

Friday, September 24, 2021

New project

Solar pumping project

Parameter

| | | | | | |
|------------------------|--|---------------------|-------|--------------|------|
| Location: | Netherlands, Assen (53° North; 6° East) | Water temperature: | 30 °C | | |
| Required daily output: | 10 m ³ ; Sizing for average month | Dirt loss: | 5,0 % | Motor cable: | 25 m |
| Pipe type: | - | Total dynamic head: | 15 m | Pipe length: | - |

Products

| Quantity | Details |
|-----------------|--|
| PS2-150 C-SJ5-8 | 1 pc. Submersible pump system including controller with DataModule, motor and pump end |
| LC275-P60 | 2 pc. 550 Wp; 1 x 2 modules; 53 ° tilted |
| Motor cable | 25 m 16 mm ² 3-phase cable for power and 1-phase cable for ground |
| Accessories | 1 set Well Probe V2, PV Disconnect 440-40-3, Sun Sensor Module, Surge Protector2 |

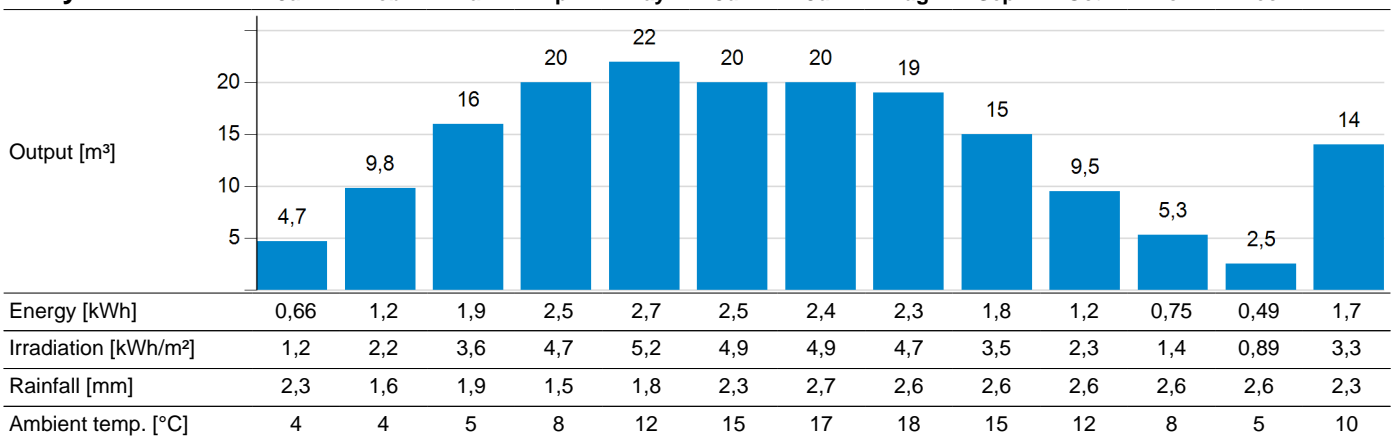
Sun Sensor setting in PumpScanner

min. 100 W/m²

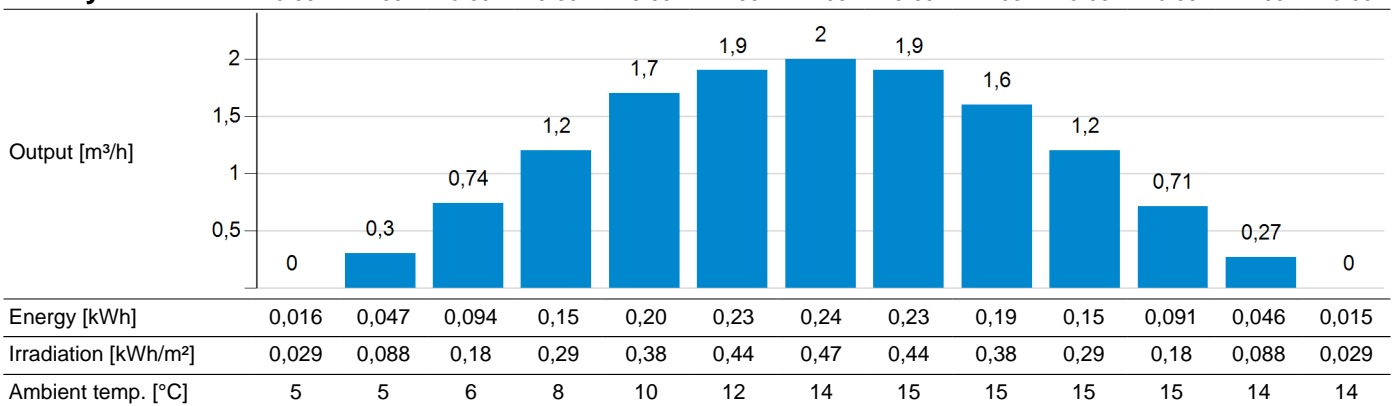
Daily output in average month

