

Performance Assessment of PV Based Grid Connected Solar Plant with Varying Load Conditions

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Abstract : This paper aims to analyze the power flow of a grid connected 100-kW Photovoltaic(PV) array connected to a 25-kV grid via a DC-DC boost converter and a three-phase three-level Voltage Source Converter (VSC). Maximum Power Point Tracking (MPPT) is implemented in the boost converter by means of a Simulink model using the 'Perturb & Observe' technique. First, related papers and technological reports were extensively studied and analyzed. Accordingly, the system is tested under various loading conditions. Power flow analysis is done using the Newton-Raphson method in Matlab environment. Finally, the system is subject to Single Line to Ground Fault and Three Phase short circuit. The results are simulated under the grid-connected operating model.

Keywords : grid connected PV Array, Newton-Raphson Method, power flow analysis, three phase fault

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