

عنوان مقاله:

A PSO-based Optimization of a fuzzy-based MPPT controller for a photovoltaic pumping system used for irrigation of greenhouses

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خلاصه مقاله:

The main asset of this paper is among the uses of fuzzy logic in the engineering sector and especially in the renewable energies as a large alternate of fossil energies, in this paper a PSO-based optimization is used to find the optimal scaling parameters, of a fuzzy logic-based MPPT controller, that maximize the efficiency of a photovoltaic pumping system. The tuning of input and output parameters are of direct effect on the power that flows from the photovoltaic source to the load. In order to see concrete results, the PV system is used for irrigation of greenhouses in Laghouat, Algeria. The performances of the proposed PSO-based fuzzy controller are compared with those obtained using fuzzy logic and P&O controllers under variations of meteorological conditions. The simulation results proved a good robustness performance of the proposed Fuzzy based PSO controller over the other regarding the gained solar energy and the daily pumped water.

کلمات کلیدی:

(PSO-based optimization, Photovoltaic pumping system, MPPT controller, Fuzzy logic, Perturb and Observe (P&O)

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