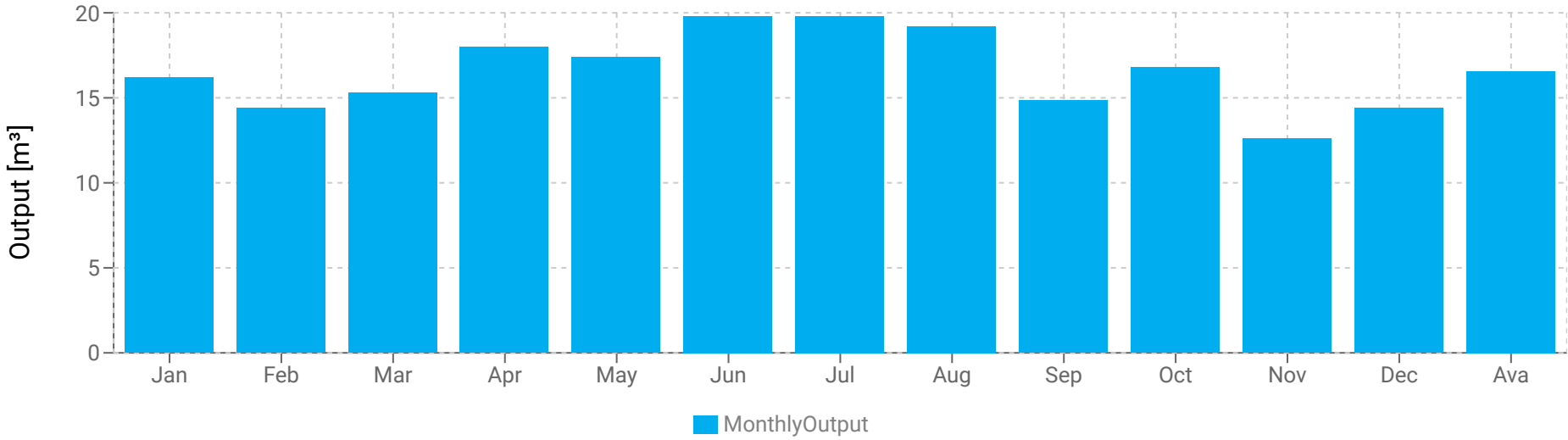




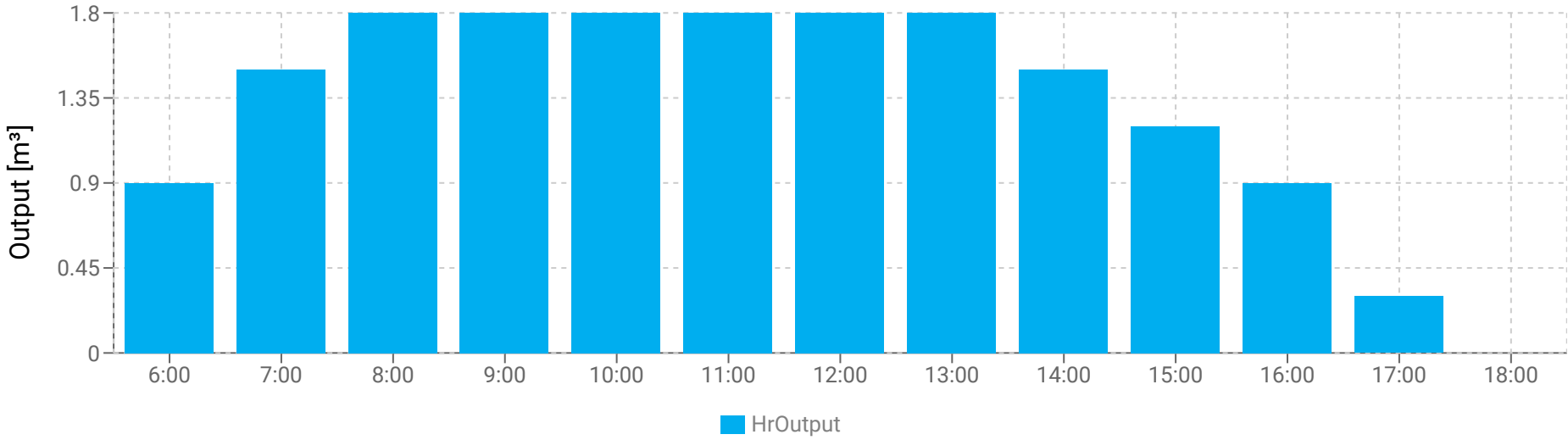
Project Name:Gheghanak Sub Health Center (SHC) water power solar system

Input Summary		Monday, 3,June,2024	
Location:	Afghanistan, Ghor(34°, 64°)		
GPS:	34 40'24.717°, 66 11'45.733°		
Designer:	Farid Ahmad Qaderi		
Water Demand:	1.2(m³/h)		
Avg. Water Production:	10.8(m³/d) According to 6 hours pump operation during sunny days at STC (1000 w/m²) irradiation at 25C°		
Head (SWL+DD):	51(m)		
Pipe Friction losses:	4m (5%)		
Total Dynamic Head:	55 (m)		
Main Products	Description	Unite	Quantity
Solar	PROPSOLAR 270W Poly crystalline 37.9V 9.22A	panels	4
Pump	PEDROLLO 4SR1.5/17 1HP 0.75Kw 220V	pc	1
Controller	FRECON IP65 1.5kw 220V	pc	1
Structure	Fixed Structure	set	1
Motor Cable	4*2.5mm2	m	63
Solar Cable	2*6mm2	m	63
Pipline	PE 0.5 Inch/16mm (PE100, PN10)	m	75
Accessories	Description	Unite	Quantity
Float switch	Mechanical	pcs	1
PV disconnect switch	IP54	pcs	1
Inverter box	IP20	Box	1
Grounding rod	Copper	set	1
Flexible Conduct pipe	Flexible	m	30
Cable splice kit	IP68	set	1
Safety rope	Plastic	m	80
Well probe sensors	Electronic	set	1
Earthing Cable	1*16mm2	m	30
Cable 2*1.5mm2	For sensors	m	63
Pump fittings	Poly ethylene	set	1

