !-! hub: 90,0 m (873.2)  | 0:00                   |
| 76  | REpower 5M 5000 126.0 !-! hub: 90,0 m (874.1)  | 0:00                   |
| 77  | REpower 5M 5000 126.0 !-! hub: 90,0 m (874.2)  | 0:00                   |
| 78  | REpower 5M 5000 126.0 !-! hub: 90,0 m (874.3)  | 0:00                   |
| 79  | REpower 5M 5000 126.0 !-! hub: 90,0 m (874.4)  | 0:00                   |
| 80  | REpower 5M 5000 126.0 !-! hub: 90,0 m (875)    | 0:00                   |



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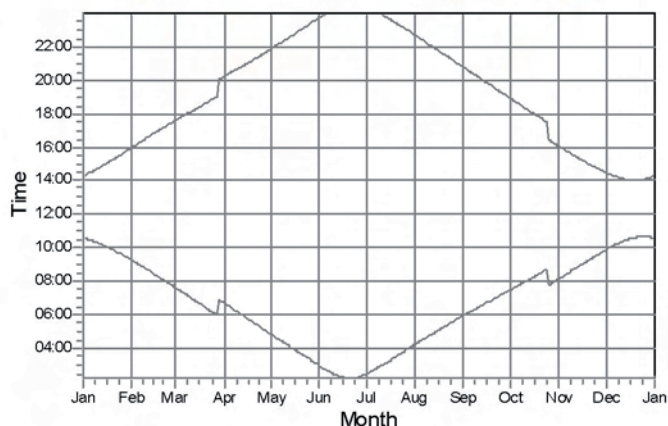
Calculated:

2008.11.08 22:31/2.6.0.140

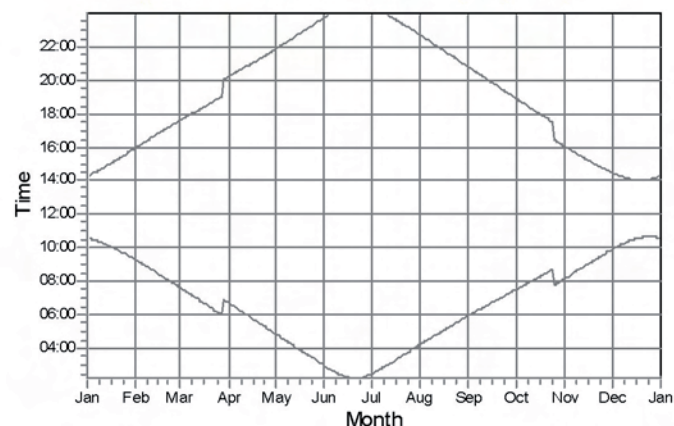
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

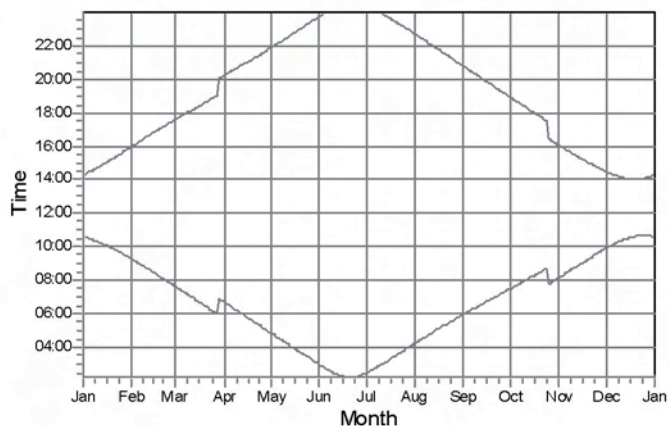
1: REpower 5M 5000 126.0 !hub: 90,0 m (864.1)



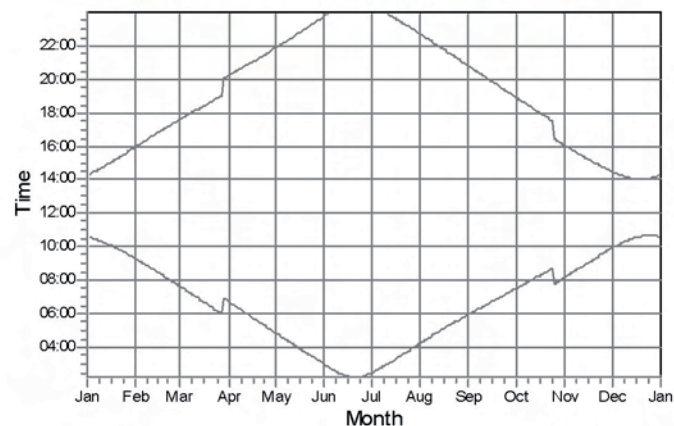
2: REpower 5M 5000 126.0 !hub: 90,0 m (864.2)



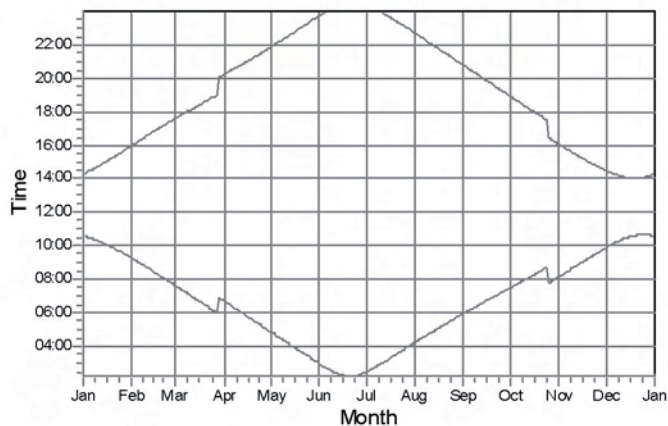
3: REpower 5M 5000 126.0 !hub: 90,0 m (864.3)



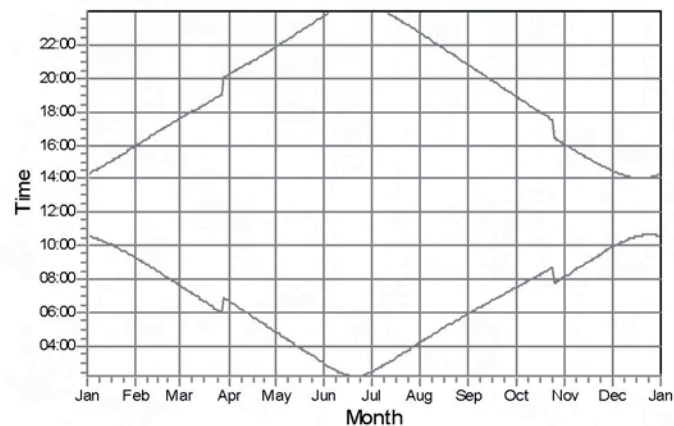
4: REpower 5M 5000 126.0 !hub: 90,0 m (864.4)



5: REpower 5M 5000 126.0 !hub: 90,0 m (865.1)



6: REpower 5M 5000 126.0 !hub: 90,0 m (865.2)



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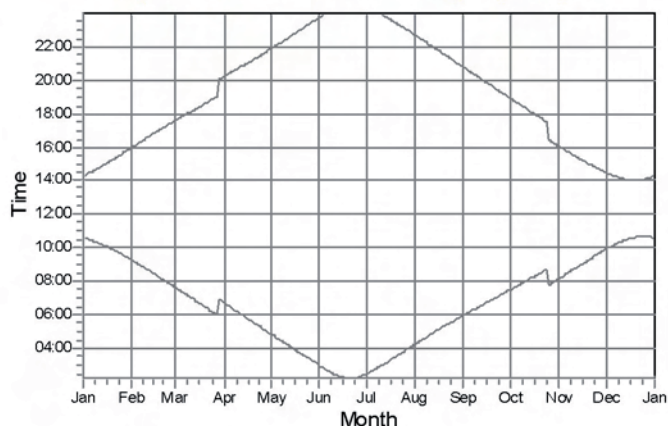
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2008.11.08 22:31/2.6.0.140

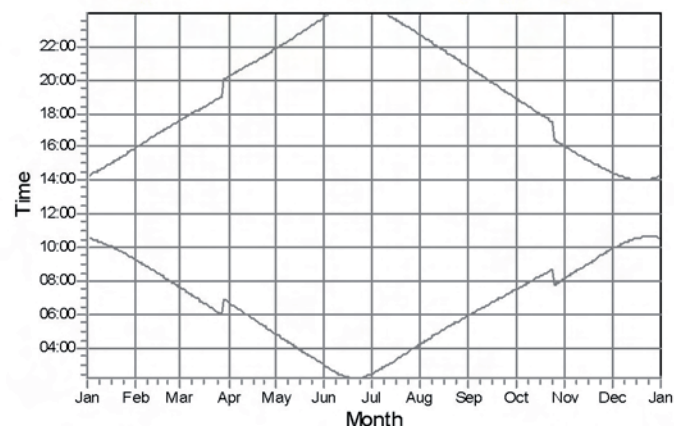
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

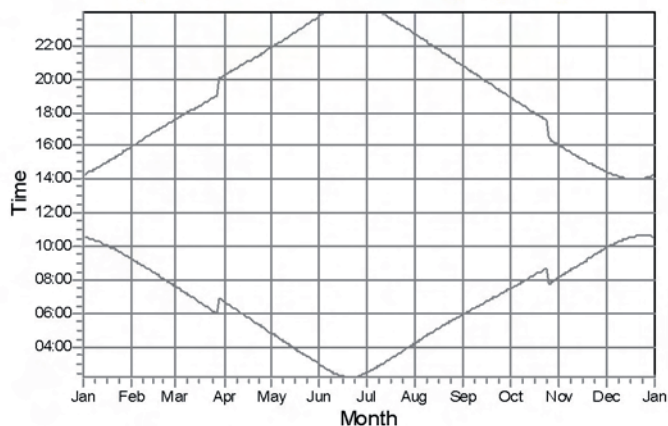
7: REpower 5M 5000 126.0 !hub: 90,0 m (865.3)



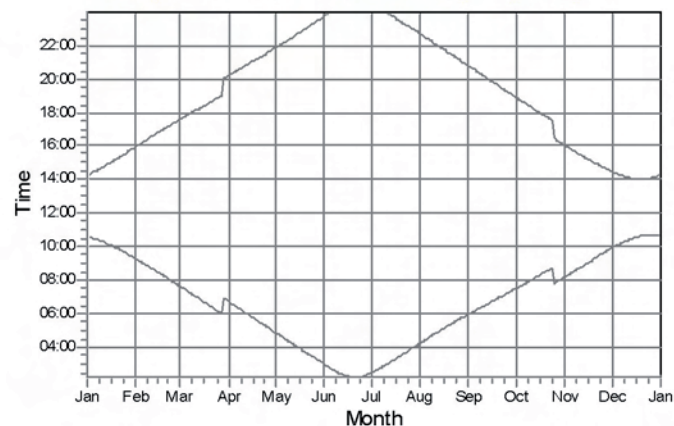
8: REpower 5M 5000 126.0 !hub: 90,0 m (865.4)