14 m³

Daily values



Hourly values

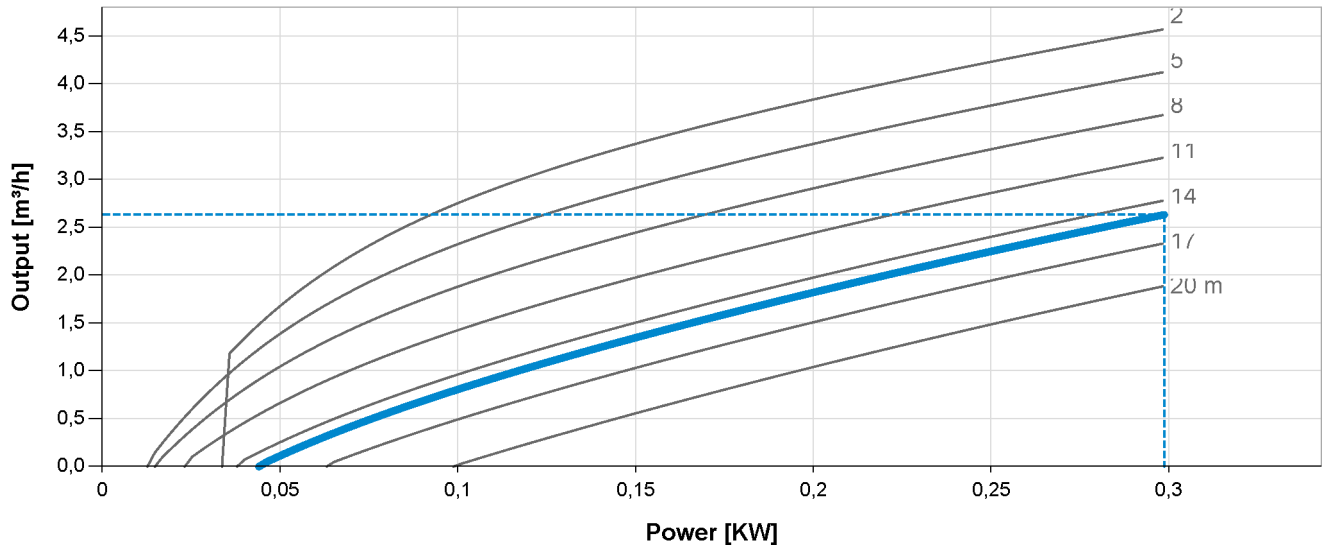


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System characteristic



| | | | Min. | 800 W/m², 20 °C | Max./STC* |
|---------------------|------------------|--------|-------|-----------------|-----------|
| PV generator | Cell temperature | [°C] | | 46 | 25 |
| | Temperature loss | [%] | | 9,0 | - |
| | Dirt loss | [%] | | 5,0 | - |
| | Pmax | [Wp] | | 381 | 550 |
| | Vmp | [V] | | 29 | 32 |
| | Imp | [A] | | 13 | 17 |
| | Voc | [V] | | 36 | 39 |
| | Isc | [A] | | 14 | 19 |
| | Pout | [W] | | 312 | - |
| | Vout | [V] | | 32 | - |
| | Iout | [A] | | 9,8 | - |
| Motor cable | Power loss | [%] | 1,2 | 3,5 | 3,5 |
| Pump systems | Motor power | [W] | 44 | 299 | 299 |
| | Motor voltage | [V EC] | 15 | 22 | 22 |
| | Motor current | [A] | 3,0 | 14 | 14 |
| | Motor speed | [rpm] | 1.575 | 1.935 | 1.935 |
| | Flow rate | [m³/h] | 0 | 2,6 | 2,6 |
| | Efficiency | [%] | 0 | 35 | 36 |

