

Improvement Perturb and Observe for a Fast Response MPPT Applied to Photovoltaic Panel

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Abstract : Maximum power point tracking (MPPT) techniques are used in photovoltaic (PV) systems to maximize the PV array output power by tracking continuously the maximum power point(MPP) which depends on panels temperature and on irradiance conditions. The main drawback of P&O is that, the operating point oscillates around the MPP giving rise to the waste of some amount of available energy; moreover, it is well known that the P&O algorithm can be confused during those time intervals characterized by rapidly changing atmospheric conditions. In this paper, it is shown that in order to limit the negative effects associated to the above drawbacks, the P&O MPPT parameters must be customized to the dynamic behavior of the specific converter adopted. A theoretical analysis allowing the optimal choice of such initial set parameters is also carried out. The fast convergence of the proposal is proven.

Keywords : P&O, Taylor's series, MPPT, photovoltaic panel

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