
Design of solar water pump off-grid system

What is a solar pump system?

In this tutorial, we delve into the intricacies of designing a solar pump system, a sustainable solution harnessing solar energy for water pumping. Ideal for remote or off-grid locations, these systems are increasingly pivotal in modern agriculture, livestock management, and rural water supply.

How does a solar water pump work?

This work focuses on the design; fabrication and testing of water pump system powered by a solar photovoltaic (P.V) panel. Two 12V, 17AH battery was incorporated in the pump system to ensure storage and stability of power discharged. The system pumped water at an average of 30L/min within the hours of 1pm to 4pm at an hour interval.

What is a solar-powered pump?

Solar-powered pumps are a dynamic and growing field that rapidly changes. The system designer may need to research the different solar-powered pumps available on the market at the time of the system development. Solar pumping for village water supply systems

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How efficient is a solar water pump?

The system pumped water at an average of 30L/min within the hours of 1pm to 4pm at an hour interval. The pump was operated at different heads ranging from 3m to 10m. The pump performed with an efficiency of 3.94% to 13.14%. The power consumption was fixed at 0.373kWh. The design and testing of the solar pump are presented in this work.

A simple and low power standalone photovoltaic (PV) water pumping system with conventional centrifugal pump is presented here. ...

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The system uses solar energy as its primary power source, making it ideal for remote and off-grid applications. It incorporates various sensors to monitor environmental ...

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Living off the grid means taking control of your resources, and one of the most critical elements of true self-sufficiency is a reliable water supply. While many off-grid ...

At this against this background, this work proposes a simple and efficient off-grid solar photovoltaic water pumping system (SPVWPS). The designed system is based on a DC ...

Introduction As access to reliable water supply becomes increasingly important across

agriculture, infrastructure development, and remote-area projects, the solar pump has ...

Sustainable off-grid pumping systems typically fall under one of two categories--solar direct and battery-based. Solar direct applications are designed to take advantage of usable and ...

Without being exhaustive, we aim to offer with this training manual practical guidelines for the design, exploitation, management, maintenance and financial analysis of off- ...

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