

What is direct driven solar PV water pumping system?

Direct driven solar PV water pumping system is shown in Fig. 4. In this system, electricity generated by PV modules is directly supplied to the pump. The pump uses this electric power to pump the water. As no backup power is available, the system pumps water during the daytime only when the solar energy is available.

How to optimize solar PV water pumping system?

Optimization of overall solar PV water pumping system The efficiency of solar PV panel is usually very low (10-18%), hence the PV power should be utilized very efficiently. This is achieved by selecting each component of SPVWPS with optimum operating parameters.

How to control photovoltaic water pumping system?

Three MPP T controls: VSS-P&O, VSS-INC, and KF combined with DTC were used to control the Photovoltaic water pumping system. The proposed DTC to control the adopted Photovoltaic water pumping system is made. This technique is proposed to overcome the limitations of the conventional DTC.

Why is PV important in a solar water pumping system?

PV is considered an essential part of the photovoltaic solar water pumping system (PVWPS). The efficiency of the PV array of the photovoltaic solar water pumping system may be affected by two factors: the variation of the irradiations and temperature and the nature of the load.

What is a photovoltaic water pumping system?

As shown in Fig. 1, the proposed Photovoltaic water pumping system configuration consists of solar panels, a DC-DC boost converter, Voltage Source Inverter (VSI), and an induction motor coupled with a pump Centrifugal. The MPPT control is used to extract the maximum power from the solar panel by regulating the duty cycle of a DC-DC boost converter.

What is water pumping based on PV technology?

Water pumping based on PV technology is a promising alternative to conventional pumping systems that are based on diesel. There are two types of standalone PV systems. The first one uses the storage battery to store the excess electricity generated by the PV system, while the second one uses a tank to store the pumped water.

Water is a precious resource for agriculture and most of the land is irrigated by tube wells. Diesel engines and electricity-operated pumps are widely used to fulfill irrigation water requirements; such conventional systems are inefficient and ...

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