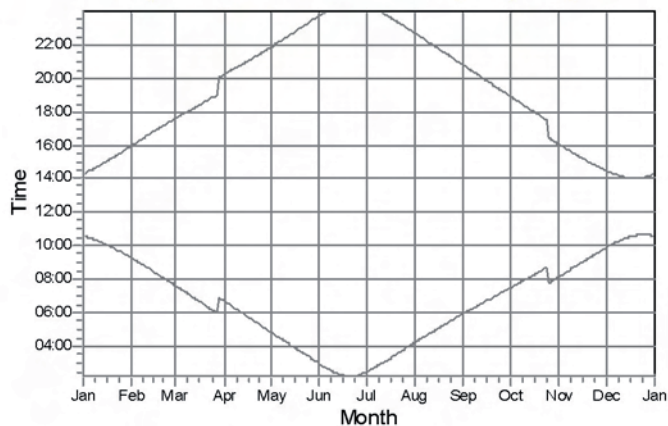
9: REpower 5M 5000 126.0 !hub: 90,0 m (865.5)



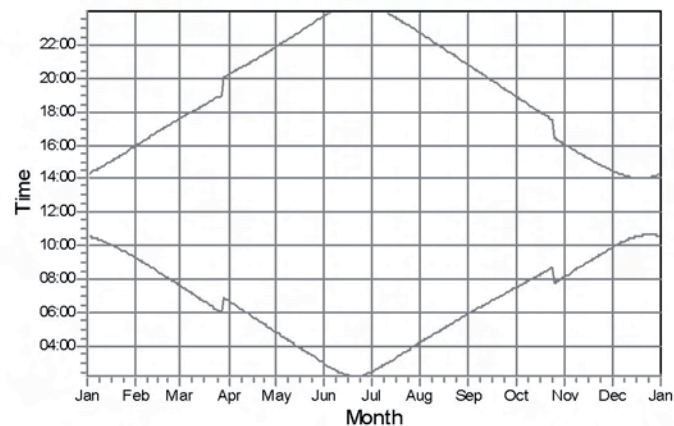
10: REpower 5M 5000 126.0 !hub: 90,0 m (865.6)



11: REpower 5M 5000 126.0 !hub: 90,0 m (866.1)



12: REpower 5M 5000 126.0 !hub: 90,0 m (866.2)



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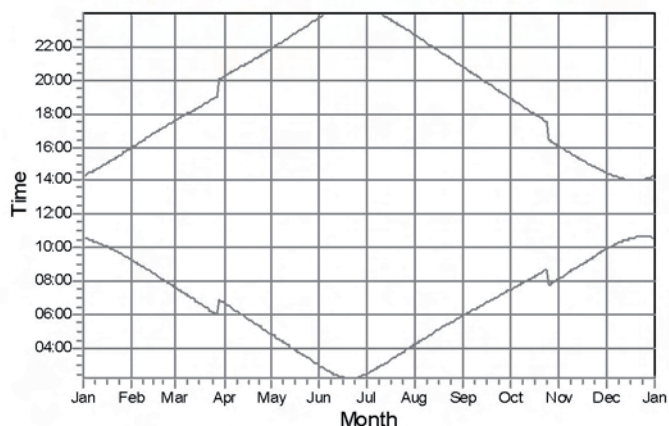
Calculated:

2008.11.08 22:31/2.6.0.140

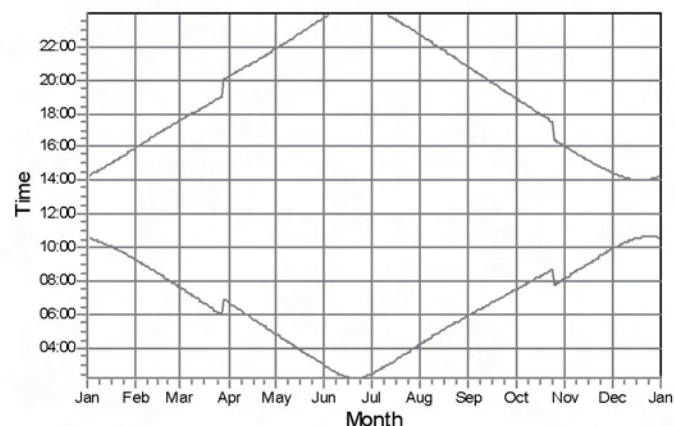
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

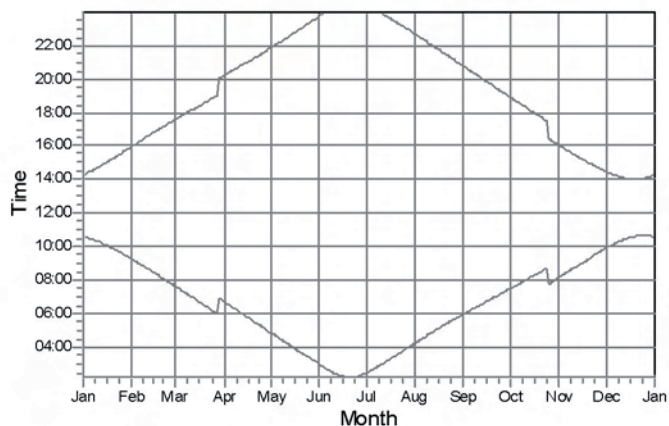
13: REpower 5M5000 126.0 !hub: 90,0 m (866.3)



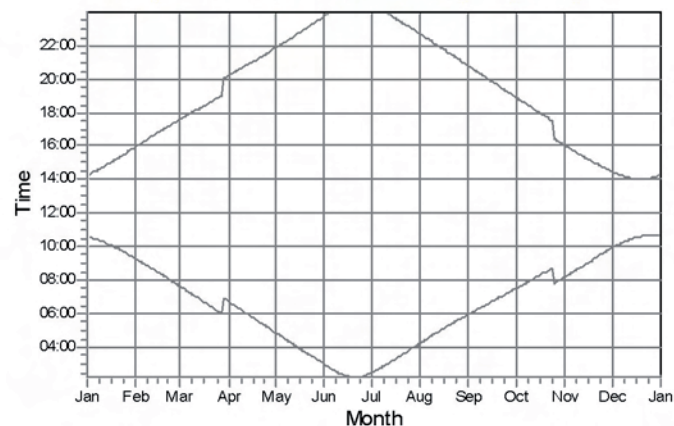
14: REpower 5M5000 126.0 !hub: 90,0 m (866.4)



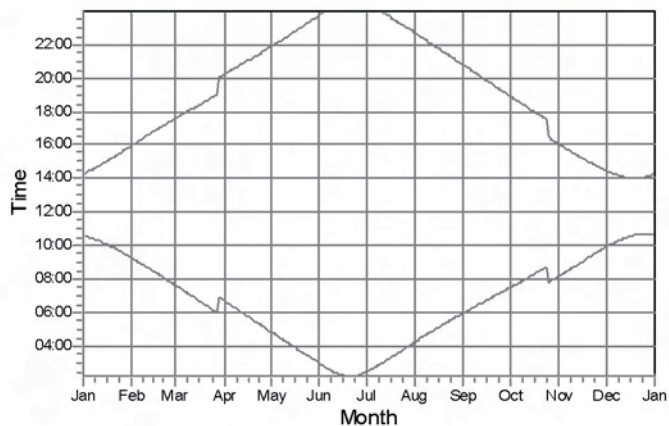
15: REpower 5M5000 126.0 !hub: 90,0 m (866.5)



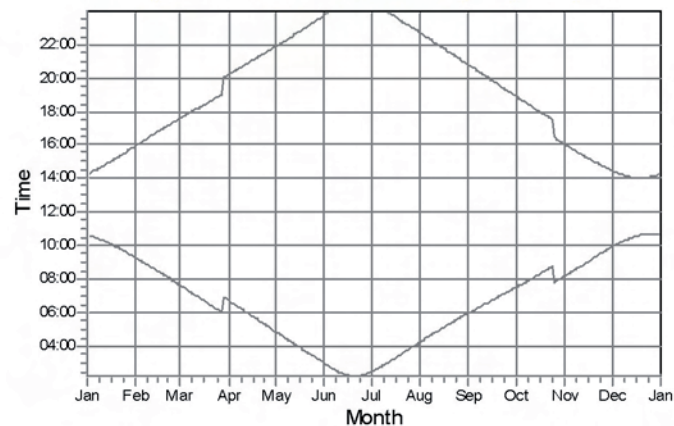
16: REpower 5M5000 126.0 !hub: 90,0 m (866.6)



17: REpower 5M5000 126.0 !hub: 90,0 m (866.7)



18: REpower 5M5000 126.0 !hub: 90,0 m (866.8)



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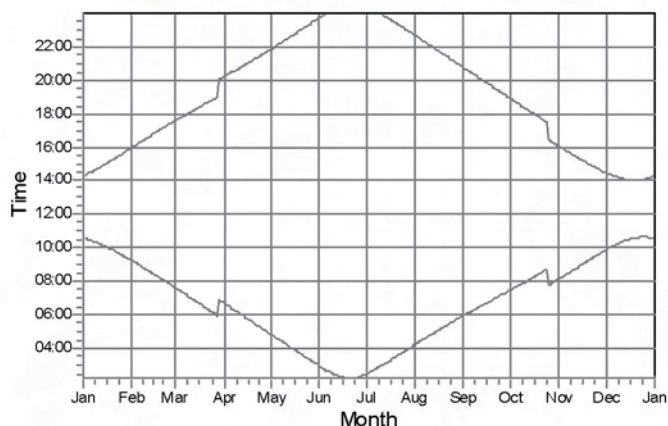
Calculated:

2008.11.08 22:31/2.6.0.140

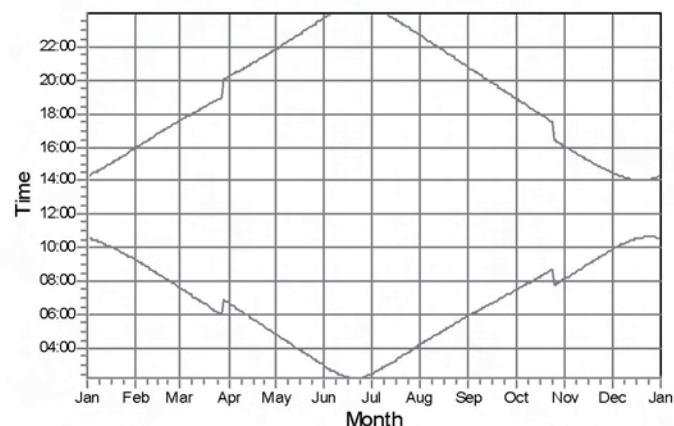
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

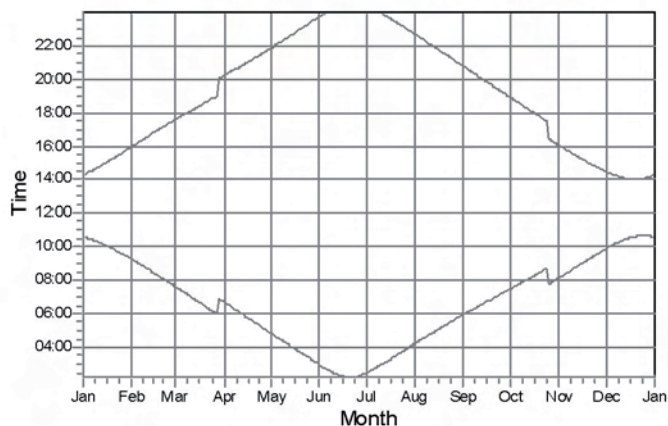
19: REpower 5M5000 126.0 !hub: 90,0 m (867.1)



