

'SolarPump' Choosing and Installing Your Solar Powered Borehole and Well Pumping System

The SolarPump System

Our SolarPump systems are effective solar or battery powered borehole and well pumping solutions and can pump as much as 20m³/day from 50m or be scaled down for more modest domestic uses. This information sheet details how you can get the most out of your 4 Elements SolarPump system.

Specifying the system - Your Water Needs

This checklist will help you determine which SolarPump system you need:

- How much water do you need in m³/day or gal/day
- How far down do you need to pump from - not forgetting the drawdown in the borehole or well
- What seasons do you need water for
- Does your borehole/well have access to open skies with few obstructions such as trees and buildings
- Can the solar array be mounted within a few meters of the borehole/well

Answers to these simple questions will help us to specify a SolarPump system for your precise needs.

Site Preparation

In order to get the most out of your Solar Pump System

There are a few ground rules that will ensure that the system will deliver what you require:

- 1 Header tank or lagoon/pond:** We strongly recommend that pumped water be fed into a header tank or lagoon/pond facility. This will even out supply during cloudy periods to ensure you always have a reserve of water to draw on
- 2 Solar Array location:** The array should be positioned as close to the wellhead as practical to reduce power losses through the cables, orientated in a southerly direction and free of any potential shadows from buildings and trees etc.



3 Secure mountings: A 1 kWatt Solar array covers approximately 9 m². Therefore, even a modest array will require a secure base for mounting. Most of our solar pump arrays are mounted in concrete footings with bolts ready to accept our mounting systems. With each system we supply ready-made templates and mounting bolts. The templates help to orientate and hold the mounting bolts in the correct position to accept our mounting poles.

Installation

For the larger systems we provide a full installation service. Normally, with a prepared site, we aim to install and commission a system in one day. Anyone with a working knowledge of DC electronics and outdoor electronic systems will be able to assemble the major items of our smaller solar pump systems. We choose Lorentz pumps and controllers as they are proven, reliable, very efficient and come with complete instructions. Of course, we are always on the end of a telephone should you need help.

Using and maintaining the SolarPump

Our solar pump systems are very simple to use and almost maintenance free. A simple on-off switch on the controller enables the system for pumping and low water and float switch sensors will automatically stop the system if the water level in the borehole drops too far or the header tank/lagoon becomes too full. With no moving parts on the array the only maintenance required is a wipe of the solar panels to remove any winter grime at the start of the pumping season. A manual DC disconnect switch is included in the junction box to enable you to electrically isolate the array if required.

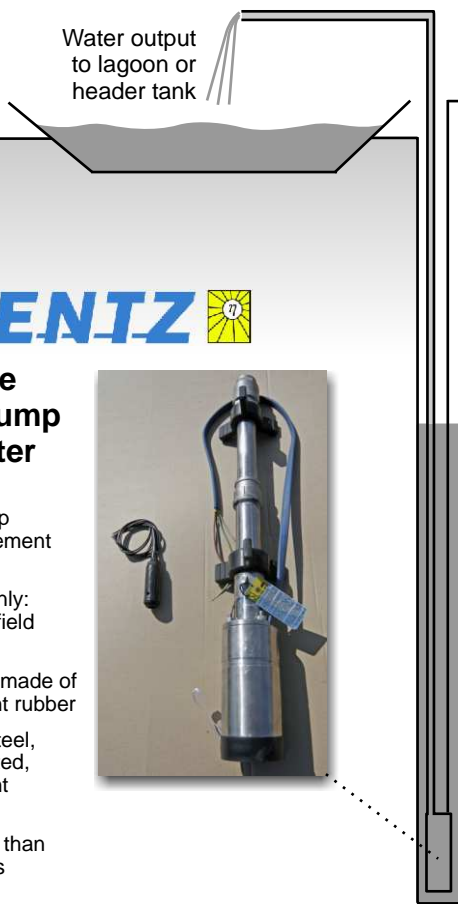
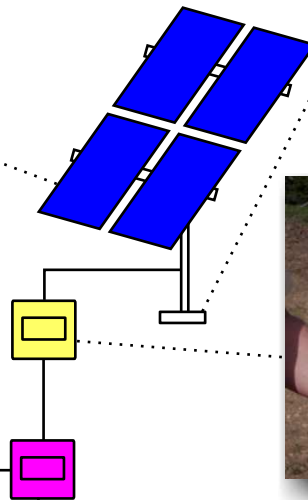


Solar Photovoltaic Array

4 Elements supply a wide range of branded high quality Photovoltaic modules from the worlds leading manufacturers such as Sharp, Tenesol and BP Solar. Modules are robust and designed to withstand severe weather conditions. Each module comes with a 20 year warranty designed to protect your investment in our solutions.

Array Pole Mount

4 Elements photovoltaic mounting systems are designed with robustness and longevity in mind. The mounting system is fully galvanised for complete weather protection and includes the ability, if required, to alter the elevation of the solar array to maximise the power output in different seasons.



LORENTZ 

Submersible Borehole Pump and low water sensor

- helical rotor pump (positive displacement pump)
- two main parts only: stator and rotor, field servicable
- stator: geometry made of abrasion resistant rubber
- rotor: stainless steel, hard chrome plated, abrasion resistant
- more resistant to damage by sand than other pump types
- self-cleaning



Pump Controller

- controlling of the pump system and monitoring of the operating states
- mounted at surface (no submerged electronic parts) two control inputs for well probe (dry running protection), float or pressure switches, remote control etc.
- automatic reset 20 minutes after well probe turns pump off
- protected against reverse polarity, overload and high temperature
- speed control, max. pump speed adjustable to reduce flow rate to approx. 30 %
- solar operation: integrated MPPT (Maximum Power Point Tracking)
- battery operation: low voltage disconnect and restart after battery has recovered
- max. efficiency 88 % (motor + controller)
- enclosure: IP 54 (sealed, weatherproof)



Junction Box

The weatherproof junction box contains a DC isolator switch. This enables you to safely isolate the solar array from the pump for maintenance purposes and when the system is not required in winter.