

Comparative Analysis of DFIG and SCIG Based Grid Connected Wind Turbine under Different Modes of Operation

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Abstract

wind power generators represent a prominent facility for generating renewable and clean bulk power to utility grids. Double fed induction generator (DFIG) with partial size back-to-back converter becomes the common option for variable speed wind power generation. In this paper, control strategies of DFIG scheme is proposed to capture maximum wind power and operate with unity P.F versus Squirrel Cage Induction Generator (SCIG). The control action of DFIG under different operating modes (i.e. sub, super synchronous speed) is examined. Comprehensive models of wind speed, wind turbine, DFIG and power electronic converters along with their control schemes are implemented in MATLAB/SIMULINK environment. Simulation results show the feasibility and robustness of the presented control scheme for DFIG based wind turbines.

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