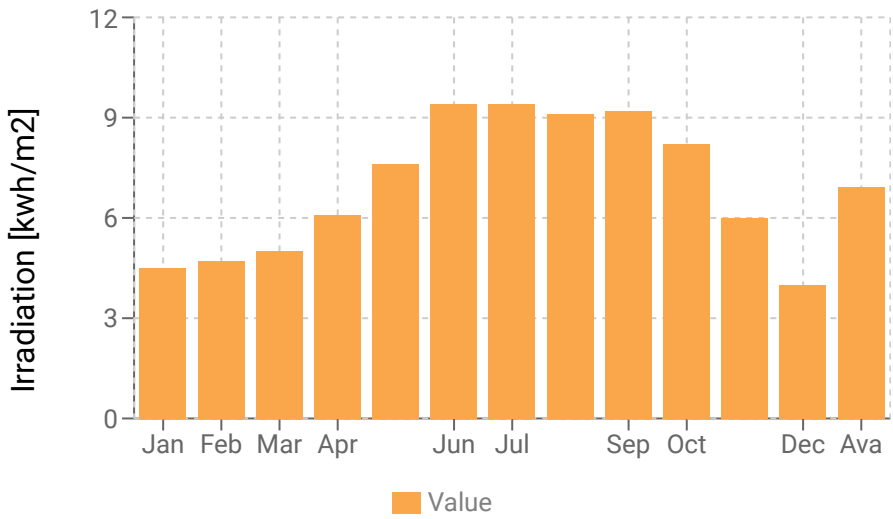
Daily Average output/month



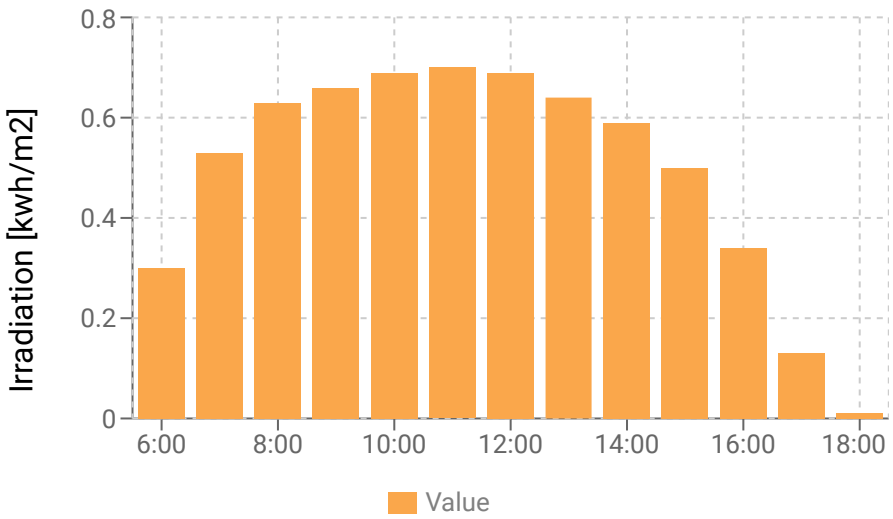
Hourly Output



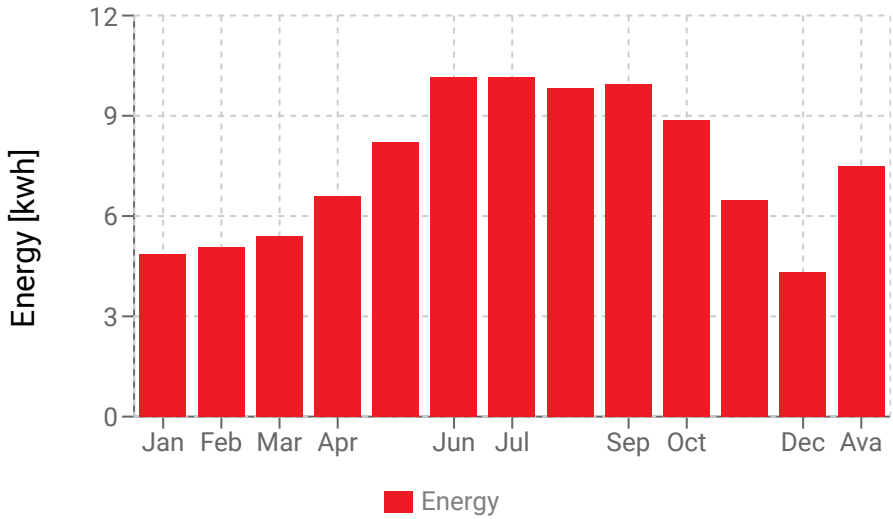
Irradiation value in deferent months of year



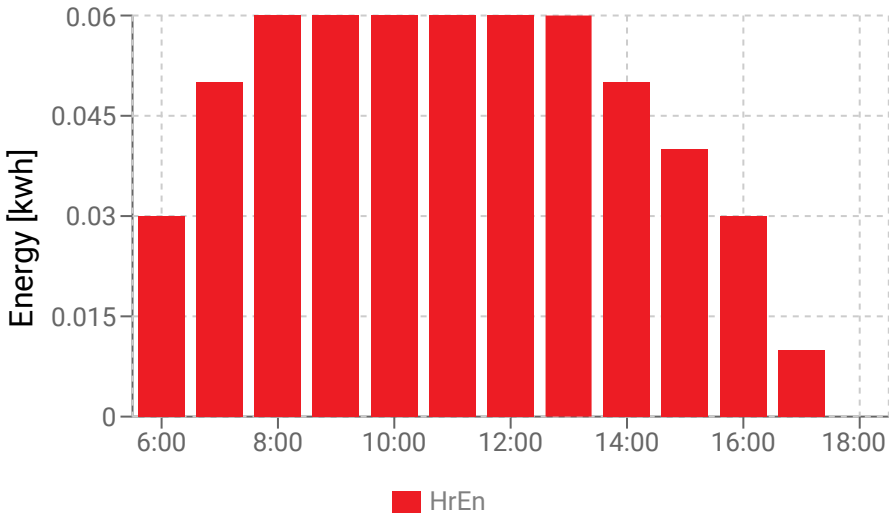
Hourly Values



Energy value in deferent months of year



Hourly Values



Project Name: Gheghanak Sub Health Center (SHC) water power solar system

Submersible pump specification:

Brand:

Model:

