World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:9, No:12, 2015

# A Variable Incremental Conductance MPPT Algorithm Applied to Photovoltaic Water Pumping System

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**Abstract :** The use of solar energy as a source for pumping water is one of the promising areas in the photovoltaic (PV) application. The energy of photovoltaic pumping systems (PVPS) can be widely improved by employing an MPPT algorithm. This will lead consequently to maximize the electrical motor speed of the system. This paper presents a modified incremental conductance (IncCond) MPPT algorithm with direct control method applied to a standalone PV pumping system. The influence of the algorithm parameters on system behavior is investigated and compared with the traditional (INC) method. The studied system consists of a PV panel, a DC-DC boost converter, and a PMDC motor-pump. The simulation of the system by MATLAB-SIMULINK is carried out. Simulation results found are satisfactory.

**Keywords :** photovoltaic pumping system (PVPS), incremental conductance (INC), MPPT algorithm, boost converter
**Conference Title :** ICSOGE 2015 : International Conference on Shale Oil and Gas Engineering
**Conference Location :** London, United Kingdom
**Conference Dates :** December 10-11, 2015