

# Solar bidirectional water pump





## Overview

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This paper presents a novel method for controlling the flow of electricity in both directions in an intelligent grid-interactive solar photovoltaic (PV) water pumping system. Does solar photovoltaic water pumping system have bidirectional power flow control?

**ABSTRACT:** A solar photovoltaic (PV) water pumping system with bidirectional power flow control is proposed in this research. The brushless DC (BLDC) motor-drive without phase current sensors is used to power the pump.

How does a solar water pump work?

A pumping system operated by a solar power-fed synchronous motor is also equipped with a two-stage energy conversion system 36. The PV is paired with a boost converter to increase output, which is optimized using the incremental conductance method. A PMSM-driven water pump with field-oriented control is also shown in 37.

Why do we need a bi-directional Converter for a water pumping system?

It is prevalent from the discussions that a grid-connected system using bi-directional converter provides better resilience and reliability with respect to water-pumping system even under low irradiation conditions and supplies the excess energy back to the grid.

What is a solar PV-based water-pumping system?

A solar PV-based water-pumping system is an integration of different subsystems that can be grouped into electrical, mechanical, and electronics. 5 Therefore, synchronous operation of these components becomes vital in achieving better efficiency.



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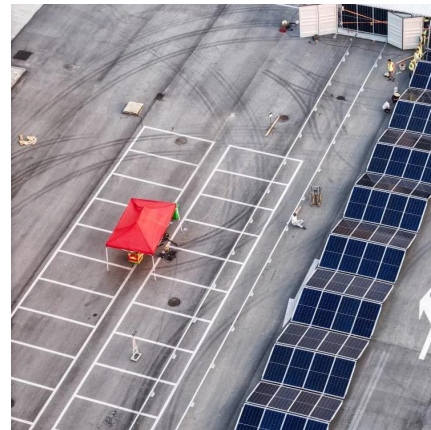


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