

Dynamic Response of a Stand Alone AC Side Wind Energy Conversion System

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Abstract: This Paper consists on the study of one part of wind energy system conversion, its ACside. Renewable resources are in constant fluctuation. This situation could put in peril the energizing efficiency towards a given demand requirement. Therefore, in order to maximize the efficiency of the renewable energy system, it is necessary to track the maximum powerpoint of the input source, a study established under MATLAB/Simulink platform. For the wind system, the maximizing is assured while considering the optimal power curve as load characteristic, with the knowledge of the turbine characteristic C_p (?).Then, this work elaborates the analysis and simulation of a low speed Permanent Magnet Synchronous Generator (PMSG) driven by a vertical wind turbine through a Pulse-Width Modulation (PWM) voltage inverter, independently of the DC components of the wind system conversion, using MATLAB computer simulation.

Keywords : Wind, Optimal load characteristic, Compensation decoupling, IP regulator, Permanent Magnet Synchronous Generator.