

A Comparative Study Between Modified MPPT Algorithms Using Different Types of Solar Cells

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Abstract

The I-V characteristics of the solar cells depend on solar irradiance, shading and temperature, which impact the maximum power point (MPP). This paper presents a comprehensive comparative study between the performance of four MPP tracking (MPPT) algorithms: the Modified Variable Step Size Perturb and Observe (M-VSS-P&O) and Modified Variable Step Size Incremental Conductance (M-VSS-INC) and the conventional P&O and INC. Simulations carried out using Matlab-Simulink to investigate the performance of the two solar cells under STC conditions and in a sudden change in solar irradiance. The simulation results, in both cases, reveal that the modified algorithms could make a correct decision in tracking the MPP and hence achieve better performance regarding the response time and the steady-state power oscillation than the conventional algorithms.

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