Solar Water Pumping Overview

Solar water pumping is one of the most efficient ways to utilize solar energy. Since wells and other water sources tend to be in remote locations, using conventional energy sources entails either running extended lengths of wire or using a fossil fuel generator at the site. Since these traditional methods involve both expensive equipment costs, plus ongoing energy costs, solar energy is often both cost effective and efficient for well pumping.

The Components of a Solar Well System

A solar water pumping system consists of four main parts: the pump, the pump controller, the solar electric panels and a storage unit. A solar water pump is sized based on the depth of the well and amount of water needed. The pump is powered by an array of solar electric panels. The current between the solar electric panels and the pump is controlled by a pump controller, which protects the pump from fluctuations in the current and helps to provide a steady output. The pump controller can also shut down the pump if the pump is running dry. A float switch can be connected to the controller to shut off the pump once the storage tank has reached full capacity.

Storage for a solar water pumping system can be approached from two different angles. The most cost effective and reliable method is to install a large water storage tank that serves as a reservoir. This tank supplies water during the night and on days with low sunlight, when your solar pump is running at a lower output. When planning a system with a water tank, be sure to select a solar pump that meets your total daily water needs and can provide excess water for storage. It is also possible to install batteries to run the pump on cloudy days and at night. Although this type of system is quite reliable, it does involve higher costs and more maintenance than the standard storage tank approach.