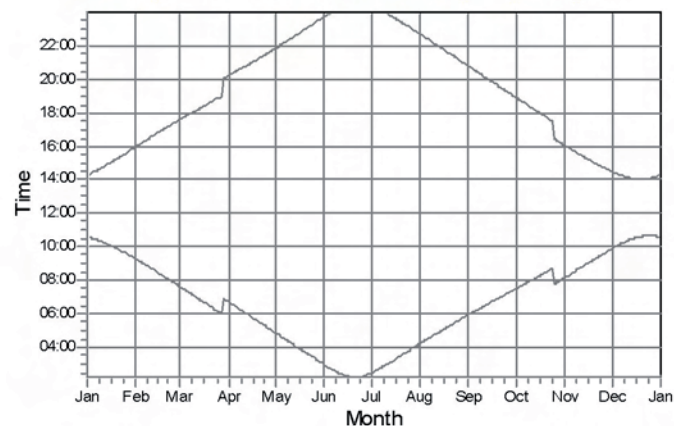
20: REpower 5M5000 126.0 !hub: 90,0 m (867.2)



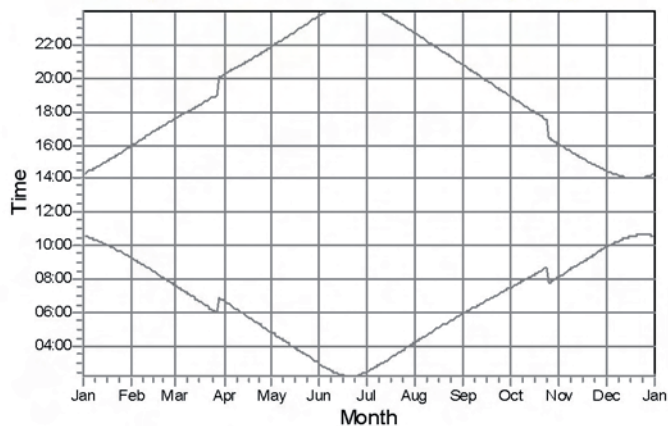
21: REpower 5M5000 126.0 !hub: 90,0 m (868.1)



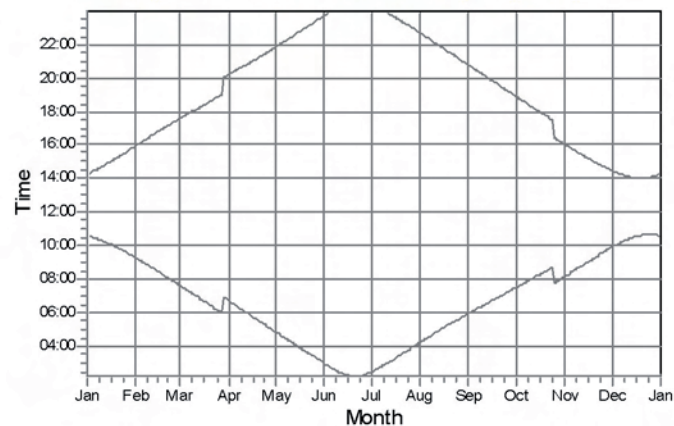
22: REpower 5M5000 126.0 !hub: 90,0 m (868.2)



23: REpower 5M5000 126.0 !hub: 90,0 m (868.3)



24: REpower 5M5000 126.0 !hub: 90,0 m (868.4)



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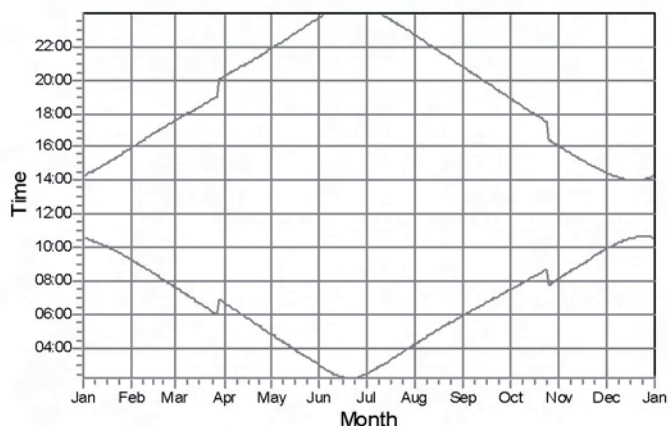
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2008.11.08 22:31/2.6.0.140

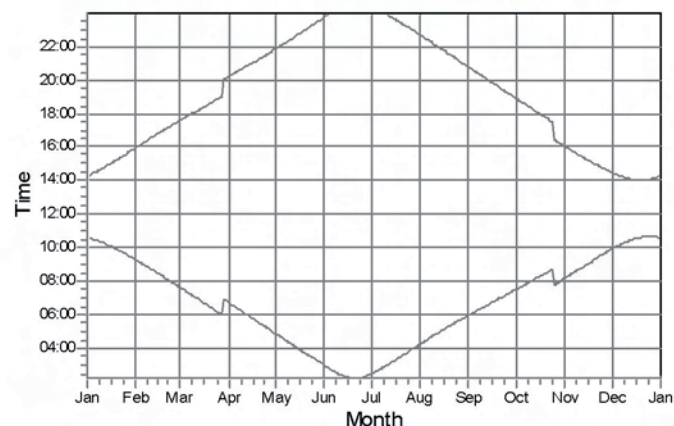
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

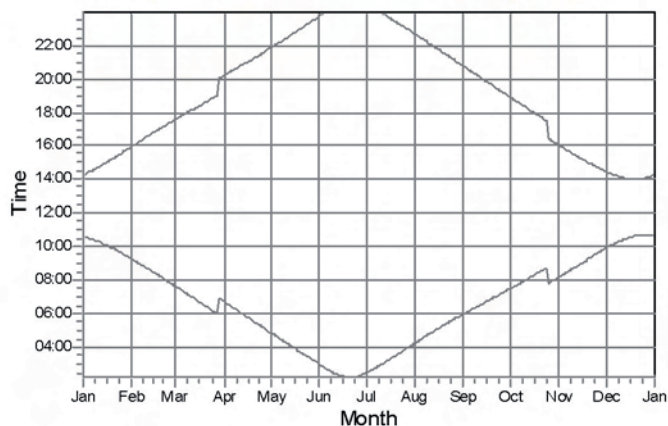
25: REpower 5M5000 126.0 !hub: 90,0 m (868.5)



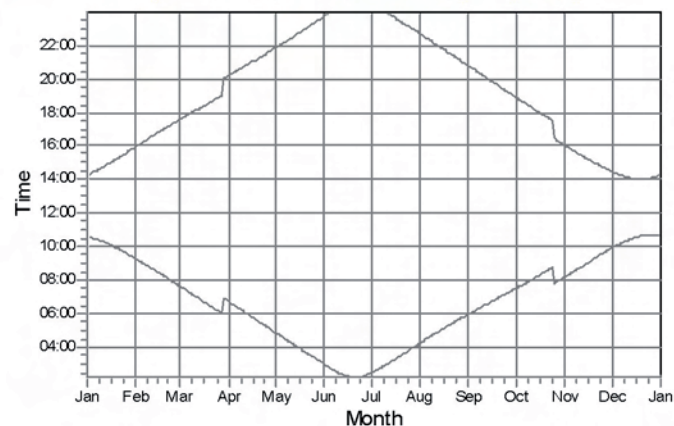
26: REpower 5M5000 126.0 !hub: 90,0 m (868.6)



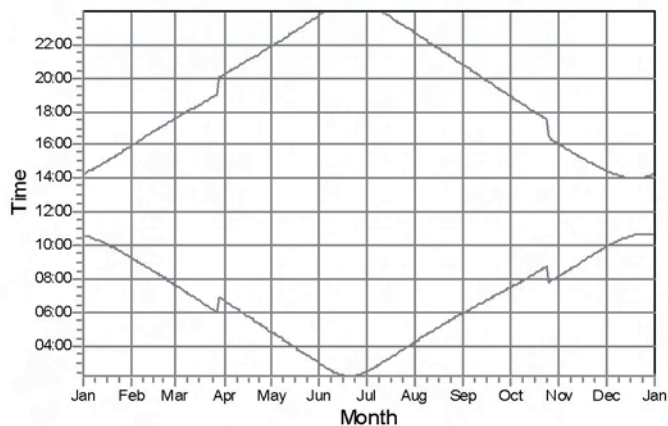
27: REpower 5M5000 126.0 !hub: 90,0 m (868.7)



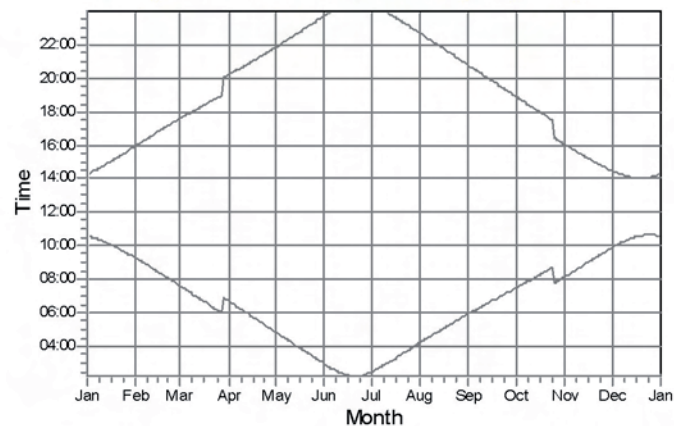
28: REpower 5M5000 126.0 !hub: 90,0 m (868.8)



29: REpower 5M5000 126.0 !hub: 90,0 m (868.9)



30: REpower 5M5000 126.0 !hub: 90,0 m (869.1)



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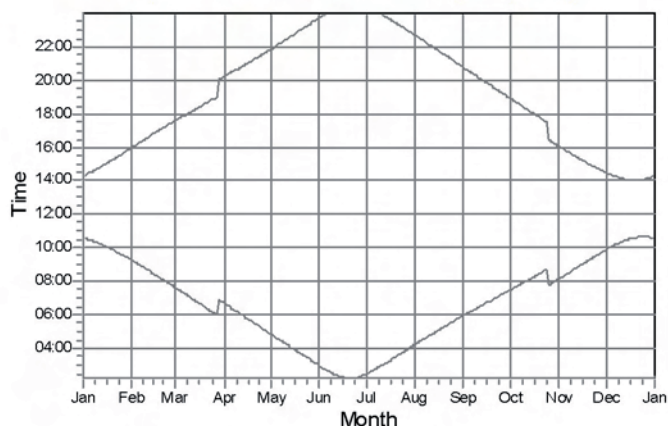
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2008.11.08 22:31/2.6.0.140