Power:

Hours power:

Current:

OutLet:

Voltage:

Phase:

Diameter:

Weight:

Made in:

PEDROLLO

4SR1.5/17

0.75Kw

1HP

8.6A

0.5Inch

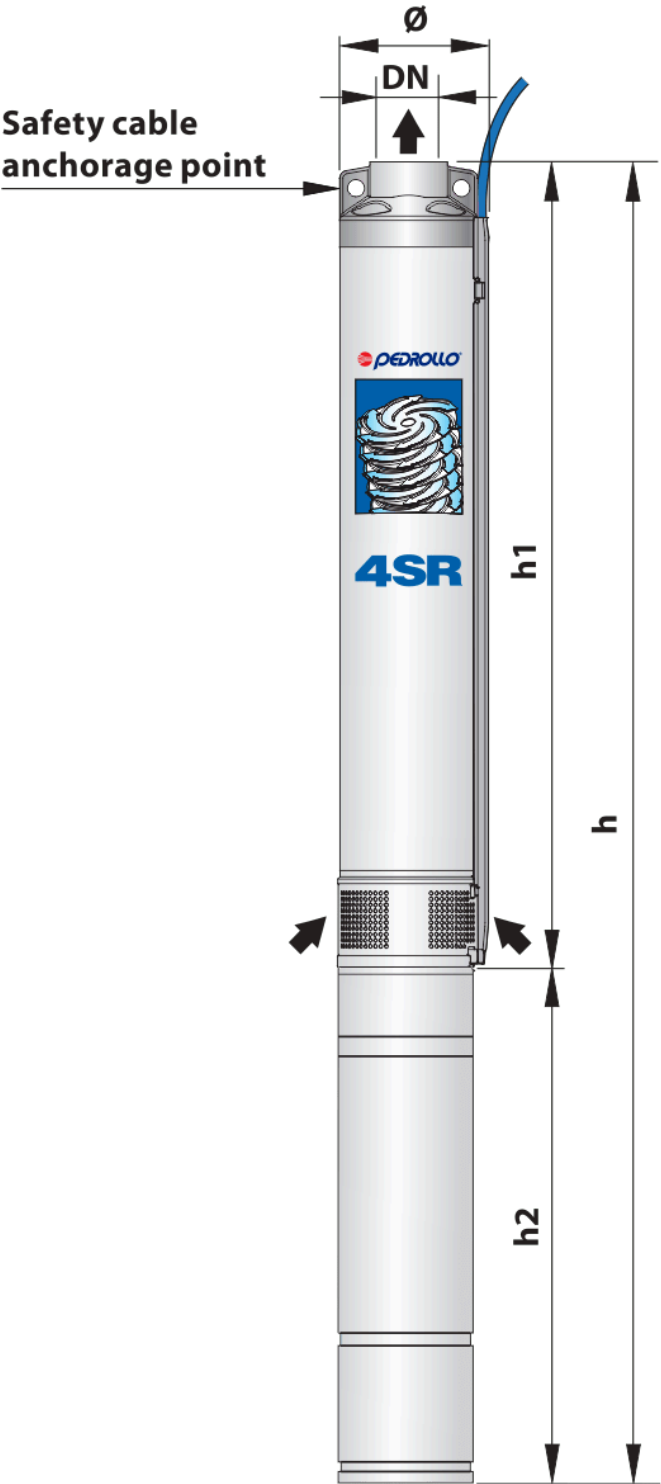
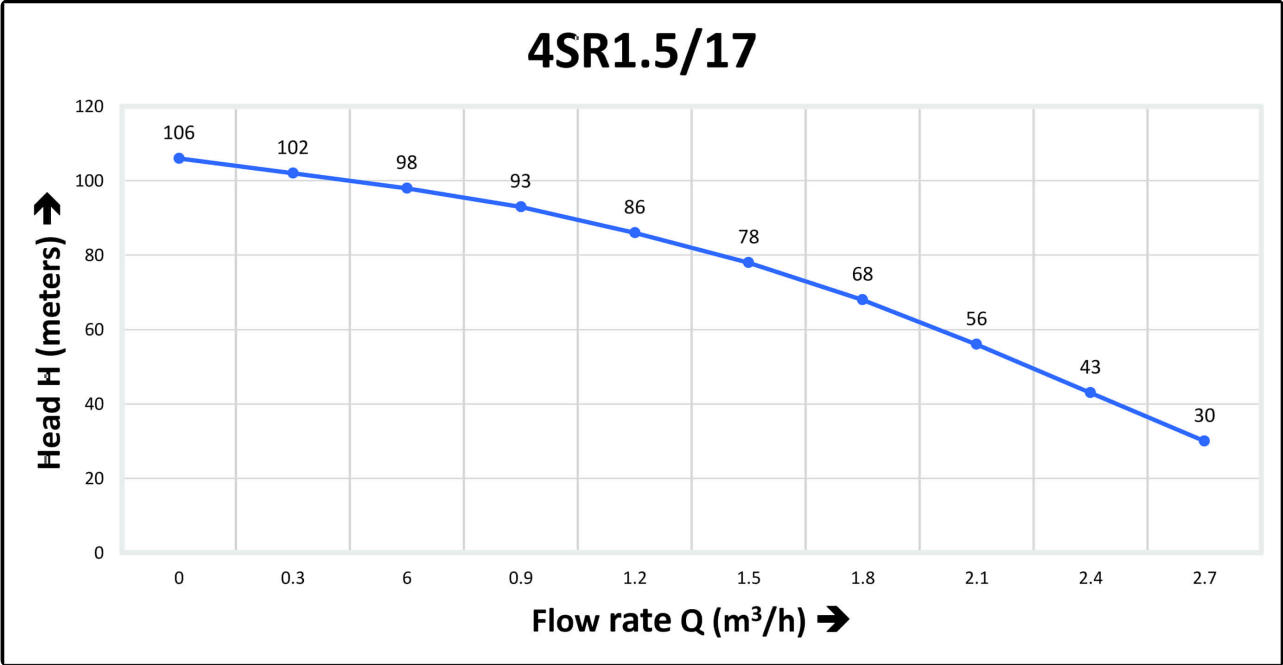
220V

