

Control Power in Doubly Fed Induction Generator Wind Turbine with SVM Control Inverter

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Abstract : This paper presents a grid-connected wind power generation scheme using Doubly Fed Induction Generator (DFIG). This can supply power at constant voltage and constant frequency with the rotor speed varying. This makes it suitable for variable speed wind energy application. The DFIG system consists of wind turbine, asynchronous wound rotor induction generator, and inverter with Space Vector Modulation (SVM) controller. In which the stator is connected directly to the grid and the rotor winding is in interface with rotor converter and grid converter. The use of back-to-back SVM converter in the rotor circuit results in low distortion current, reactive power control and operate at variable speed. Mathematical modeling of the DFIG is done in order to analyze the performance of the systems and they are simulated using MATLAB. The simulation results for the system are obtained and hence it shows that the system can operate at variable speed with low harmonic current distortion. The objective is to track and extract maximum power from the wind energy system and transfer it to the grid for useful work.

Keywords : Doubly Fed Induction Generator, Wind Energy Conversion Systems, Space Vector Modulation, distortion harmonics

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