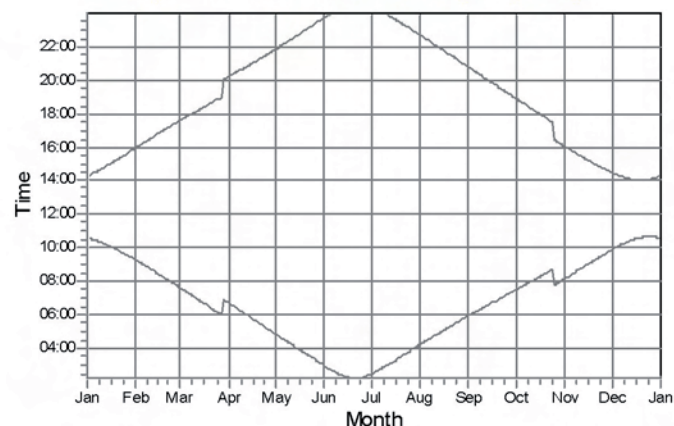
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

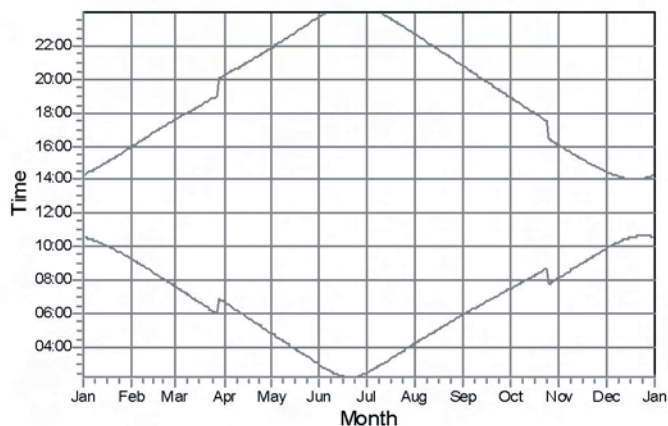
31: REpower 5M5000 126.0 !hub: 90,0 m (869.2)



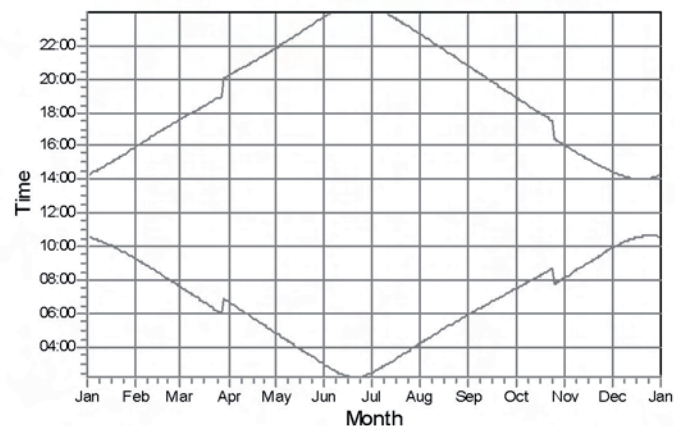
32: REpower 5M5000 126.0 !hub: 90,0 m (869.3)



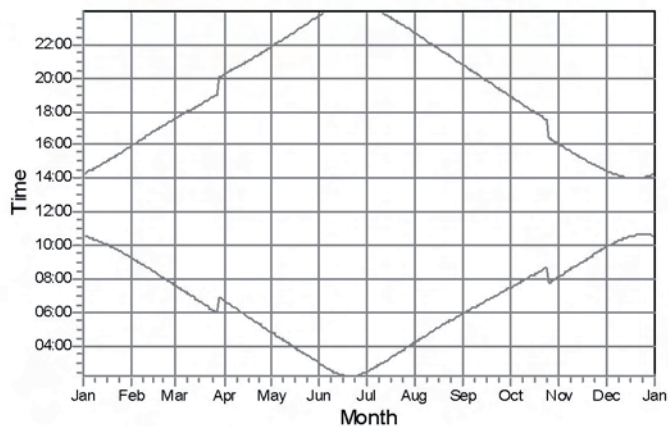
33: REpower 5M5000 126.0 !hub: 90,0 m (869.4)



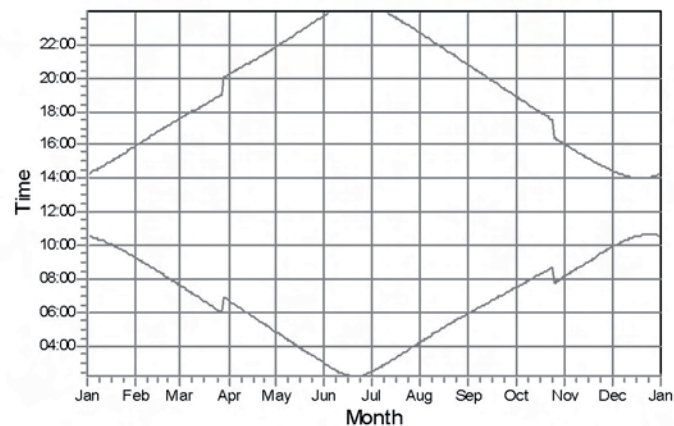
34: REpower 5M5000 126.0 !hub: 90,0 m (869.5)



35: REpower 5M5000 126.0 !hub: 90,0 m (869.6)



36: REpower 5M5000 126.0 !hub: 90,0 m (869.7)



Shadow receptor

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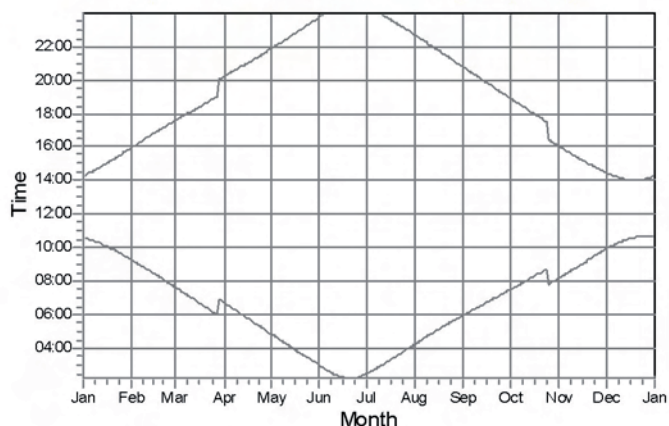
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2008.11.08 22:31/2.6.0.140

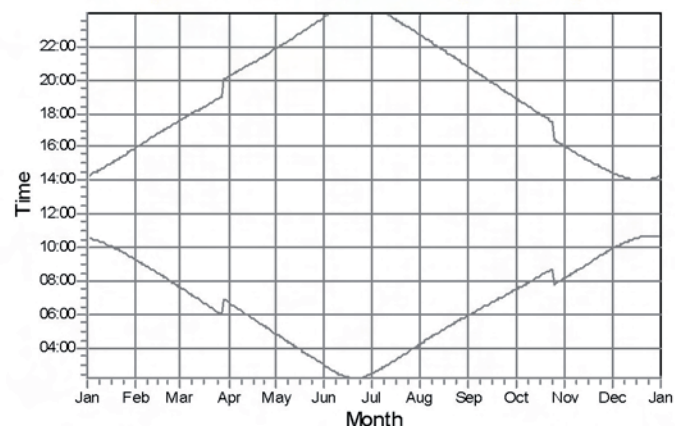
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

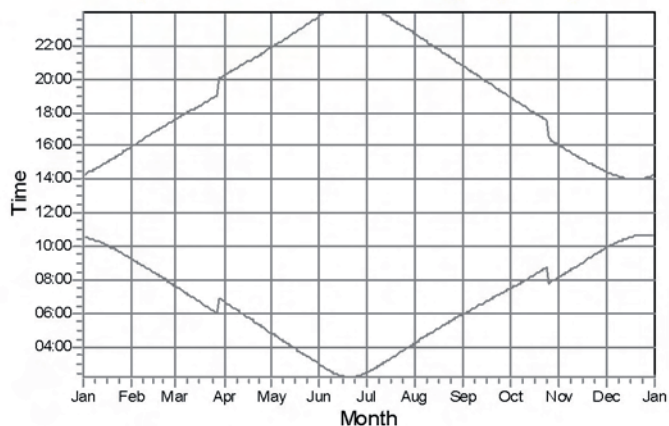
37: REpower 5M 5000 126.0 !hub: 90,0 m (869.8)



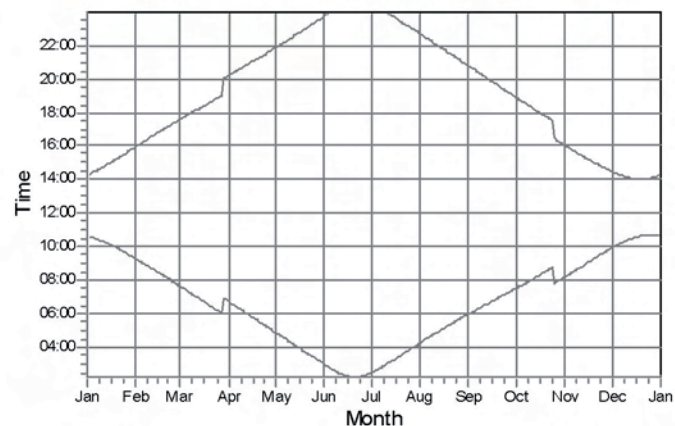
38: REpower 5M 5000 126.0 !hub: 90,0 m (869.9)



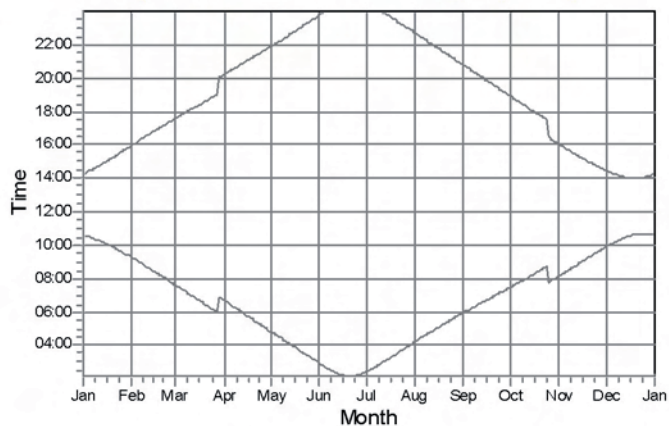
39: REpower 5M 5000 126.0 !hub: 90,0 m (869.10)



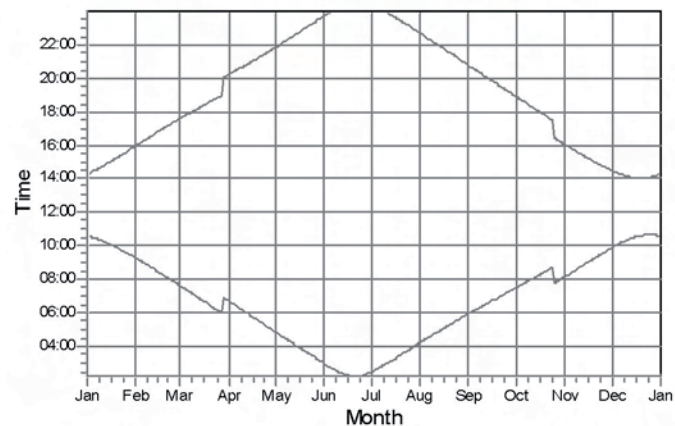
40: REpower 5M 5000 126.0 !hub: 90,0 m (869.11)