3Phase

4inch

14.3kg

Italy



Dimensions and weight

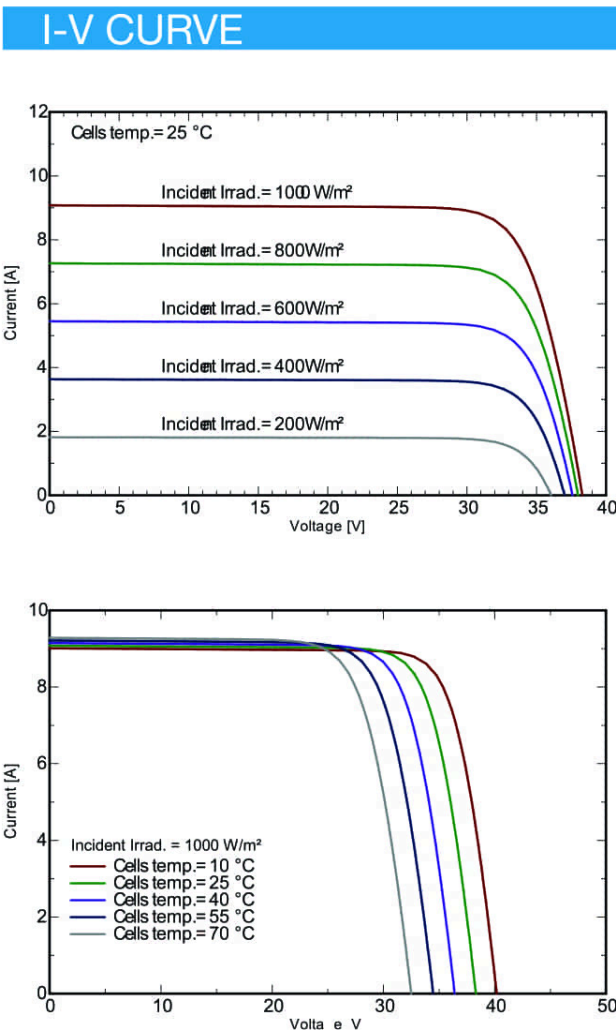
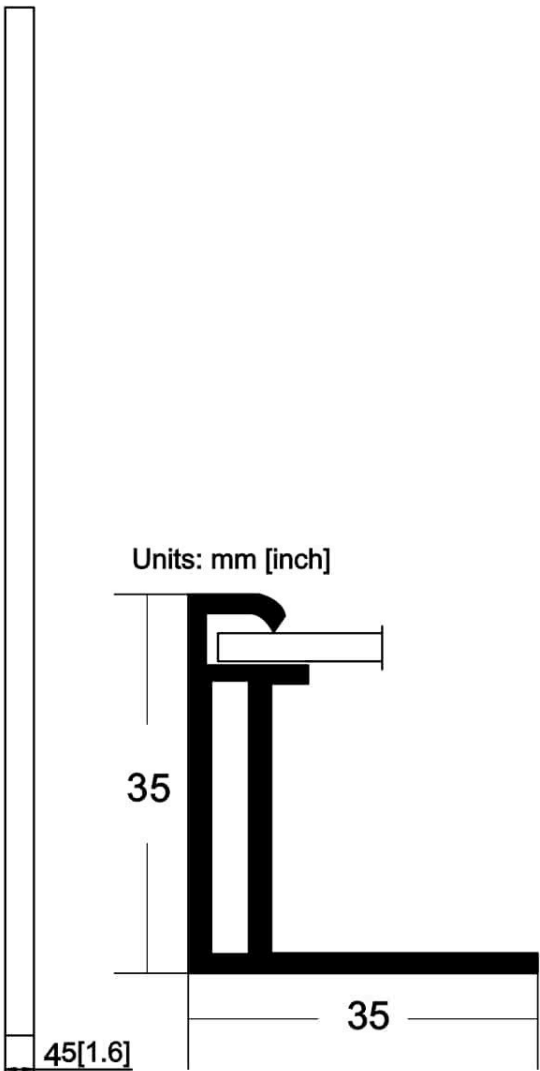
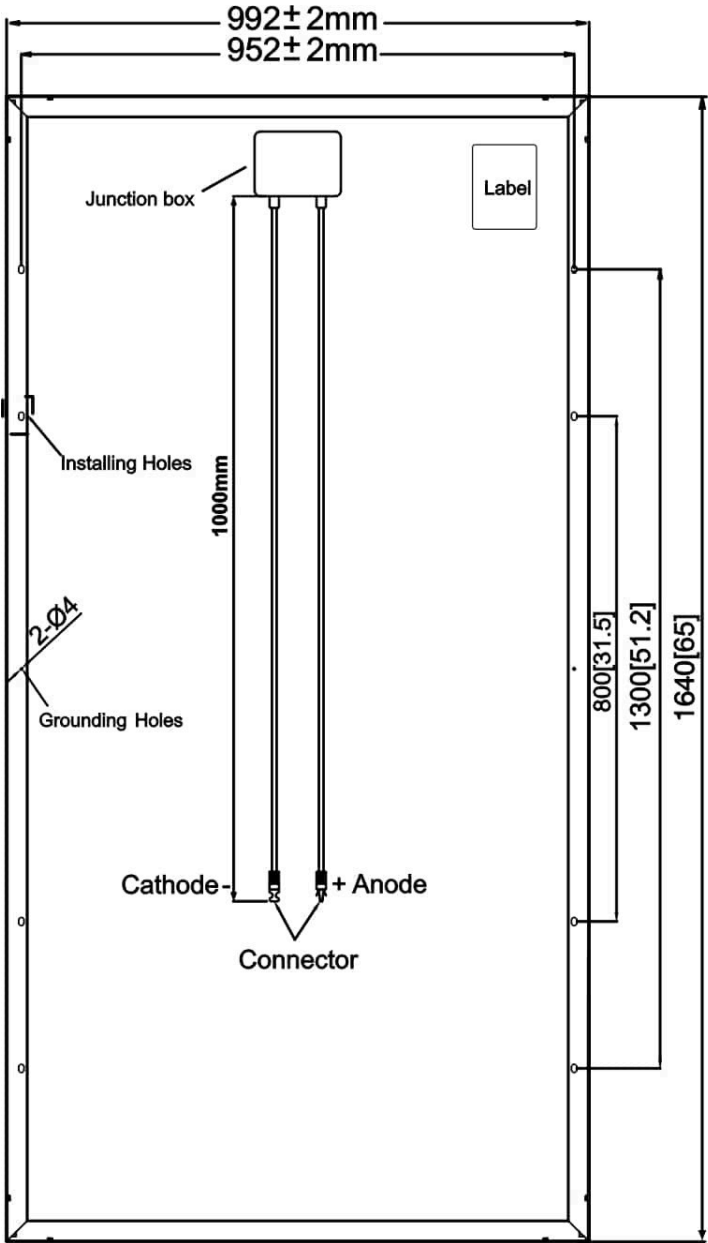
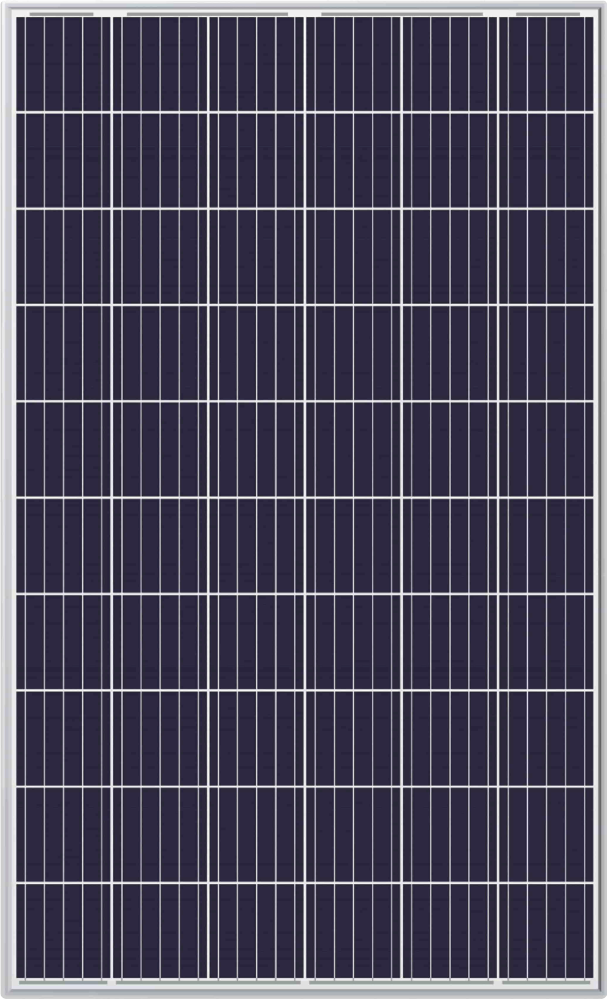
MODEL	PORT DN	DIMENSIONS mm				kg
		Ø	h1	h2	h	
Three-phase 4SR1.5/17 - PD	1¼"	98	499	356	855	14.2

