

Solar water pump with external DC power supply





Overview

How to design a solar photovoltaic powered DC Water Pump?

The simplest type of PV system one could ever design is by connecting single or multiple PV modules directly to the DC load as shown in figure 1 below. The overall capacity of the modules is such that it can supply power only during the sunshine hours.

How does a solar water pump work?

The design of such a system is very simple as we have to match the power and voltage rating of the PV module to that of the DC pump motor so when the module receives the solar radiation the pump will draw the water and store it in the tank.

Can a water pumping system use solar energy?

Therefore, it is appreciable to utilise the water reservoir or tank to store the water rather than to store the PV array power in the form of electrical energy [4]. Therefore, the solar PV energy conversion system (SPECS) for the water pumping system (WPS) is one of the potential and efficient arrangement to harvest solar power.

Is solar PV energy conversion system effective for water pumping system?

Therefore, the solar PV energy conversion system (SPECS) for the water pumping system (WPS) is one of the potential and efficient arrangement to harvest solar power. However, it has been determined that the drive used in WPS shares more than 1/3rd of the overall solar power expenditure.



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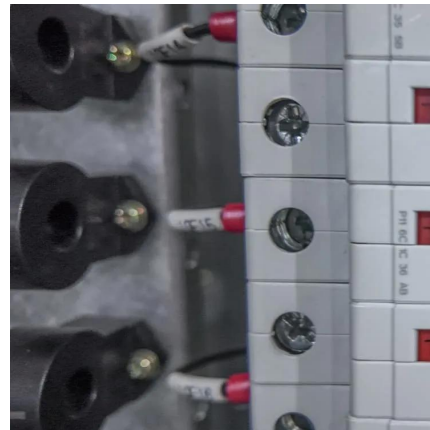
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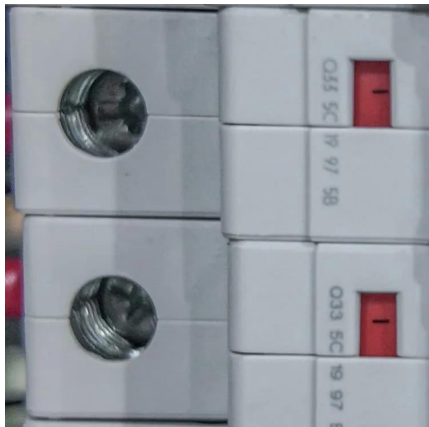
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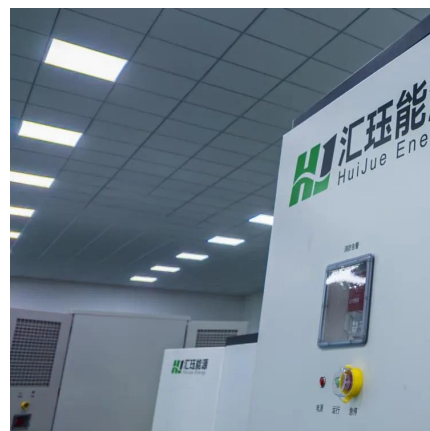
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Efficient solar-powered water pump with single-input



dual-output DC-DC

A four-phase switched reluctance motor (SRM) drive is selected to pump the water effectively and to make the system reliable. The utilised DC-DC converter can provide two ...

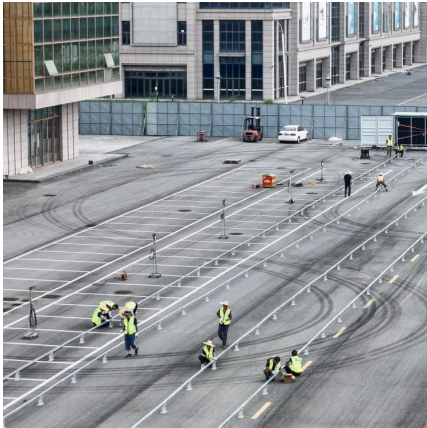
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Example & Calculation for Designing a Solar Powered DC Water Pump To understand this simply let us take a design example where we need 50 m3 water per day from a depth of 20 m.

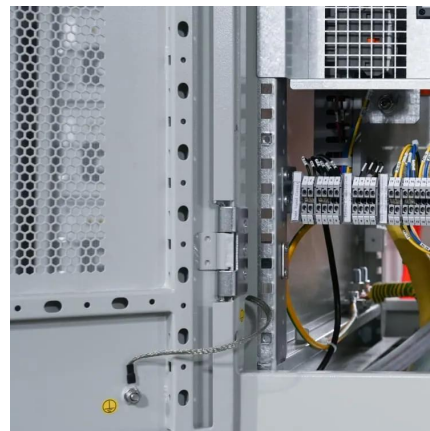
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