

Abstract

Hady Maged Raghieb EL Helw

Transient Analysis of Grid-Connected Photovoltaic System Based on Comparative Study of Maximum Power Point Tracking Techniques

In this paper the grid disturbances effects on a grid connected PV array were studied while considering different maximum power point tracking algorithms. The maximum power point tracking techniques included in this study are the perturb & observe technique (P&O), incremental conductance technique (ICT), fuzzy logic based technique. The grid disturbances involved in this paper are the different types of faults, voltage sag, and voltage swell. A comparative study of the grid disturbances effect on the three maximum power point tracking algorithms is obtained. A 100 kW photovoltaic array connected to the grid via a voltage source inverter through a boost converter is modeled and simulated under the MATLAB/SIMULINK in order to accomplish this study. The simulation results show that the fuzzy logic based technique gives the best response under steady state and transient conditions.