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Robust Control of Doubly Fed Induction Generator for WindTurbine Under Sub-Synchronous Operation Mode

Khouloud BEDOUD, Mahieddine Ali-rachedi, Tahar Bahi, Rabah Lakel, Azzeddine Grid.

Abstract: This paper presents a modeling and a robust control of doubly fed induction generator for wind generation system. The wholesystem is presented in d-q-synchronous reference frame. The regulation of the electromagnetic torque , stator reactive powercontrol and neuronal controller are applied in order to control the rotor currents of the DFIG. For to improve the controllerrobustness, the study is validated through simulation using software Matlab/Simulink, studies on a 1.5 MW DFIG windgeneration system compared with conventional proportional integral controller. Performance and robustness results obtained willbe presented and analyzed.

Keywords : wind power generation, modeling, Control, doubly fed induction generator, Neuronal controller, performances.