Project Name:

Gheghanak Sub Health Center (SHC) water power solar system

Solar specification:

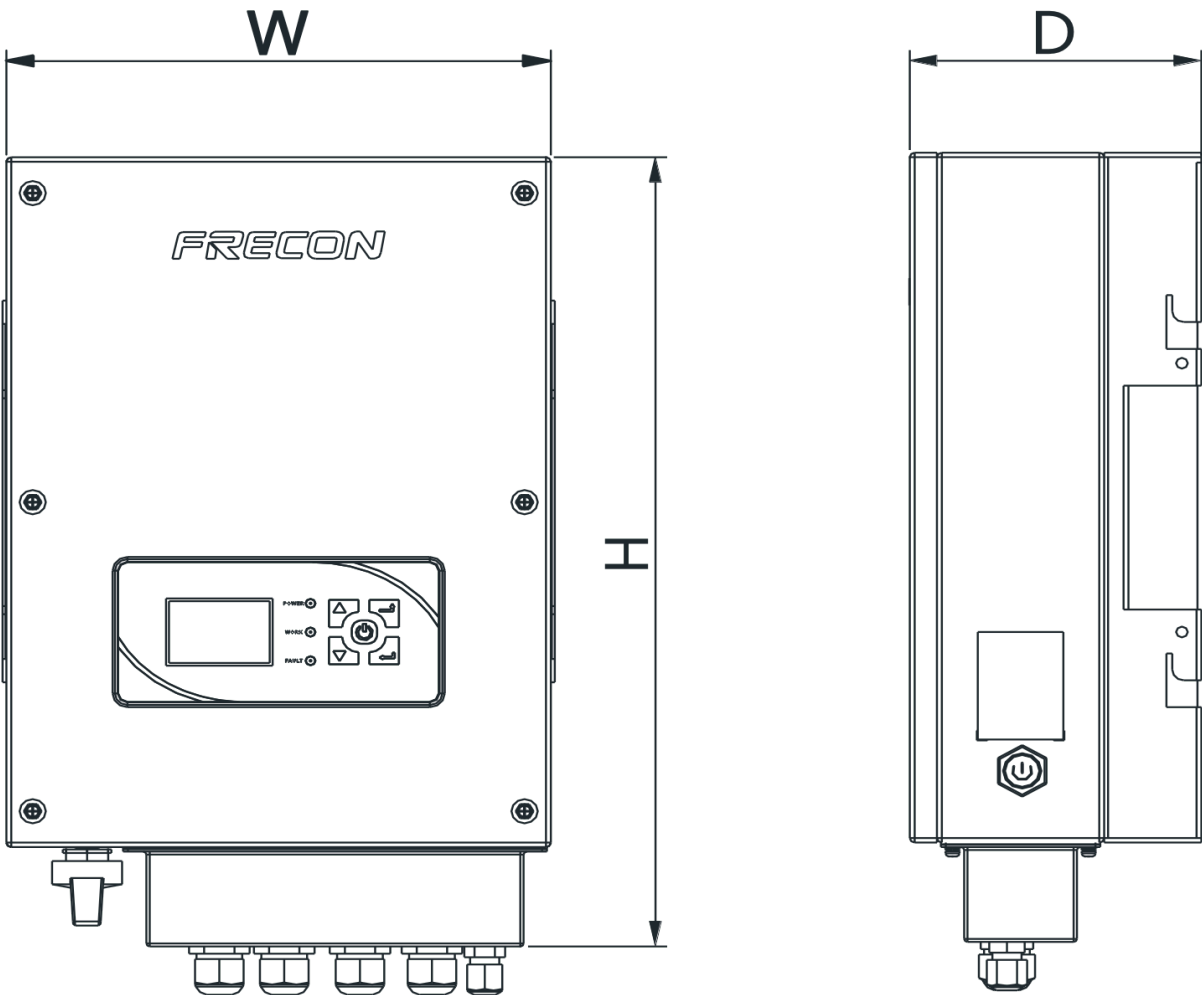
Brand:	PROPSOLAR
Model:	PS-660
Cell Technology:	Poly crystalline
Rated Maximum power (Pmax):	270 Wp
Voltage at Maximum power(Vmp):	30.9 V
Current at Maximum power(Imp):	8.73A
Open Circuit Voltage(Voc):	37.9V
Short Circuit Current (Isc):	9.22A
Mazimum System Voltage:	1000V
Weight:	18 kg
Made in:	China