41: REpower 5M 5000 126.0 !hub: 90,0 m (869.13)



42: REpower 5M 5000 126.0 !hub: 90,0 m (870.1)



Shadow receptor

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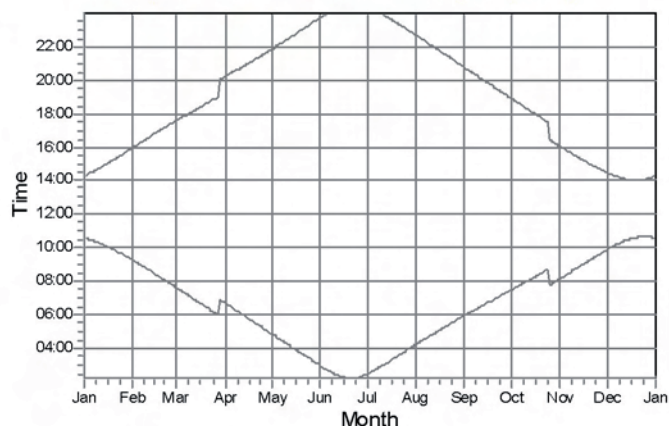
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2008.11.08 22:31/2.6.0.140

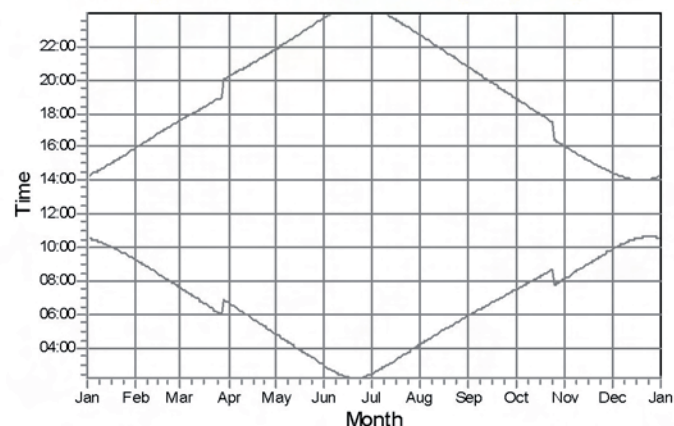
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

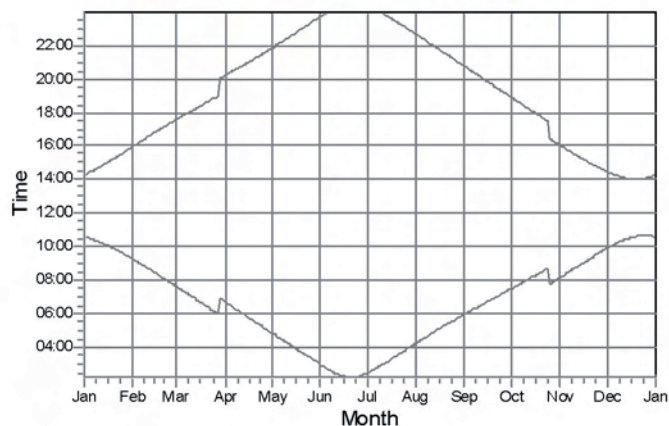
43: REpower 5M5000 126.0 !hub: 90,0 m (870.2)



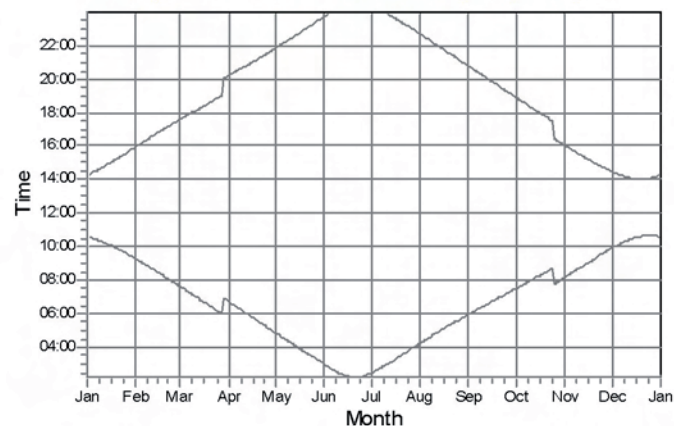
44: REpower 5M5000 126.0 !hub: 90,0 m (870.3)



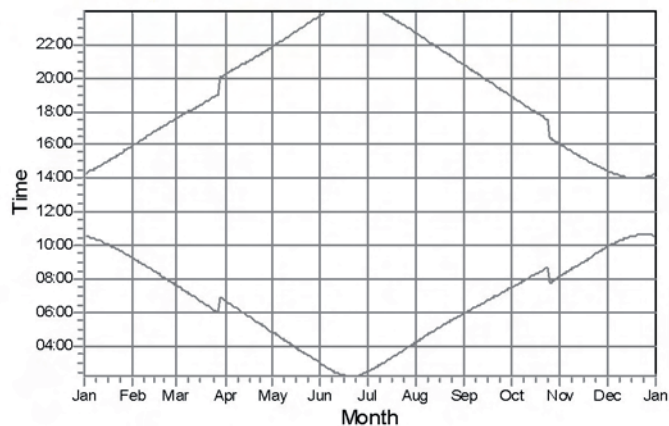
45: REpower 5M5000 126.0 !hub: 90,0 m (870.4)



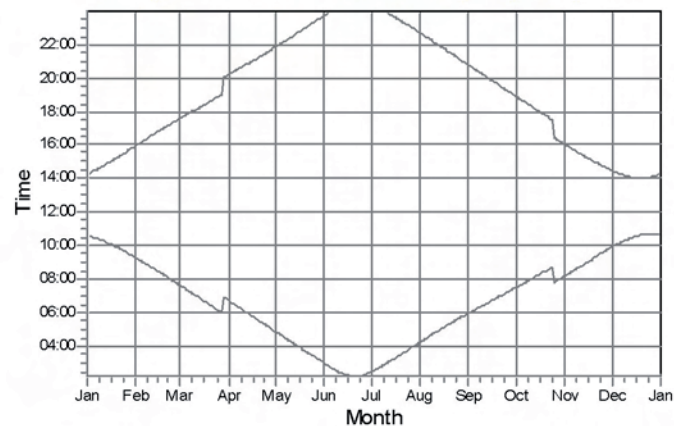
46: REpower 5M5000 126.0 !hub: 90,0 m (870.5)



47: REpower 5M5000 126.0 !hub: 90,0 m (870.6)



48: REpower 5M5000 126.0 !hub: 90,0 m (870.7)



Shadow receptor



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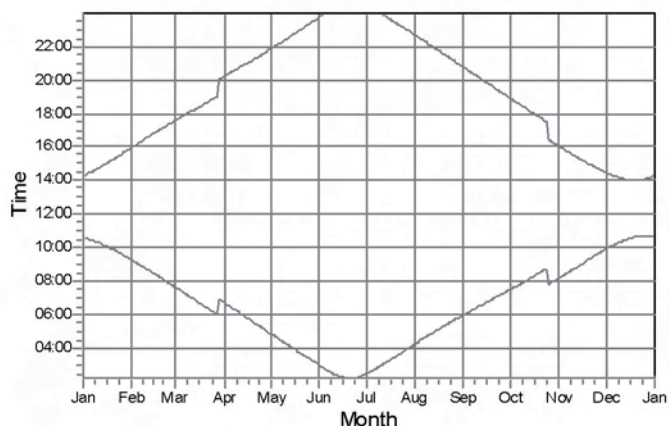
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2008.11.08 22:31/2.6.0.140

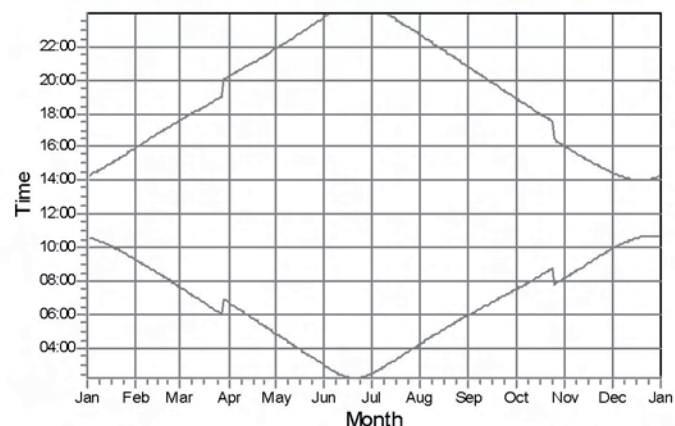
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

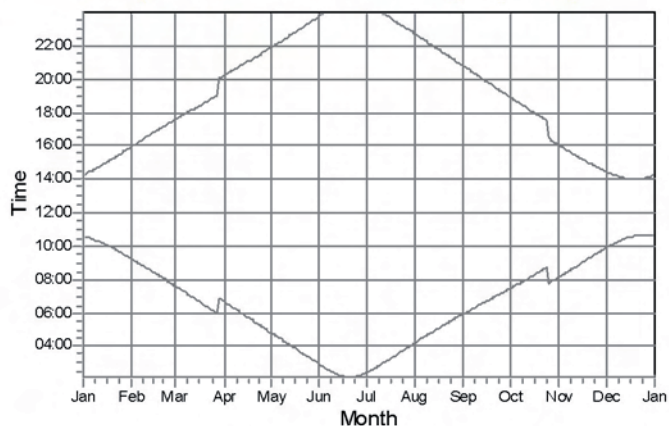
49: REpower 5M 5000 126.0 !hub: 90,0 m (870.8)



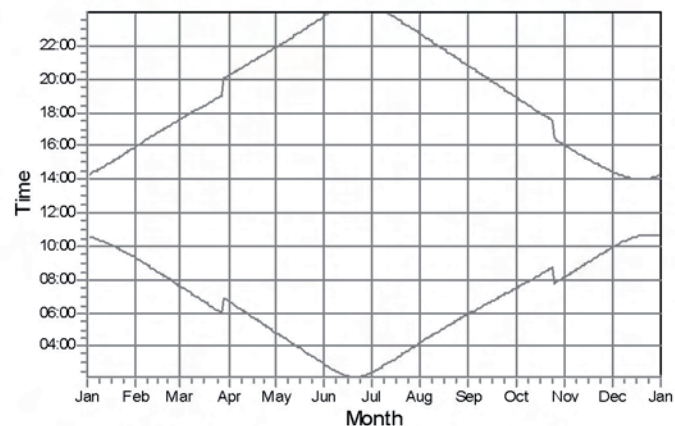
50: REpower 5M 5000 126.0 !hub: 90,0 m (870.9)



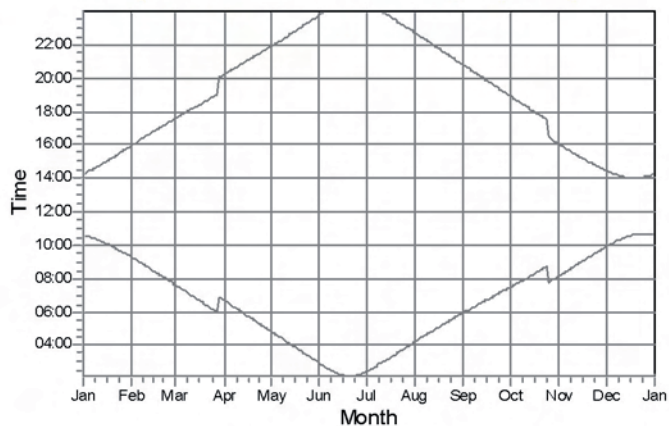
51: REpower 5M 5000 126.0 !hub: 90,0 m (870.10)



