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The development of photovoltaic (PV) panels has made solar-powered pumps a reality. The pump drivers are usually direct-current (DC) motors, which are fed by power electronic converters with maximum power point tracking (MPPT) to extract the whole energy that the PV panels can generate, depending on environmental conditions including irradiation and temperature. The implementation of the MPPT algorithm essentially involves sensing both an input current and an input voltage. Understandably, such realisation is expensive.

In this paper, a solar PV water pumping system based on DC to DC converter as an MPPT module is considered. The system consists of a PV array, a DC to DC boost converter and the DC motor coupled to a centrifugal pump. A proposed method is employed to seek the maximum power point using the flow rate obtained from a single sensor. A comparison with conventional hill climbing technique is included in experimental results to prove the feasibility of the proposed method.

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