Project Name:
 Gheghanak Sub Health Center (SHC) water power solar system

Controller specification:

Brand:	FRECON IP65
Model:	PV580-2S-1.5
Power:	1.5 Kw
Hours power:	2 HP
Current:	10.5 A
Voltage(AC):	220 V
Voltage(DC):	200-260V
Weight:	11.4 kg
Made in:	China



Model	External and installation dimensions (mm)			N.W (kg)
	W	H	D	
PV580-2S-1.5B	280	440	150	11.4

Project Name: Gheghanak Sub Health Center (SHC) water power solar system

Strucuter specification:

Brand:	No
Model:	Fixed Structure
Capacity:	4/6/8/10/12 panels

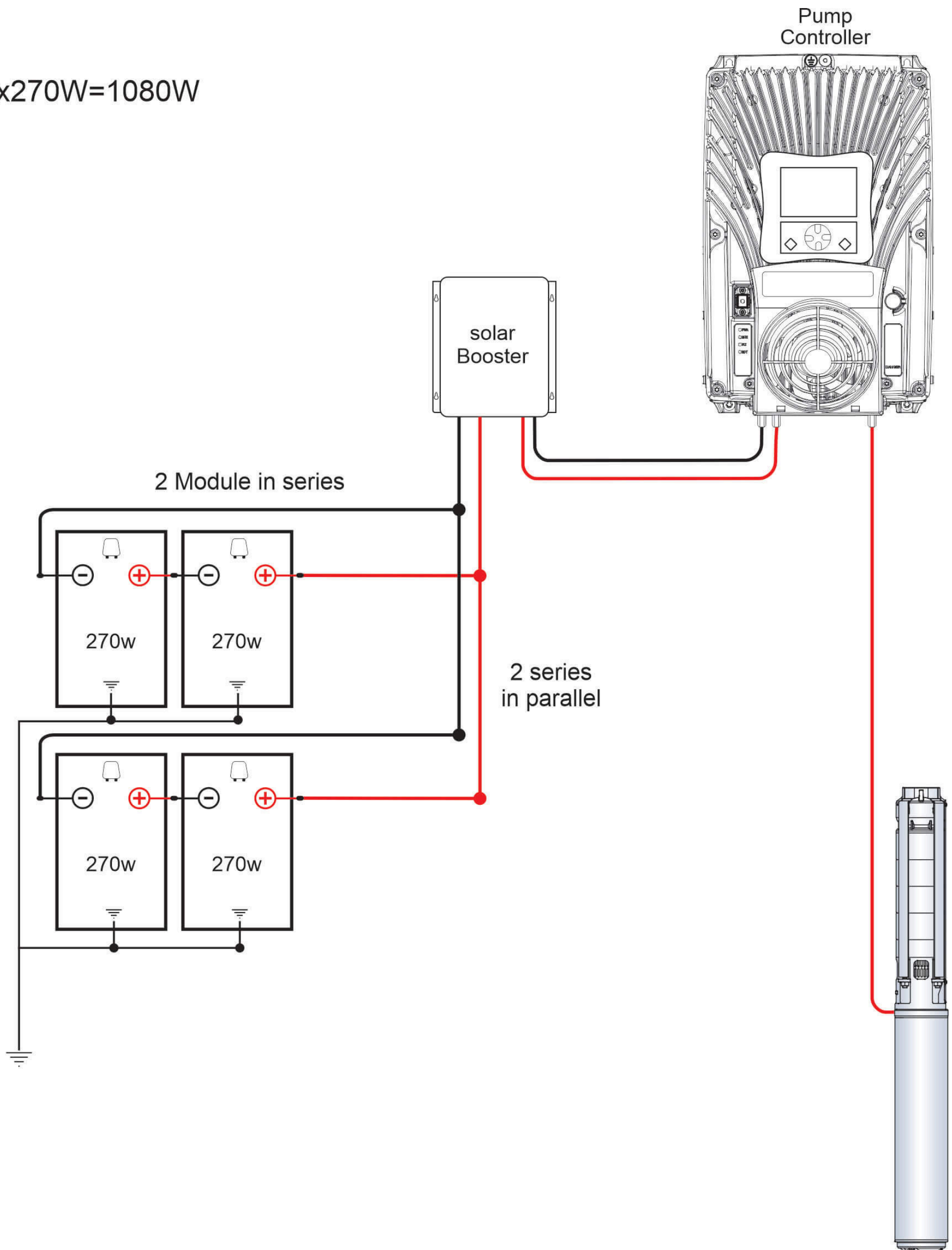


Note: Image may be deferent with actual product as this is a graphic design.

