

基于PSCAD/EMTDC的双馈式变速恒频风电机组动态模型仿真

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摘要

以电磁暂态仿真软件PSCAD/EMTDC为平台, 应用电机矢量控制原理与比例-积分调节器串联校正等方法建立基于双馈感应发电机的变速风电机组控制系统模型, 并将该模型与PSCAD/EMTDC模型库中的已有模型相结合, 形成基于双馈感应发电机的变速风电机组动态模型。依据变速风电机组的运行特性对该模型进行校验并验证其有效性, 该模型为研究基于双馈感应发电机的变速风电机组的工作特性提供了新的手段。

关键词 [变速风电机组](#); [双馈电机](#); [控制系统](#); [动态模型](#)

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PSCAD/EMTDC Based Simulation Study on Dynamic Model of Doubly-Fed Variable Speed Wind Turbine

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Abstract

By use of electromagnetic transient simulation software PSCAD/EMTDC and applying vector control principle of induction motor and serial correction of proportion-integral (PI) regulator, a control system model of variable speed wind turbine (VSWT) based on doubly fed induction generator is established. Combining the established model with the existing models in the model library of PSCAD/EMTDC, a dynamic model of VSWT based on doubly fed induction generator is formed. According to operating characteristic the dynamic model of VSWT is verified and its effectiveness is validated by simulation. Simulation results show that this dynamic model of VSWT can meet the technical requirements from wind turbine manufactures and can be used as a new means for the research on working performance of VSWT based on doubly fed induction generator.

Key words [variable speed wind turbine \(VSWT\)](#); [doubly fed induction generator](#); [control system](#); [dynamic model](#)

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