

Solar Water Pumping

By Geoffrey Kaila

Where & why would one use a solar water pump?

If you live beyond the reach of the electricity power grid or you have an off-grid farm that requires water pumping for irrigation or livestock watering, solar water pumping can be a reliable and sustainable solution.



Solar water pumping installation in Chongwe

Solar water pumping is a better solution than fuel burning engine pumps, generators, cumbersome windmills and tedious hand pumps. Solar water pumping systems provide the most water when it is need most-during dry sunny weather.

What type of solar pump can I use?

There are two basic types of solar pumps; the surface pump and the submersible pump. Surface pumps depend on suction lift to pump water. This limits pumping to depths of zero to about seven meters (7m). This limitation makes surface pumps useful for pumping in shallow wells and pressure booster systems. At higher elevation above sea level, suction lift fails due to vaporization of water due to dissolved gases in the water.

Submersible pumps have more flexibility; they do not have the suction lift limit. They can pump water from very deep wells and boreholes of over 200metres

How do I choose the size and type of solar water pump?

In order to determine the size and type of solar water pump that would be right for your site and meet your needs; you have to define your needs. How much water will you need per day? What will you use the water for? What will be your source of water? Is it a borehole, or a dam, or shallow well or running water from a stream or river? Typically:

- People need about 70 liters per person per day
- Trees need about 40 liters per tree per day
- Animals (cattle) need about 90 liters per animal per day

These estimates may vary with seasons. The type of pump required would depend on the source of water; submersible pumps would work in deep wells and surface pumps in shallow wells, dams, stream and rivers. Submersible pumps can also be used in streams, rivers and dams.



Solar water pumping installation in Namwala

After you workout your water needs, you then need to decide how much storage you would need. Typically have enough storage for at least Five (5) days. This would take you through cloudy days and days when you have more demand than usual. To store water, you can have an overhead tank and use gravity to deliver water to the point of use, or a ground tank with a booster pump to pressurize the water line so that water reaches point of use.

After all this hard work, you then go to a solar pump installer with the data that you have gathered. The solar installer would then size the components of the solar water pumping system, cost the system and give a quotation. When you are happy with the cost of the system, the solar installer would then go to the site to install the system for you. You can then Kiss your engine pump, generator or hand pump goodbye.

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