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Design and Simulation of Fuzzy Controller J. Joswa Arul kumar

Abstract - It has been observed from literature, a renewable energy system (photovoltaic cell) in both grid connected and stand alone nodes. The system containing solar PV cell, DC-DC boost convertor and invertors coupled to the load system. In this work a 18 V photovoltaic cell is designed. A DC-DC boost convertor is used for boosting of DC voltage obtained from photovoltaic cell. The advantage of using the proposed DC-DC convertors are only one sensor is required, high power density more efficient with reduced complexity of control. The invertors used to convert DC-ac for application purposes with closed controller. When PV cell is out of service a battery can be used as a source of energy for the system. The above is analyzed with variation in temperature of PV cell and variation in the load parameters for the feasibility of the designed controller. The load side filter is designed to obtain reduced Total Harmonics Distortion (THD) at load and more sinusoidal output voltage. The above proposed work is an analyzed using Fuzzy Logic controller (FLC) for good transient and steady state performance improvement. A typical fuzzy controller with 24V is designed for both DDC-DC and DC-AC convertor. It is found that the controller developed provides fast responses and good performance. The simulations are highlight the feasibility and validity of the developed control scheme. Hence this work gives the information of PV cell stand alone model with grid connected system for effective power flow.