MPPT Control with (P&O) and (FLC) Algorithms of Solar Electric Generator

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Abstract : The current trend towards the exploitation of various renewable energy resources has become indispensable, so it is important to improve the efficiency and reliability of the GPV photovoltaic systems. Maximum Power Point Tracking (MPPT) plays an important role in photovoltaic power systems because it maximize the power output from a PV system for a given set of conditions. This paper presents a new fuzzy logic control based MPPT algorithm for solar panel. The solar panel is modeled and analyzed in Matlab/Simulink. The Solar panel can produce maximum power at a particular operating point called Maximum Power Point(MPP). To produce maximum power and to get maximum efficiency, the entire photovoltaic panel must operate at this particular point. Maximum power point of PV panel keeps on changing with changing environmental conditions such as solar irradiance and cell temperature. Thus, to extract maximum available power from a PV module, MPPT algorithms are implemented and Perturb and Observe (P&O) MPPT and fuzzy logic control FLC, MPPT are developed and compared. Simulation results show the effectiveness of the fuzzy control technique to produce a more stable power.

Keywords : MPPT, photovoltaic panel, fuzzy logic control, modeling, solar power

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