Abstract

Photovoltaic (PV) is one of the main resources of Renewable Energy, as it is environmental friendly and relatively cost effective. It is utilized to produce electricity from the abundant solar energy. A PV system consists of (PV) array of modules, DC/DC converter with a fixed load and maximum power point tracking MPPT controller. The DC/DC converter is controlled to operate at MPP of the PV array. In this paper a system with a controller based on Perturb and Observe (P&O) algorithm is implemented in MATLAB/SIMULINK. A new approach has been devised to reach the maximum power point in two steps. The first step is to get Vpymax and Ipymax of the array and then get the working value of the duty ratio to operate the DC/DC converter at Imax. The simulation results show the feasibility of the approach. This technique reduces the computational effort of the system.
Implementation of the Perturb and Observe Digital Control Techniques for Photovoltaic Converters

13. ...

Index Terms

Computer Science Control Systems

Keywords

Photovoltaic (PV) System, Maximum Power Point (MPP), Maximum Power Point Tracking (MPPT), Perturbation and Observation (P&O) method, DC/DC Converter.