

Solar water pump enhancement





Overview

How can we improve the efficiency of solar water pumping systems?

To improve the efficiency of solar water pumping systems, Ref. 21 provided a novel fractional-order fuzzy-MPPT approach. By covering parts, system viewpoints, and sophisticated control techniques for increased efficiency, these publications together boost our knowledge and development of solar water pumping systems.

How to optimize a solar pump system?

Solar pump system optimization depends heavily on control of the induction machine, which contributes significantly to energy efficiency. This control covers all components, from the photovoltaic generator to the motor pump. The latter assumes particular importance in meeting crop water requirements via the hydraulic system.

How do solar water pumps work?

By using solar energy, the device provides an affordable and environmentally friendly way to operate agricultural water pumps. The system, which consists of a motor, power electronic converter, and solar PV array, captures solar energy and transforms it into electrical power.

What is a solar water pump system?

The basic block diagram of the solar water pump system is shown in Fig. 1. It consists of an autonomous solar array, an essential DC-DC boosting converter, a three-phase Voltage Source Inverter (VSI), and an induction motor coupled to a centrifugal pump that circulates water.



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