

Abstract

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A proposed fuzzy controller for MPPT of a photovoltaic system

Renewable energy sources have a great concern nowadays to overcome the conventional energy sources problem. The solar energy is one of the renewable energy that is implemented in different scale. The Photovoltaic cell (PV) is used to convert solar energy into electrical energy. The PV has a non-linear characteristic between its current and voltage. In addition, the PV power is highly sensitive to the atmospheric conditions, in particular temperature and solar radiation. This makes the PV has different equilibrium points. Therefore, Selecting equilibrium points that extract the maximum allowable power of the PV is mandatory in order to enhance the PV system efficiency and robustness. The controller that can Select the optimal operating point is defined as the Maximum Power Point Tracking (MPPT). MPPT is addressed by different techniques scattered in literatures. This paper proposes a modified fuzzy algorithm for MPPT of the PV system in order to enhance its performance, in transient and steady state, and robustness and accelerate the recovery time due to a sudden change in the connected load. A comparison between the proposed technique and conventional techniques is illustrated. Simulation and practical results are addressed.