

Modeling and Power Control of DFIG Used in Wind Energy System

Authors : Nadia Ben Si Ali, Nadia Benalia, Nora Zerzouri

Abstract : Wind energy generation has attracted great interests in recent years. Doubly Fed Induction Generator (DFIG) for wind turbines are largely deployed because variable-speed wind turbines have many advantages over fixed-speed generation such as increased energy capture, operation at maximum power point, improved efficiency, and power quality. This paper presents the operation and vector control of a Doubly-fed Induction Generator (DFIG) system where the stator is connected directly to a stiff grid and the rotor is connected to the grid through bidirectional back-to-back AC-DC-AC converter. The basic operational characteristics, mathematical model of the aerodynamic system and vector control technique which is used to obtain decoupled control of powers are investigated using the software Mathlab/Simulink.

Keywords : wind turbine, Doubly Fed Induction Generator, wind speed controller, power system stability

Conference Title : ICEECST 2015 : International Conference on Electrical Engineering, Computer Science and Technology

Conference Location : Istanbul, Türkiye

Conference Dates : December 21-22, 2015