

عنوان مقاله:

Modeling, Dynamic Simulation and Small-Signal Analysis of a DFIG-based Wind Farm Connected to a Series-Compensated Transmission Line

محل انتشار:

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خلاصه مقاله:

In this paper, detailed modeling, dynamic simulation and small-signal analysis is conducted for a DFIG-based wind farm connected to a series-compensated transmission line. Using the presented model, dynamic simulation of the overall system is discussed in detail and small-signal analysis is presented using Simulink/MATLAB. The focus of the paper is mainly on delicate dynamic modeling and simulation tips of the system in order to implement the control strategies for the studied system. The dynamics of the induction generator, transmission line, multimass shaft system and back-to-back converters are discussed in detail as well as proper control strategy of the system. In addition, operating point extraction for small-signal analysis and axis rotation for control strategy are described. Finally, simulation results are presented as dynamic responses and small-signal analysis outcomes and results are discussed.

کلمات کلیدی:

Doubly-fed induction generator; sub-synchronous resonance; series compensation; small-signal analysis; dynamic modeling and simulation

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