Project Name: **Gheghanak Sub Health Center (SHC) water power solar system**

Wiring Diagram

$$2^s \times 2^p = 4^p \times 270W = 1080W$$



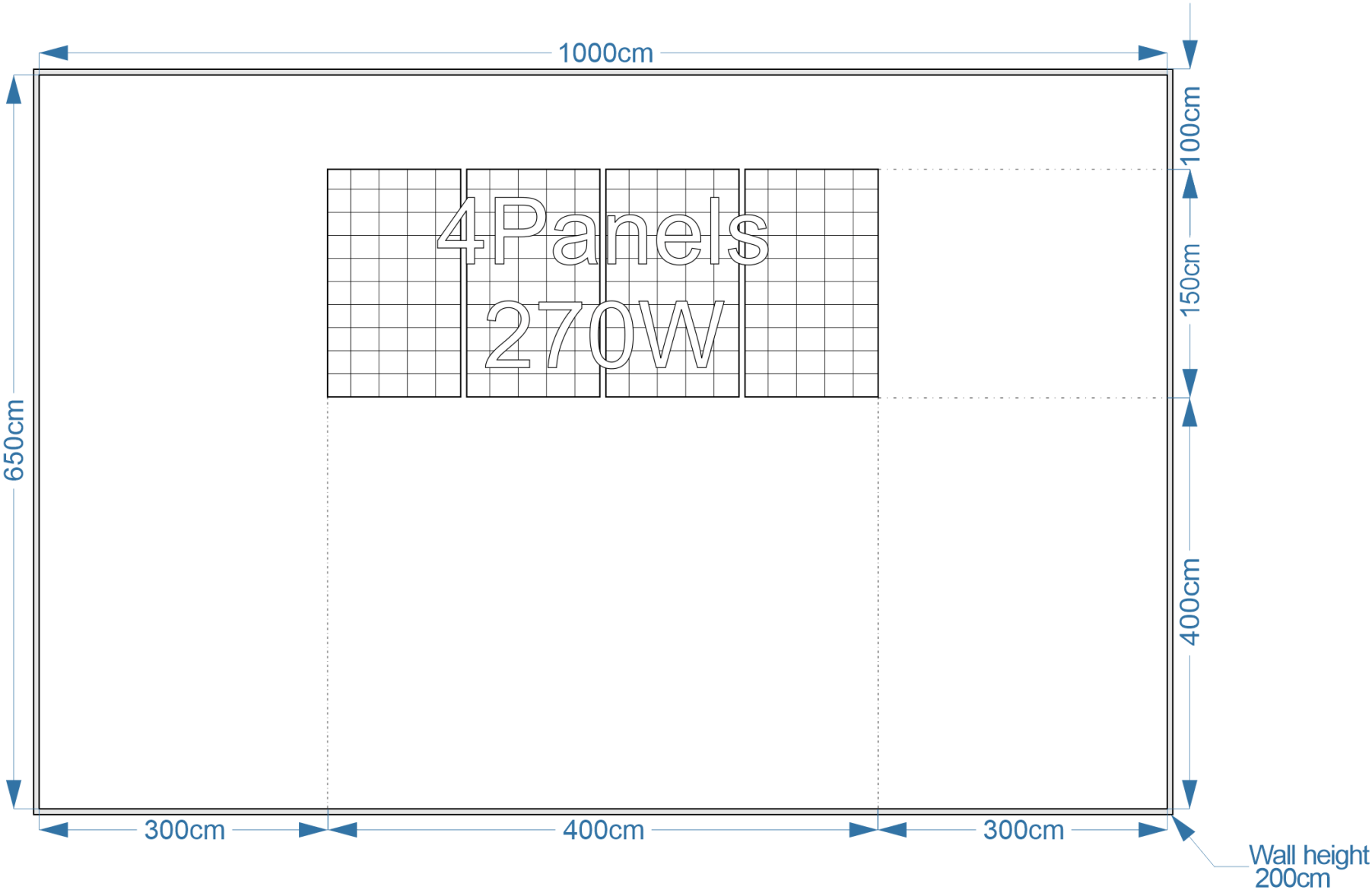
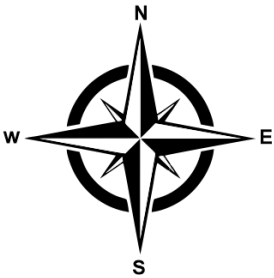
Project Name:

Gheghanak Sub Health Center (SHC) water power solar system

Area Diagram

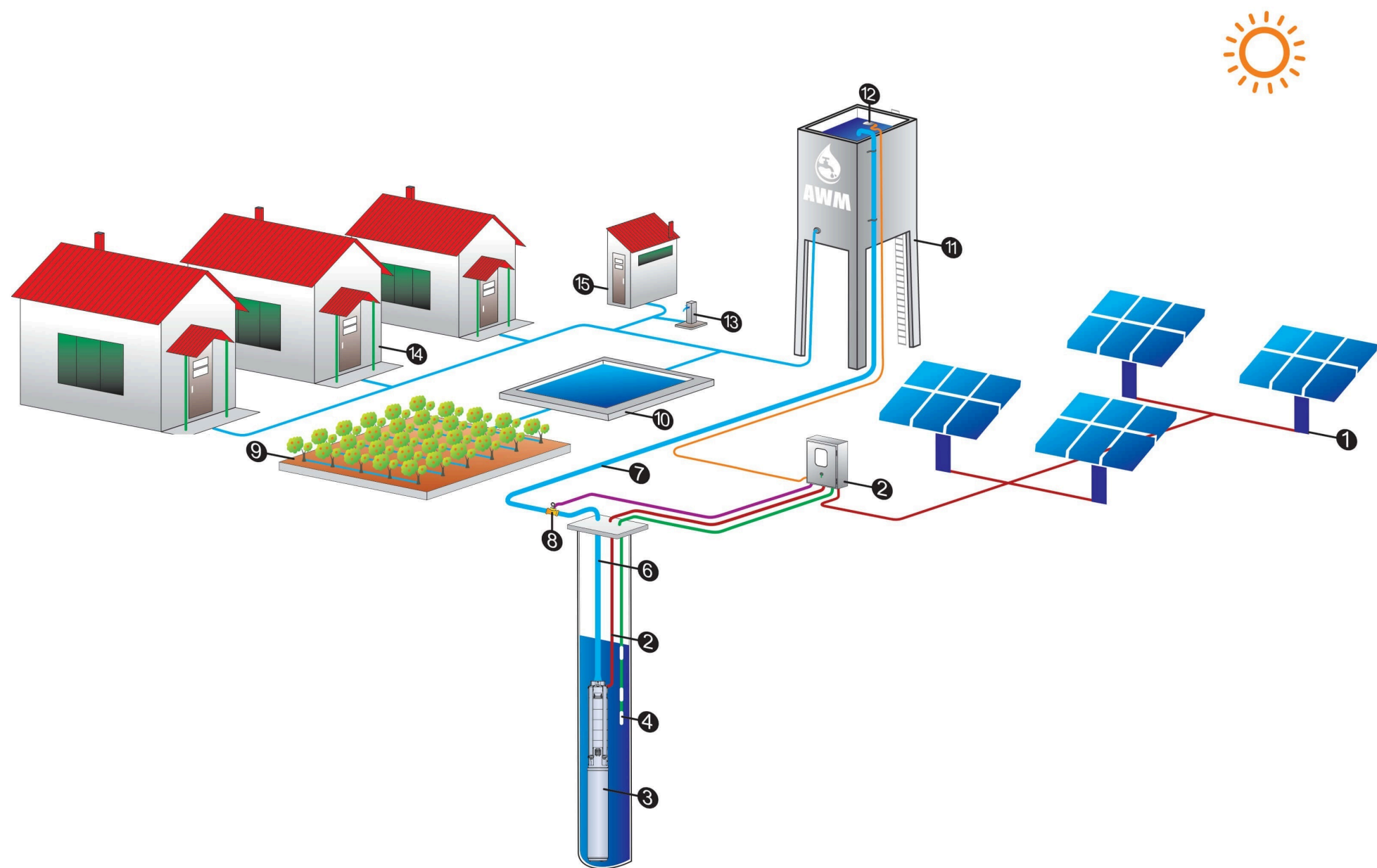
Required Area for this project:

