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Hybrid technique for an efficient PV system through intelligent MPPT and water cooling process (Article) [\(Open Access\)](#)

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Abstract

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Solar panels have undergone several tests through research studies for the purpose of improving performance to increase the resulting electrical power. This study considers the fact of the necessity of Maximum Power Point Tracking working conditions of the PV panels to harvest maximum electrical power during the weather variations. It considers also the panel temperature reduction which affects positively the panel ability in terms of producing additional electrical power. By this consideration, this study proposes a new design, and simulation results with analysis of a hybrid PV system. The system is able to deliver 5 kW, through the day hours, with less number of PV panels based on a hybrid technique. The proposed technique combines two manipulating processes. The first one guarantees the Maximum Power Point Tracking (MPPT) condition during day hours through an artificial Neural Network (ANN) controller. Whereas the second one focuses on reducing the panel temperature by introducing a water cooler which is designed for this purpose. Simulink software of MATLAB is used to implement and evaluate the proposed system. © 2020, Institute of Advanced Engineering and Science. All rights reserved.

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Topic: Maximum Power Point Trackers | Powerpoint | Photovoltaic System

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