

新能源与分布式发电

基于有限元方法的大型永磁直驱同步风力发电机电磁场计算

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摘要:

关键词:

Electromagnetic Field Calculation of High Capacity Direct-Driven Permanent Magnet Synchronous Wind Power Generator Based on Finite Element Method

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参考文献:

- [1] 徐锋, 王辉, 杨韬仪. 兆瓦级永磁直驱风力发电机组变流技术[J]. 电力自动化设备, 2007, 27(7): 57-61. Xu Feng, Wang Hui, Yang Taoyi. Research on power conversion technique in MW-level direct-driven wind turbine[J]. Electric Power Automation Equipment, 2007, 27(7): 57-61(in Chinese).
- [2] 陈巨涛, 郭焱, 郑华耀. 船舶电力推进双三相永磁同步电机数学模型和仿真[J]. 电网技术, 2006, 30(9): 34-37. Chen Jutao, Guo Yi, Zheng Huayao. Mathematical models and simulation of marine electric propulsion double 3-phase permanent magnet synchronous machine[J]. Power System Technology, 2006, 30(9): 34-37(in Chinese).
- [3] 雷亚洲, Lightbody G. 国外风力发电导则及动态模型简介[J]. 电网技术, 2005, 29(12): 27-32. Lei Yazhou, Lightbody G. An introduction on wind power grid code and dynamic simulation[J]. Power System Technology, 2005, 29(12): 27-32(in Chinese).
- [4] 李晶, 王伟胜, 宋家骅. 变速恒频风力发电机组建模与仿真[J]. 电网技术, 2003, 27(9): 14-17. Li Jing, Wang Weisheng, Song Jiahua. Modeling and dynamic simulation of variable speed wind turbine[J]. Power System Technology, 2003, 27(9): 14-17(in Chinese).
- [5] 郭金东, 赵栋利, 林资旭, 等. 兆瓦级变速恒频风力发电机组控制系统[J]. 中国电机工程学报, 2007, 27(6): 1-6. Guo Jindong, Zhao Dongli, Lin Zixu, et al. Research of the megawatt level variable speed constant frequency wind power unit control system[J]. Proceedings of the CSEE, 2007, 27(6): 1-6(in Chinese).
- [6] 姚骏. 直驱永磁同步风力发电机的最佳风能跟踪控制[J]. 电网技术, 2008, 32(10): 11-15. Yao Jun. Optimal wind-energy tracking control of direct-driven permanent magnet synchronous generators for wind turbines[J]. Power System Technology, 2008, 32(10): 11-15(in Chinese).
- [7] 尹明, 李庚银, 张建成, 等. 直驱式永磁同步风力发电机组建模及其控制策略[J]. 电网技术, 2007, 31(15): 61-65. Yin Ming, Li Gengyin, Zhang Jiancheng, et al. Modeling and control strategies of directly driven wind turbine with permanent magnet synchronous generator[J]. Power System Technology, 2007, 31(15): 61-65(in Chinese).
- [8] Xie Dexin, Yan Xiuke, ZhangYihuang. A direct field-circuit-motion coupled modeling of switched reluctance motor[J]. IEEE Trans on Magnetics, 2004, 40(2): 573-576.
- [9] 严登俊, 刘瑞芳, 胡敏强,

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