

Experimental Design of Stand-alone Field Oriented Control for WECS in Variable Speed DFIG-based on Hysteresis Current Controller

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Abstract : This paper presents the experimental design of a stand-alone field-oriented control (FOC) for wind turbine based on a doubly fed induction generator (DFIG). The control law is synthesized using a hybrid FOC-Hysteresis current controller (HCC) in Rotor side converter (RSC) and the stator is connected to the resistive load via rectifier (nonlinear load). The regulation is achieved below the synchronous speed (Hypo-synchronous mode). The implementation is realized using dSPACE1104 single board control and acquisition interface. The obtained results of the proposed control present high performance in steady and transient states.

Keywords : Doubly fed induction generator (DFIG), Field oriented control (FOC), Hysteresis current controller (HCC), Rotor/Stator side converter (RSC/SSC), dSPACE1104