

Control of a Wind Energy Conversion System Works in Two Operating Modes (Hyper Synchronous and Hypo Synchronous)

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Abstract : Wind energy has many advantages, it does not pollute and it is an inexhaustible source. However, the cost of this energy is still too high to compete with traditional fossil fuels, especially on sites less windy. The performance of a wind turbine depends on three parameters: the power of wind, the power curve of the turbine and the generator's ability to respond to wind fluctuations. This paper presents a control chain conversion based on a double-fed asynchronous machine and flow-oriented. The supply system comprises of two identical converters, one connected to the rotor and the other one connected to the network via a filter. The architecture of the device is up by three commands are necessary for the operation of the turbine control extraction of maximum power of the wind to control itself (MPPT) control of the rotor side converter controlling the electromagnetic torque and stator reactive power and control of the grid side converter by controlling the DC bus voltage and active power and reactive power exchanged with the network. The proposed control has been validated in both modes of operation of the three-bladed wind 7.5 kW, using Matlab/Simulink. The results of simulation control technology study provide good dynamic performance and static.

Keywords : D.F.I.G, variable wind speed, hypersynchrone, energy quality, hyposynchrone

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