

The Mechanism of Design and Analysis Modeling of Performance of Variable Speed Wind Turbine and Dynamical Control of Wind Turbine Power

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Abstract : Productivity growth of wind energy as a clean source needed to achieve improved strategy in production and transmission and management of wind resources in order to increase quality of power and reduce costs. New technologies based on power converters that cause changing turbine speed to suit the wind speed blowing turbine improve extraction efficiency power from wind. This article introduces variable speed wind turbines and optimization of power, and presented methods to use superconducting inductor in the composition of power converter and is proposed the dc measurement for the wind farm and especially is considered techniques available to them. In fact, this article reviews mechanisms and function, changes of wind speed turbine according to speed control strategies of various types of wind turbines and examines power possible transmission and ac from producing location to suitable location for a strong connection integrating wind farm generators, without additional cost or equipment. It also covers main objectives of the dynamic control of wind turbines, and the methods of exploitation and the ways of using it that includes the unique process of these components. Effective algorithm is presented for power control in order to extract maximum active power and maintains power factor at the desired value.

Keywords : wind energy, generator, superconducting inductor, wind turbine power

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