Performance of Photovoltaic Water Pumping System Under Different MPPT Algorithms

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Abstract:

Abstract This paper proposes an accurate model for DC photovoltaic pumping system. The system model begins with the photovoltaic module (PVM).The boost converter is used as an interfacing circuitry between the PVM and the motor. The DC motor is a permanent magnet (PM) type which coupled with a centrifugal pump. The boost converter is controlled using three different maximum power point tracking (MPPT) algorithms to extract the available power under changing conditions of radiation. Optimal duty cycle required to drive the boost converter is obtained using graphical steady state analysis. Further the system is built using Matlab/Simulink and tested with different atmospheric conditions.

Keywords:

Index term PV, pumping system, dc-dc boost converter and MPPT.

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