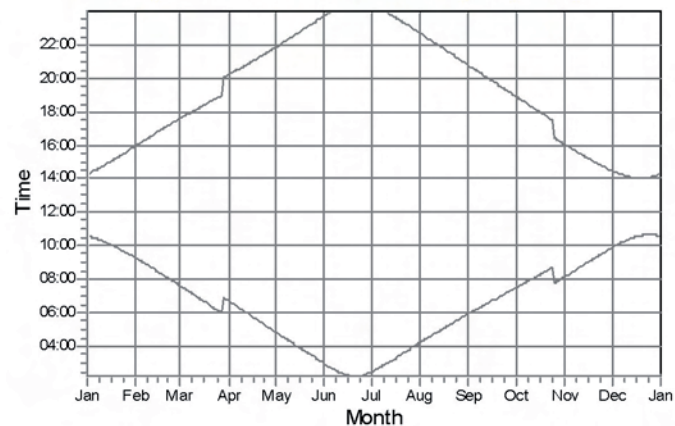
52: REpower 5M 5000 126.0 !hub: 90,0 m (870.12)



53: REpower 5M 5000 126.0 !hub: 90,0 m (870.13)



54: REpower 5M 5000 126.0 !hub: 90,0 m (871.1)



Shadow receptor



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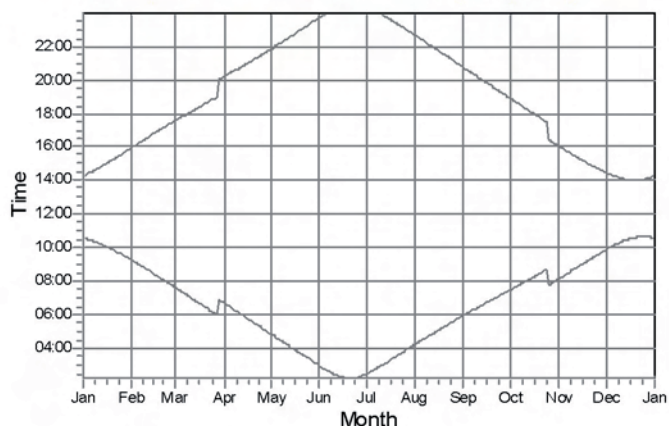
Calculated:

2008.11.08 22:31/2.6.0.140

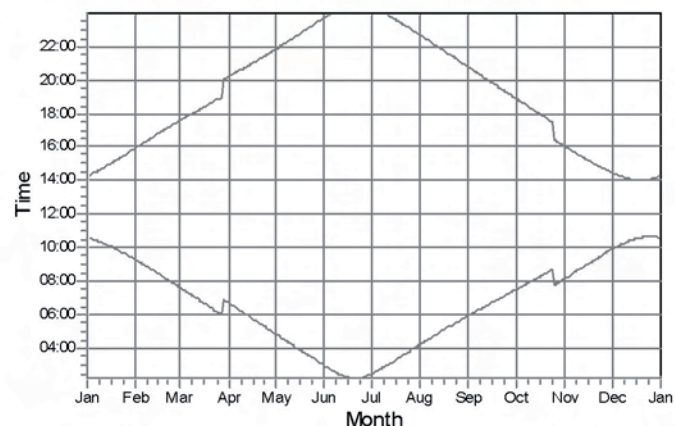
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

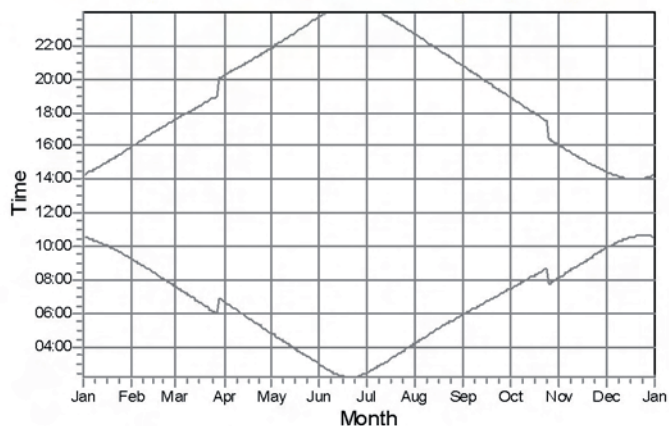
55: REpower 5M5000 126.0 !hub: 90,0 m (871.2)



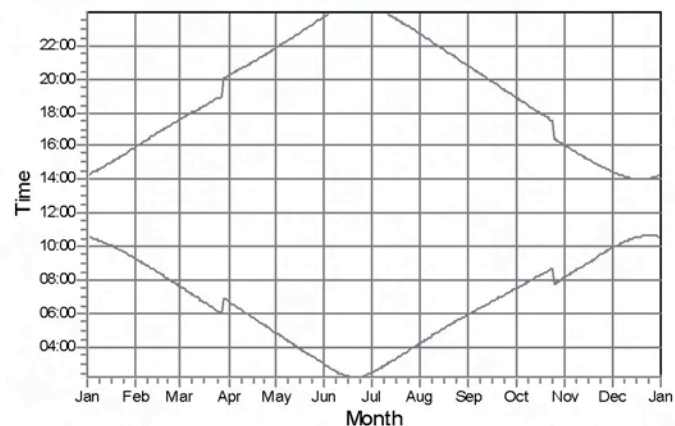
56: REpower 5M5000 126.0 !hub: 90,0 m (871.3)



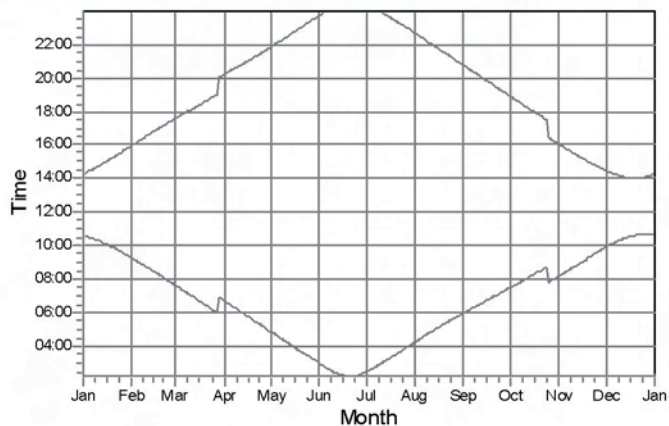
57: REpower 5M5000 126.0 !hub: 90,0 m (871.4)



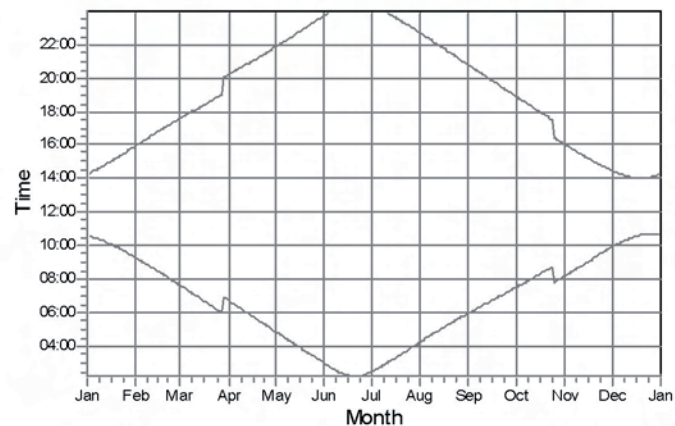
58: REpower 5M5000 126.0 !hub: 90,0 m (871.5)



59: REpower 5M5000 126.0 !hub: 90,0 m (871.6)



60: REpower 5M5000 126.0 !hub: 90,0 m (871.7)



Shadow receptor

Project:

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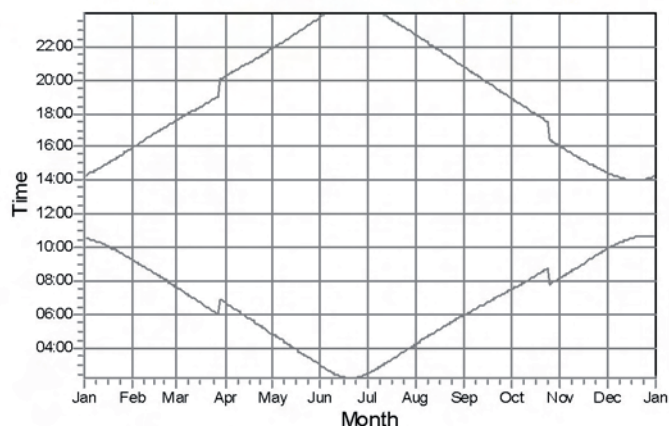
Calculated:

2008.11.08 22:31/2.6.0.140

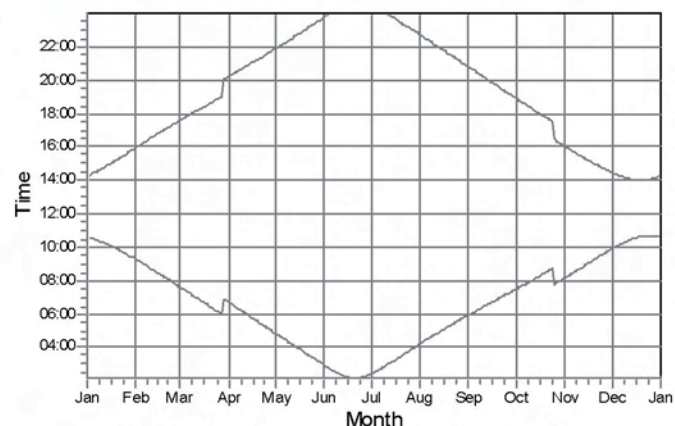
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

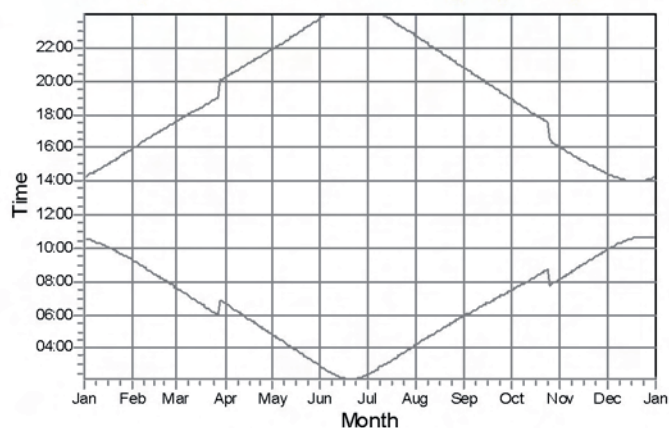
61: REpower 5M 5000 126.0 !hub: 90,0 m (871.8)



