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Hybrid Maximum Power Tracking Technique for Partially Shaded PV Arrays

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Abstract: *Photovoltaic panels are the most important green energy source because of their inexhaustible moreover its clean. It is important to connect the PV panels to the maximum power point tracking (MPPT) controller to optimize its output power. The PV panels output power efficiency is related to the rapidly variation of the incident irradiance moreover the partial shading pattern. The variation of the incident irradiance and the partial shading pattern makes the tracking of the global maximum peak (GMP) through the local ones too difficult, which extremely decrease the efficiency of the PV panels. The problem is the GMP value varies as the sun irradiance varies so; the detection of the GMP needs an efficient and fast algorithm which cannot be done by the traditional MPPT. In order to solve the problem, proposed system a hybrid new algorithm can combine a traditional MPPT algorithm, such as perturb and observe, or incremental conductance, with the ANN (artificial neural network) This new algorithm can combine a traditional MPPT algorithm, The proposed hybrid MPPT algorithm is based on the ANN and used to predict the global MPP region by estimating its voltage boundaries. Consequently, the conventional MPPT algorithm searches for the MPP in the predicted region. The proposed technique is modeled and simulated using MATLAB/Simulink.*

Keywords: Photovoltaic (PV), GMP, MPPT, ANN

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