Minimum 65m²



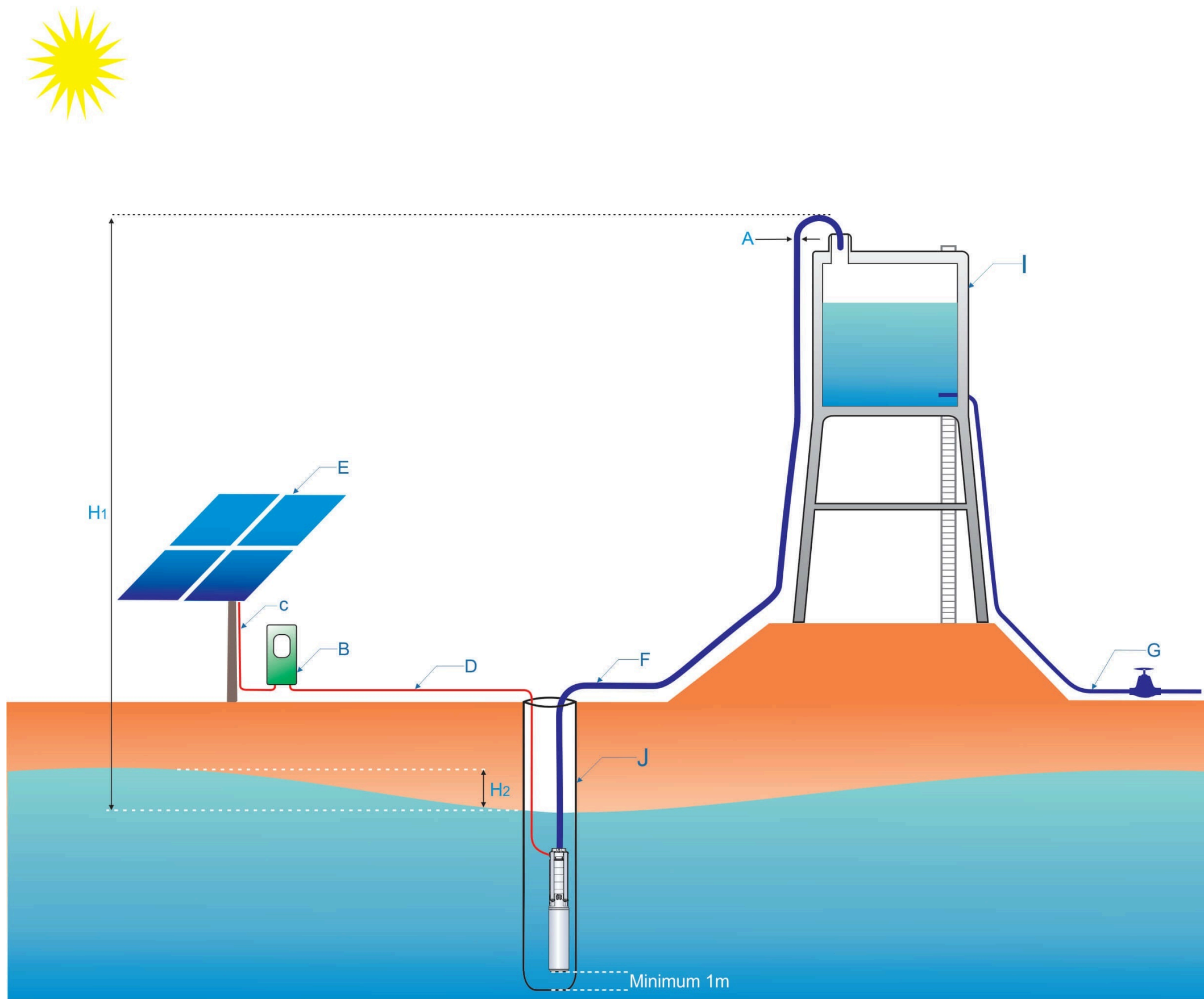
Note: The area which the panels will install must be south face.

System General layout



- | | |
|--------------------------|-----------------------------|
| 1- Solar panels | 9- Garden |
| 2- Pump controller | 10- Swimming pool |
| 3- Submersible | 11- Water reservoir |
| 4- well probe sensors | 12- Flaut switch |
| 5- Pump electrical cable | 13- Flaut switch Ele. cable |
| 6- Non return valve | 14- Residential Houses |
| 7- Pressure Gauge | 15- Toilet |
| 8- Water meter | |

Sizing layout



- A (pipe diameter) pipeline inner diameter.
- B (controller) solar pump controller to drive the pump.
- C (cable) the electrical cable between solar and controller.
- D (cable) the electrical cable between controller and pump.
- E (solar) solar panels stand.
- F (pipeline) pipeline from the pump outlet to the reservoir.
- G (pipeline) water tank outlet.
- H₁ (static head) virtical height from the lowest level to the highest point of delivery.
- H₂ (draw down) the dynamic water level of the well depending on the pump operation.