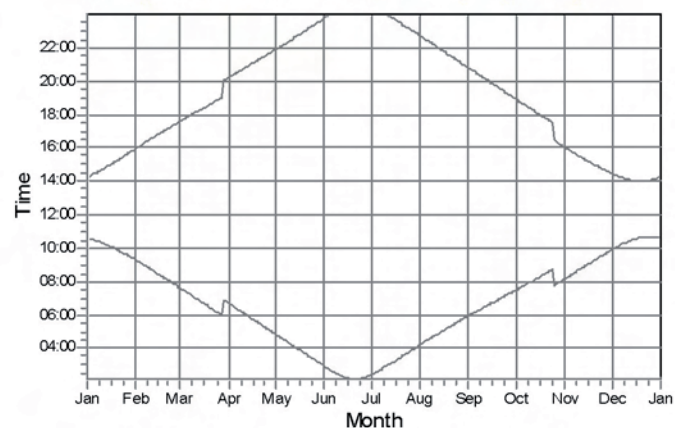
62: REpower 5M 5000 126.0 !hub: 90,0 m (871.11)



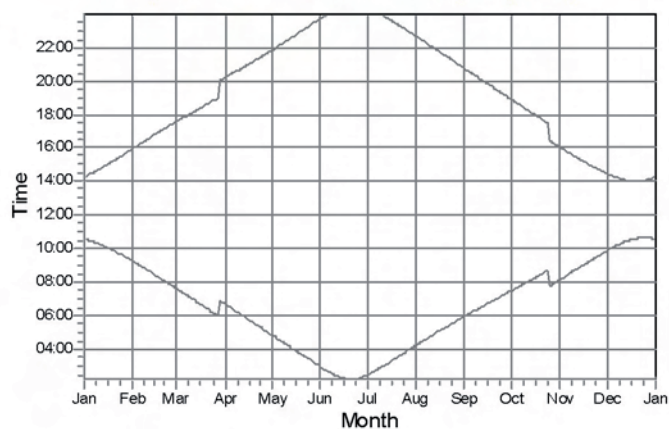
63: REpower 5M 5000 126.0 !hub: 90,0 m (871.12)



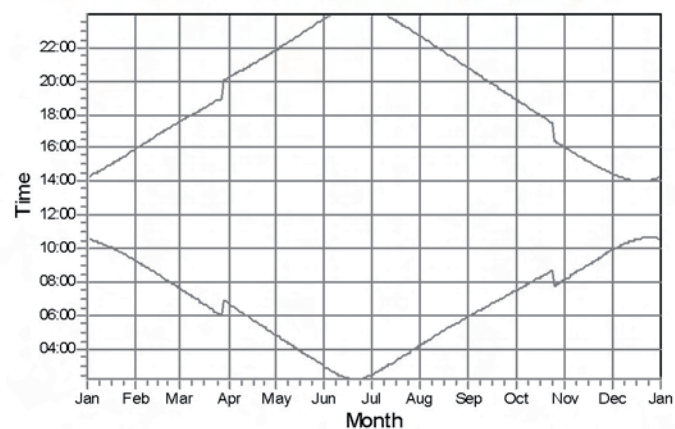
64: REpower 5M 5000 126.0 !hub: 90,0 m (871.13)



65: REpower 5M 5000 126.0 !hub: 90,0 m (872.1)



66: REpower 5M 5000 126.0 !hub: 90,0 m (872.2)



Shadow receptor

Project:

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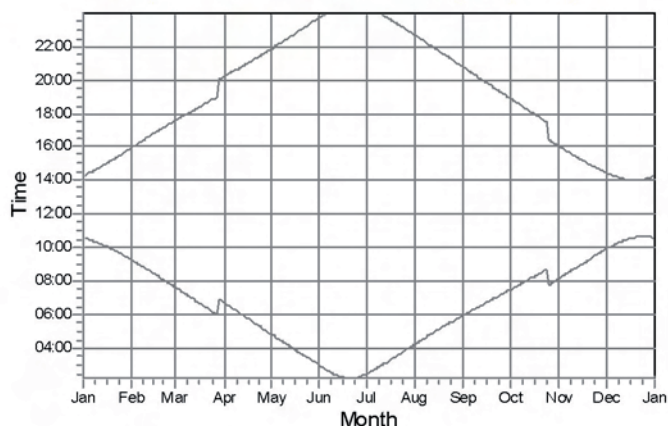
Calculated:

2008.11.08 22:31/2.6.0.140

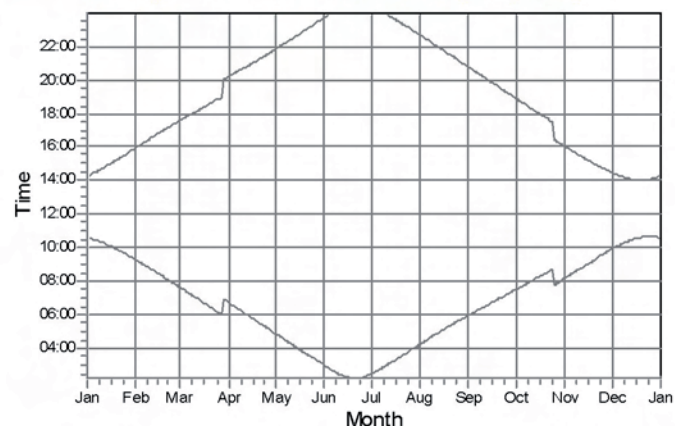
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

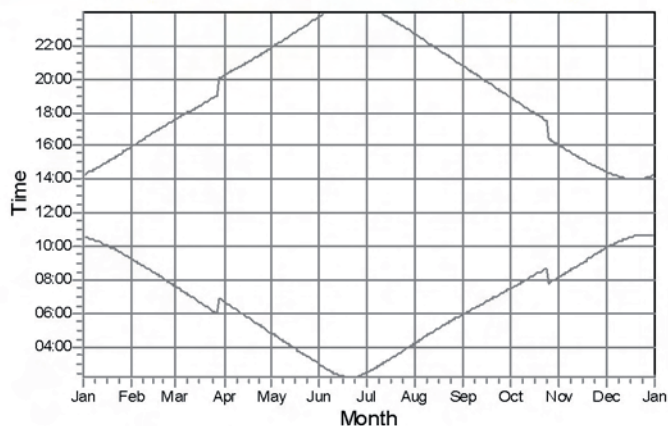
67: REpower 5M5000 126.0 !hub: 90,0 m (872.3)



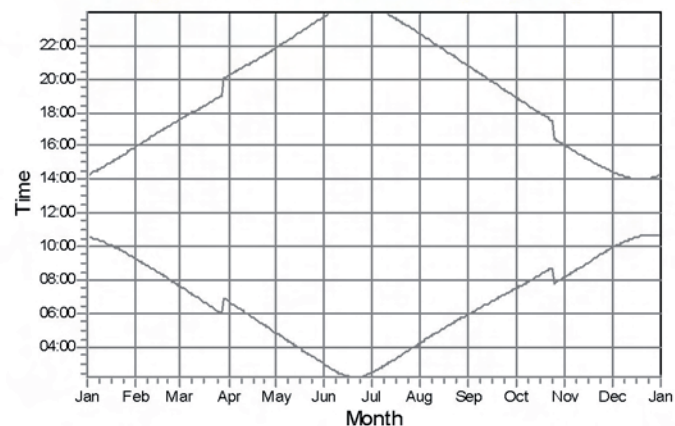
68: REpower 5M5000 126.0 !hub: 90,0 m (872.4)



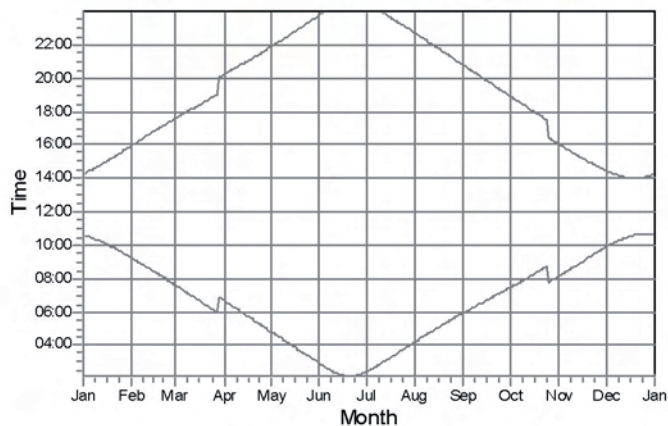
69: REpower 5M5000 126.0 !hub: 90,0 m (872.5)



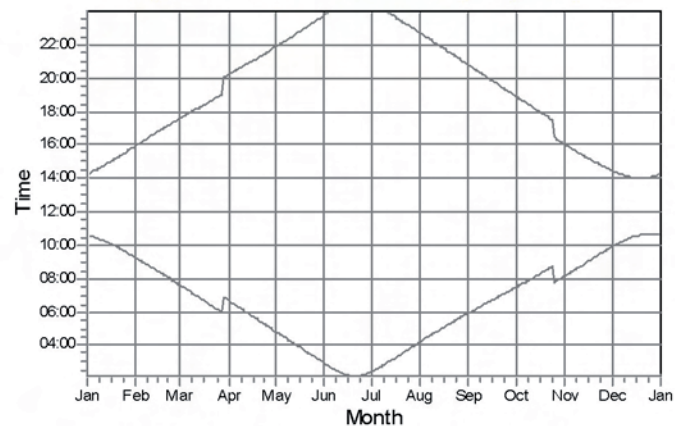
70: REpower 5M5000 126.0 !hub: 90,0 m (872.6)



71: REpower 5M5000 126.0 !hub: 90,0 m (872.7)



72: REpower 5M5000 126.0 !hub: 90,0 m (872.8)



Shadow receptor



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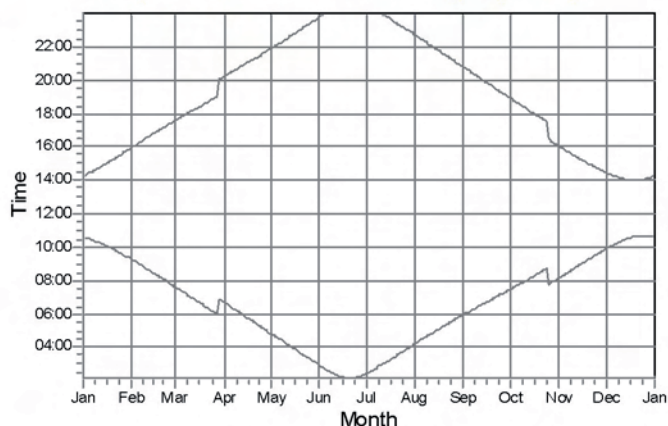
Calculated:

2008.11.08 22:31/2.6.0.140

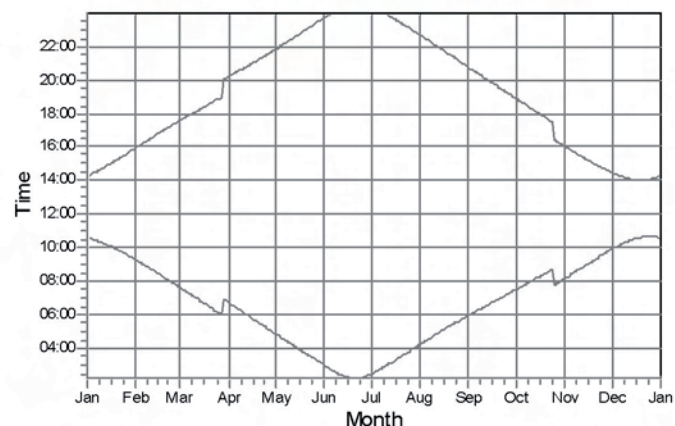
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

