

Solar Water Pumping Systems

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Company Profile

Groundwater Engineering is an international company specializing in water well engineering, dewatering and groundwater control for clients in the construction, mining and oil & gas industries

Backed by decades of industry experience and technical expertise we are committed to providing our clients with high quality and cost-effective solutions to their groundwater problems based on offering services in:

- Contracting
- Consultancy
- Equipment sales and rental

The company has evolved to supply and install Solar Pumping Systems for Residential or Irrigation needs and Solar PV installations.



Synopsis

- Overview of solar water pumping systems
- Technology
- Security
- Application



Solar Pumping Overview

- One of the simplest and most economical uses of solar energy is for pumping water. With advances in pumps and pump controllers, solar water-pumping systems have become fairly easy to install, operate, and maintain.
- If you live beyond the reach of the grid, have a remote pumping need, or need to cut costs on applications like:
 - Irrigation;
 - fish pond aeration;
 - poultry heating;
 - livestock watering; or
 - buildings and houses with insufficient water supplythen a solar-electric pump system can be a solution that is reliable and sustainable.



Solar Pumping Overview

- Like any renewable energy investment, solar water pumping systems require research and design before the first PV module and pump is purchased and installed. Each component must be carefully matched to the others, and to the load, so proper planning is essential— the results will be an efficient, reliable system that will be functioning for years to come.
- These pumps provide individual solutions to water problems where conventional water supply systems fail or simply cannot reach.



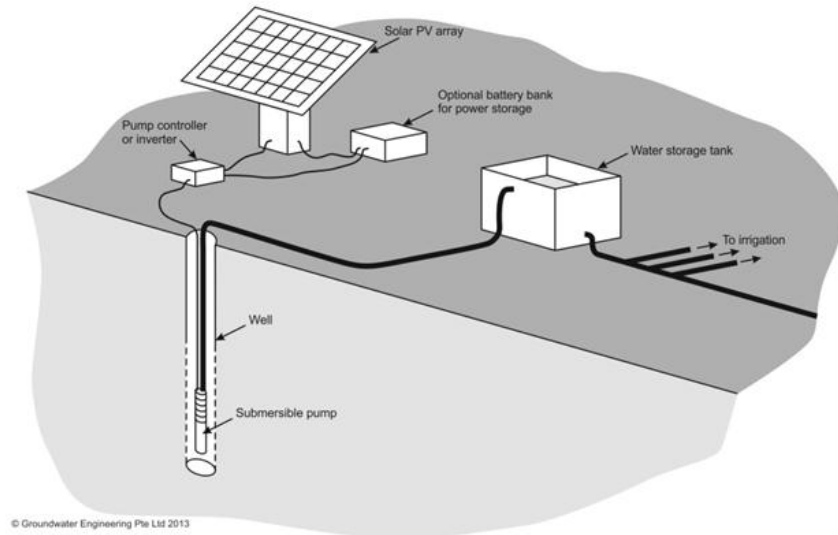
Solar Pumping Overview

- Solar panels can be used to pump groundwater or surface water to a reservoir which feeds domestic outlets. Compared to the use of a diesel or grid-powered pump, the initial capital cost of a solar-powered system is high but the running and maintenance costs are low (there is no fuel or electric bill to pay for), but this is where the comparison stops. The life cycle cost is lower because you can save substantial sum on reduced maintenance cost and no energy cost.
- A reservoir is used to provide water when there is no sunshine to power the system and should have the capacity to provide 2-5 days' water consumption, depending on climatic conditions. Batteries, generator or grid power can be used instead to continue pumping water without sunshine, but a reservoir is more reliable and much more economical.



Technology

- The technology involved in solar water pumping systems is advanced and includes complex electronic systems. The solar array is the most reliable component of the system and have a guarantee of up to 25 years. Panel failure is rare , but pump failures are common, mostly due to lack of simple maintenance rather than defects in the pump itself. Most of pump breakdowns were due to sediment build up.
- easy installation
- virtually no maintenance
- highly efficient pumping
- low lifecycle cost.





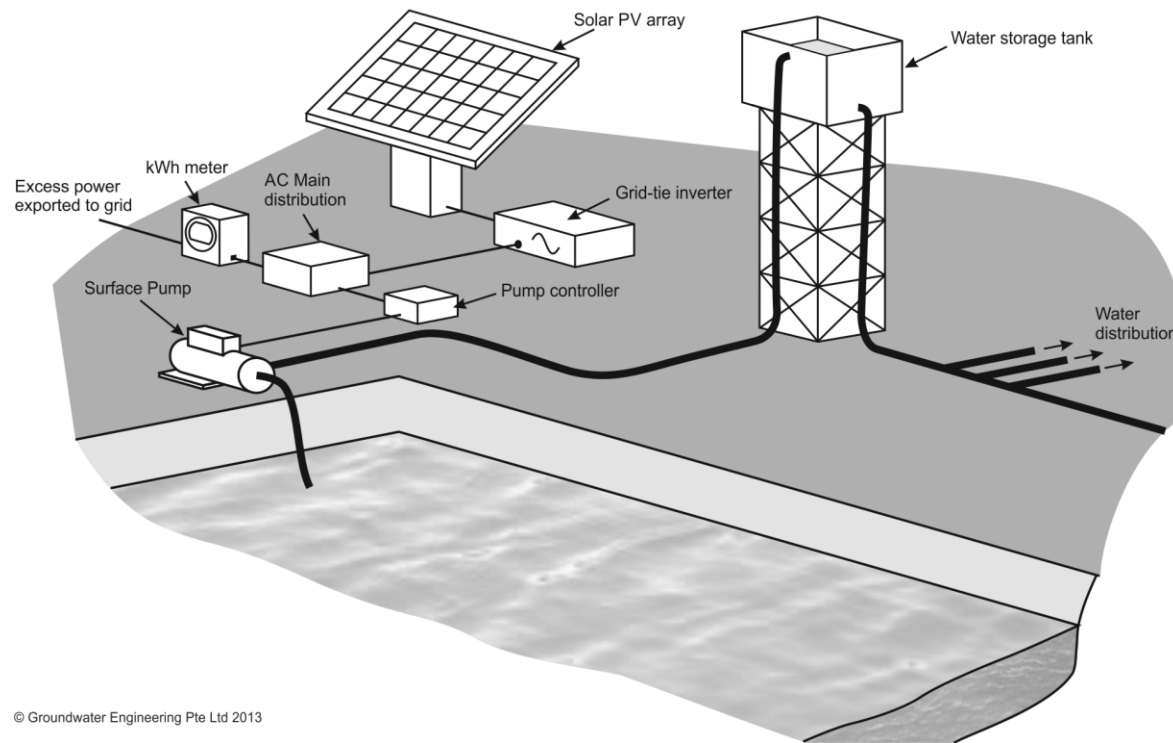
Security

- Security is an important issue in solar systems because solar panels are valuable items and can too easily be stolen or vandalized. A variety of security methods are:
 - locating panels in a community member's yard
 - using latest designs of panels which are robust and hard to steal
 - An alternative is to employ a vigilance system whereby community members take turns in guarding the equipment.



Application

- Designed for continuous as well as intermittent operation, the solar water pumping system is especially suitable for water supply in remote locations such as:
 - villages, schools, hospitals, single-family houses, etc.
- Typical rural and remote applications:
 - irrigation, livestock and fish farming, stable water supply for remote villages.
- Applications for homes and businesses in rural areas and towns:
 - pressure boosting in the house, swimming pool.



Thank you for your attention!

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