

A Hybrid PEO Based Maximum Power Point Tracking Controller for PV System under Partial Shading Conditions

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Abstract

Solar photovoltaic (PV) energy plays a potential role in the generation of electricity and is eco-friendly to the environment. However, PV systems face the challenge to extract maximum peak power (MPP) on the account of partial shading conditions (PSC). To encounter this problem previously various conventional and soft computing based maximum power point tracking (MPPT) controllers are used to track the MPP. Nevertheless, inaccuracy occurred in the tracking of MPP, hence in this paper, a new metaheuristic hybrid method is introduced such as premature equilibrium optimizer (PEO). This PEO method acts as an MPPT controller and can track the MPP without any oscillation under PSC and has less convergence time, settling time and high efficiency.

Keywords: Maximum peak power (MPP); Maximum power point tracking (MPPT); Partial shading conditions (PSC); Photovoltaic (PV); Premature equilibrium optimizer (PEO).