

Photovoltaic Water Pumping System Application

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Abstract : Photovoltaic (PV) water pumping system is one of the most used and important applications in the field of solar energy. However, the cost and the efficiency are still a concern, especially with continued change of solar radiation and temperature. Then, the improvement of the efficiency of the system components is a good solution to reducing the cost. The use of maximum power point tracking (MPPT) algorithms to track the output maximum power point (MPP) of the PV panel is very important to improve the efficiency of the whole system. In this paper, we will present a definition of the functioning of MPPT technique, and a detailed model of each component of PV pumping system with Matlab-Simulink, the results shows the influence of the changing of solar radiation and temperature in the output characteristics of PV panel, which influence in the efficiency of the system. Our system consists of a PV generator, a boost converter, a motor-pump set, and storage tank.

Keywords : PV panel, boost converter, MPPT, MPP, PV pumping system

Conference Title : ICPTA 2017 : International Conference on Photovoltaic Technologies and Applications

Conference Location : London, United Kingdom

Conference Dates : December 18-19, 2017