**Doubly Fed Induction Generator for Wind Energy Conversion Systems With Integrated Active Filter Capabilities**

**ABSTRACT**

Doubly Fed Induction Generator for Wind Energy Conversion Systems deals with the operation of doubly fed induction generator (DFIG) with an integrated active filter capabilities using grid-side converter (GSC). The main contribution of this work lies in the control of GSC for supplying harmonics in addition to its slip power transfer. The rotor-side converter (RSC) is used for attaining maximum power extraction and to supply required reactive power to DFIG. Wind energy conversion system (WECS) works as a static compensator (STATCOM) for supplying harmonics even when the wind turbine is in shutdown condition. Control algorithms of both GSC and RSC are presented in detail. Implemented project DFIG-based WECS is simulated using MATLAB/ Simulink . A prototype of the proposed DFIG based WECS is developed using a PI controller. The wind energy is the preferred for all renewable energy sources. In the initial days, wind turbines have been used as fixed speed wind turbines with squirrel cage induction generator and capacitor banks. Most of the wind turbines are fixed speed because of their simplicity and low cost.