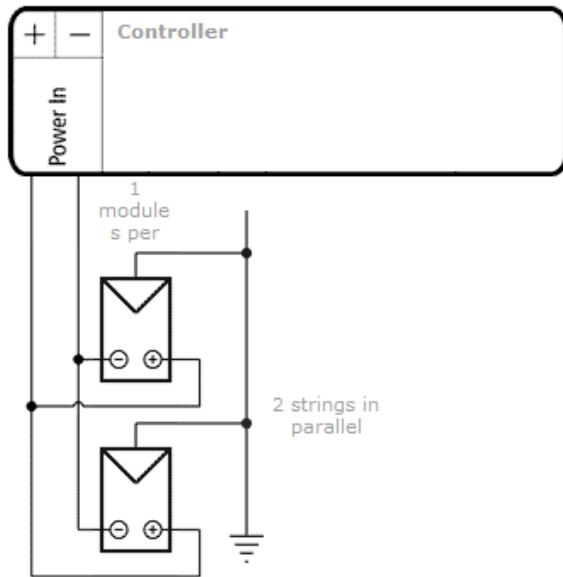
*STC: Standard test conditions for photovoltaic modules, 1000 W/m² solar irradiance, 25 °C cell temperature

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Wiring diagram



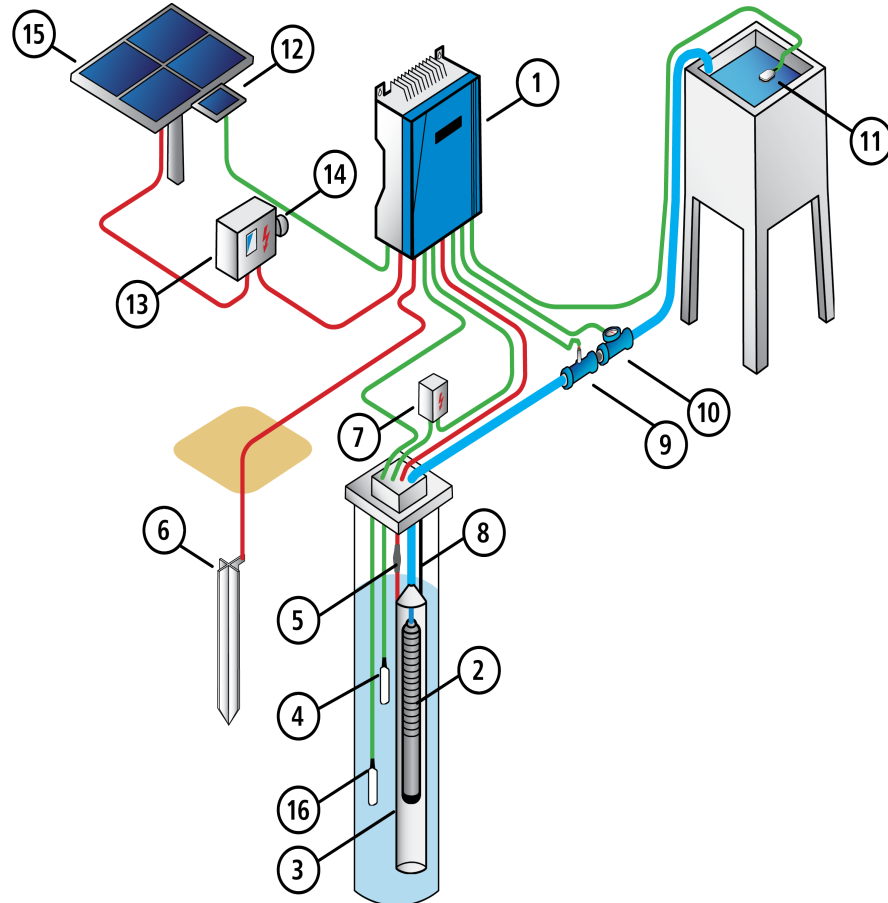
Grounding should be done according to the instructions of the module manufacturer.

