



A solar-powered pump is a pump running on electricity generated by photovoltaic panels or the thermal energy available from collected sunlight as opposed to grid electricity or diesel run water pumps. The operation of solar powered pumps is more economical mainly due to the lower operation and maintenance costs and has less environmental impact than pumps powered by an internal combustion engine(ICE). Solar pumps are useful where grid electricity is unavailable and alternative sources (in particular wind) do not provide sufficient energy.

COMPONENTS

A photovoltaic solar powered pump system has three parts:

- The Pump
- The Controller
- Solar Panels.

The size of the PV-system is directly dependent on the size of the pump, the amount of water that is required ($m^3/(1)$) and the solar irradiance available.

The purpose of the controller is twofold. Firstly, it matches the output power that the pump receives with the input power available from the solar panels. Secondly, a controller usually provides a low voltage protection, whereby the system is switched off, if the voltage is too low or too high for the operating voltage range of the pump. This increases the lifetime of the pump thus reducing the need for maintenance.

Voltage of the solar pump motors can be AC (alternating current) or DC (direct current). Direct current motors are used for small to medium applications up to about 3 kW rating, and are suitable for applications such as garden fountains, landscaping, drinking water for livestock, or small irrigation projects. Since DC systems tend to have overall higher efficiency levels than AC pumps of a similar size, the costs are reduced as smaller solar panels can be used.

Finally, if an alternating current solar pump is used, an inverter is necessary that changes the direct current from the solar panels into alternating current for the pump. The supported power range of inverters extends from 0.15 to 55 kW and can be used for larger irrigation systems. However, the panel and inverters must be sized accordingly to accommodate the inrush characteristic of an AC motor.

Note: Specifications are subject to change.

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SOLAR WATER PUMP TECHNICAL SPECIFICATION

- Motor Pump set with 5 star rated (Surface or Submersible) as per MNRE specification.
- AC induction Motor pump set with a suitable inverter.
- Electronics: Solar inverter/VFD with remote monitoring facility as per MNRE specification.
- G I mounting structure with manual tracking facility as per MNRE norms arrangement for seasonal tilt angle adjustment. Suitable foundation shall be provided to with stand for high wind speeds as per MNRE norms.
- Submersible cable of 3 core 2.5 sq.mm flat cable as per ISI standards of 200 feet length. The cost of over and above 200 ft. length shall be collected from beneficiary /farmer as per SSR rates.
- We Provide 220Ft. Standard HDPE pipe. Above 220Ft. The charges are extra as per actual for the HDPE pipe.
- A good reliable switch suitable to operate the system will be provided with the Motor pump set.
- In general at a total head of 50 mtrs, the 3 HP pump set shall deliver 57000 liters per day and 5 HP pump sets 91000 liters per day.
- An operation and manual in English and Hindi languages shall be provided with information about solar PV pump set, tracking system, mounting structure, electronics, switches, Do's and Don't Do's!!
- Regular maintenance and troubleshooting of the pumping system. Name and Address of the person or center to be contacted in case of failure or complaint and warranty card shall also be provided.

The cost of the system will cover:

1. Solar panels of appropriate size.
2. High quality ISI pump-set.
3. Transportation of all equipment's to beneficiary site.
4. Mounting structures & civil works as required at the site only on Normal Conditions.
5. Electrical cables.
6. Water pipes of different sizes, up to 200 feet depth.
7. Cost of installation and commissioning.
8. All taxes as applicable.
9. All other accessories, please refer to the technical specifications for details.

Note:

1. The farmer will be responsible for the safety & security as the system is located in the premises of the farmer.
2. Secondly, the solar pump-set is utilized to supply water to the farmer only, so the beneficiary would be customary guardian of the system.
3. Thirdly, the Warranty does not cover any kind of physical damages caused to the solar panels, pump-set or the associated equipment due to negligence and /or mollified intentions. The farmer has to take adequate precautions such as fencing the area to keep of cattle or stray animals away from the system.
4. Solar panels & associated pump-set are based on advanced technology that requires minimum manual intervention. The system operates automatically when the switch is pushed on manually. Therefore no dedicated operations personnel is required. However, the solar pump-set would require routine cleaning of the panels that can be attended by the beneficiary.
5. In few words, the company which has supplied /installed the solar pump-set will be responsible for maintaining. The farmer does not have to pay anything up to 5 years period, but will have to bear any charges (as applicable) Thereafter.

SOLAR WATER PUMP TECHNICAL SPECIFICATION

SN.	Order Code	Capacity
1.	26071A	1HP
2.	26071B	2HP
3.	26071C	3HP
4.	26071D	5HP
5.	26071E	7.5HP
6.	26071F	10HP
7.	26071G	15HP
8.	26071H	20HP

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