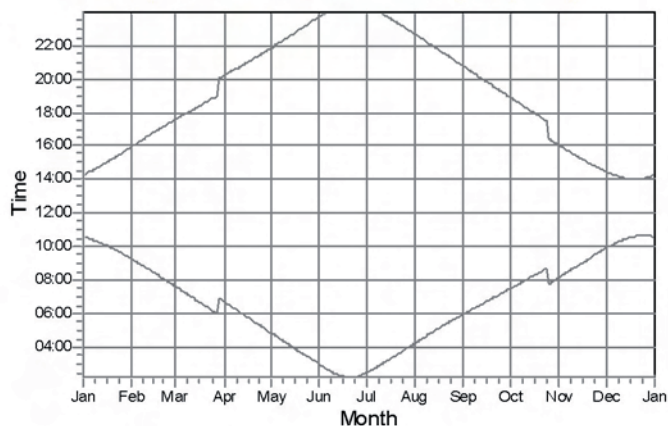
73: REpower 5M 5000 126.0 ! hub: 90,0 m (872.10)



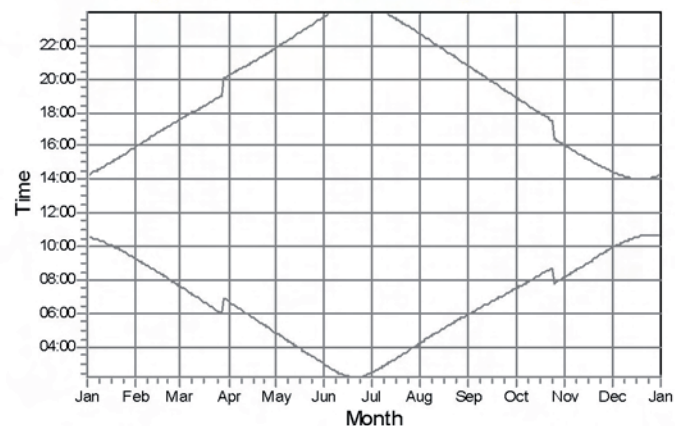
74: REpower 5M 5000 126.0 ! hub: 90,0 m (873.1)



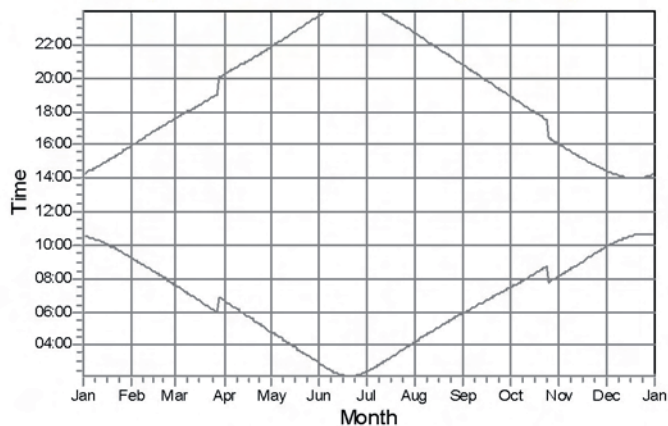
75: REpower 5M 5000 126.0 ! hub: 90,0 m (873.2)



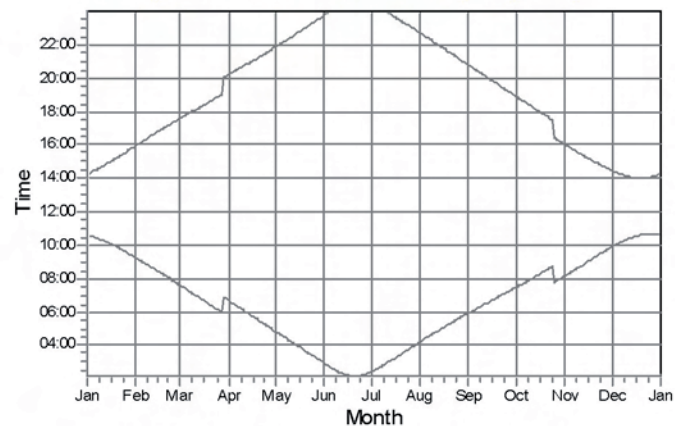
76: REpower 5M 5000 126.0 ! hub: 90,0 m (874.1)



77: REpower 5M 5000 126.0 ! hub: 90,0 m (874.2)



78: REpower 5M 5000 126.0 ! hub: 90,0 m (874.3)



Shadow receptor



Project:

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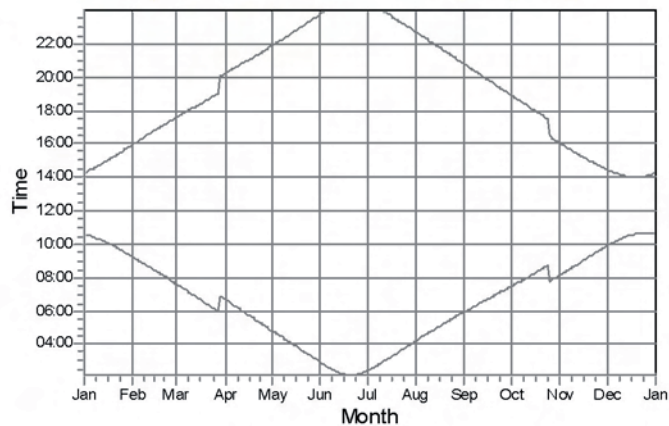
Calculated:

2008.11.08 22:31/2.6.0.140

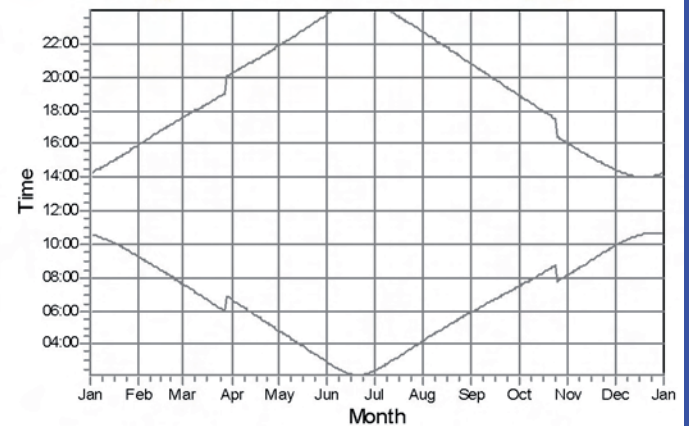
**SHADOW - Calendar per WTG, graphical**

Calculation: base 80

79: REpower 5M 5000 126.0 !hub: 90,0 m (874.4)



80: REpower 5M 5000 126.0 !hub: 90,0 m (875)



Shadow receptor

Project:

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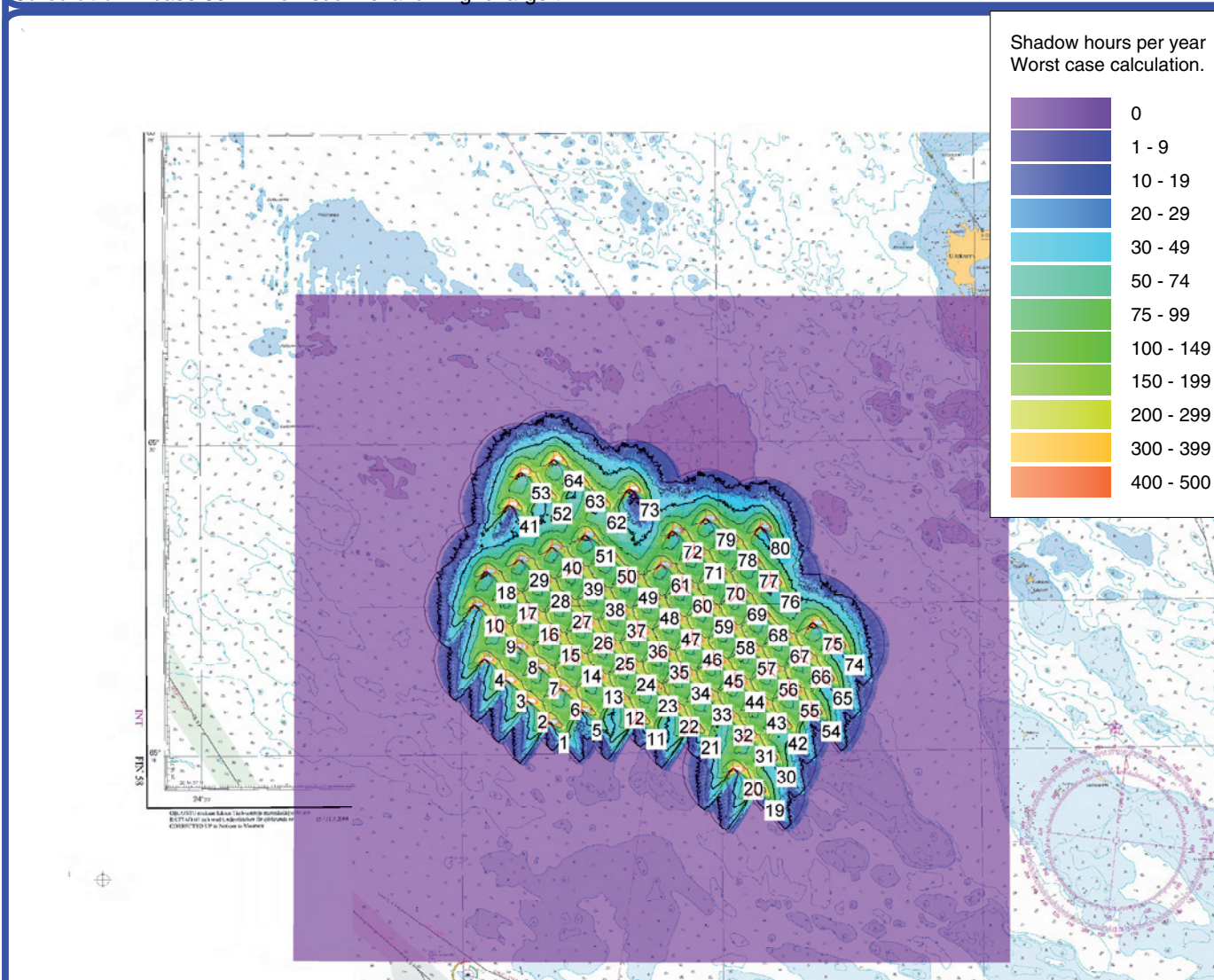
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Calculated:

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**SHADOW - Bitmap map: suurhieka low Fgrid large.tif****Calculation:** base 80 **File:** suurhieka low Fgrid large.tif

New WTG

— 0 — 10 — 25 — 50 — 100 — 200

Isolines showing shadow in Shadow hours per year. Worst case calculation.

Map: , Print scale 1:200 000, Map center KJ Finland Zone: 2 East: 2 529 080 North: 7 243 232