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System Layout



1: PS2 Controller

2: Submersible Pump

3: Flow Sleeve

4: Well Probe

5: Cable Splice Kit

6: Grounding Rod

7: Surge Protector*

8: Safety Rope

9: Water Meter

10: Pressure Sensor

11: Float Switch

12: Sun Switch

13: PV Disconnect

14: Lightning Surge Protector

15: PV Generator

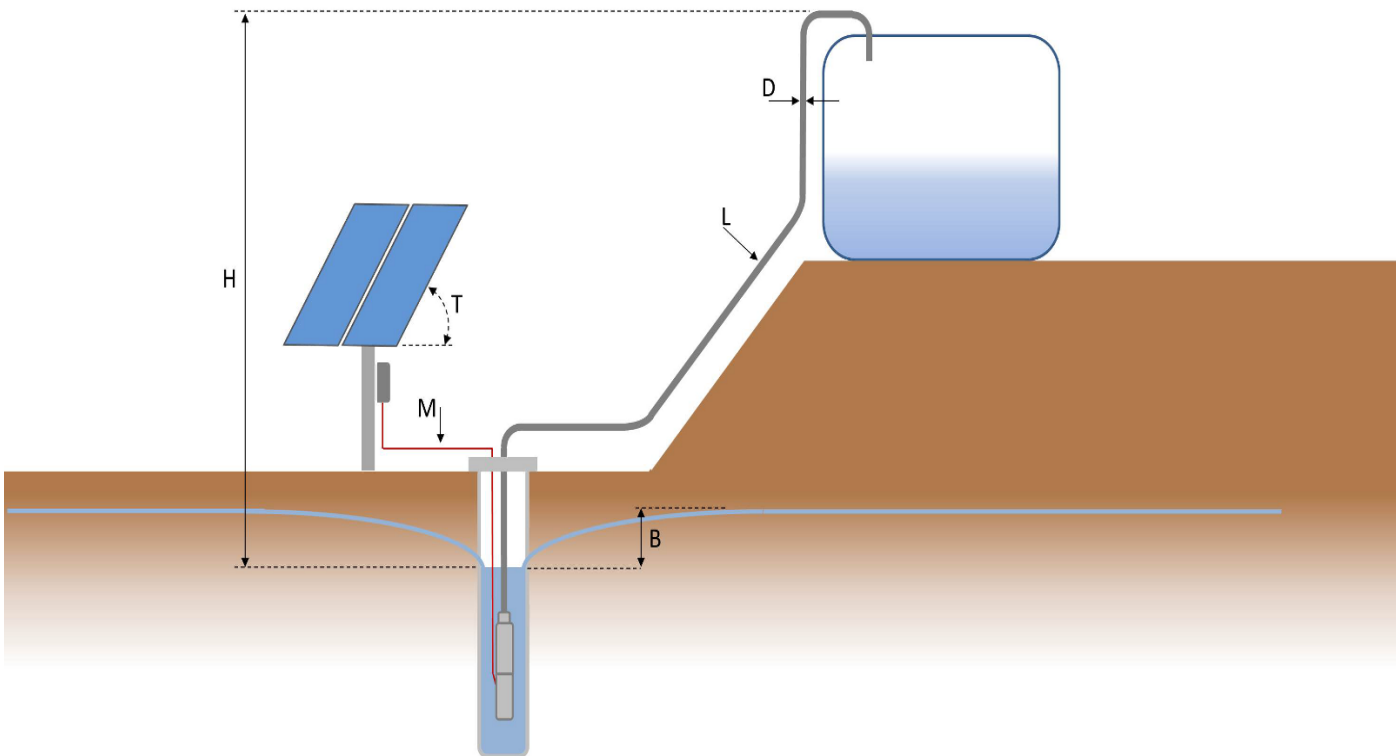
*It is recommended to install a Surge Protector at each controller sensor input.

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Sizing Layout



| | |
|------------------------------------|---|
| H (Static head): | Vertical height from the dynamic water level to the highest point of delivery. |
| B (Drawdown): | Lowering of water level depending on flow rate and recovery rate of the well. |
| D (Pipeline inner diameter) | |
| L (Pipe length): | Entire pipeline from the pump outlet to the point of delivery. Ellbows and armatures must be added as an equivalent length of pipeline. |
| M (Motor cable): | The cable between controller and pump unit. |
| T (Tilt angle): | Angle of the PV generator surface from the horizontal plane. |