

用电压源型高压直流输电解决高压电网中工业系统引起的电能质量问题

阮思焯, 孙元章, 李国杰

电力系统及发电设备控制和仿真国家重点实验室(清华大学电机系), 北京市 海淀区 100084

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摘要

为解决高压电网中工业系统引起的的电能质量问题, 文章采用电压源型高压直流输电方式向工业系统供电, 设计了可隔离谐波、进行功率和频率调节的电压源型高压直流换流站的控制器, 并运用电磁暂态仿真软件PSCAD/EMTDC建立了由VSC-HVDC供电的工业系统模型, 仿真实验验证了上述供电方式和控制器的正确性和有效性, 表明采用电压源高压直流供电方式能有效解决高压电网中工业系统引起的电能质量问题, 且控制方式灵活、简单。

关键词 [工业系统; 电能质量; 电压源高压直流输电\(VSC-HVDC\); 谐波隔离; 功率 - 频率](#)

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Utilizing VSC-HVDC to Solve Power Quality Problem in Power Grid Caused by Industry System

RUAN Si-ye, SUN Yuan-zhang, LI Guo-jie

State Key Lab of Control and Simulation of Power Systems and Generation Equipments (Department of Electrical Engineering, Tsinghua University), Haidian District, Beijing 100084, China

Abstract

To deal with the power quality problem in power grid caused by the industry system, in this paper it is proposed to deliver electric power to industry system by voltage source converter-high voltage direct current transmission (VSC-HVDC). A controller for voltage source type of HVDC converter station, which can isolate harmonics and regulate power and frequency, is designed, and on the platform of electromagnetic transient simulation software PSCAD/EMTDC an industry system model to which the electric power is delivered by VSC-HVDC is established. The correctness and effectiveness of above-mentioned power delivery mode and controller are verified by simulation. The results of the simulation show that the power delivery mode of VSC-HVDC can effectively solve the power quality problem in high voltage power grid caused by industry system, and the control strategy of VSC-HVDC is flexible and simple.

Key words [industry system; power quality; voltage source converter-high voltage direct current transmission \(VSC-HVDC\); isolation of harmonics; power-frequency](#)

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通讯作者

作者个人主页 [阮思焯; 孙元章; 李国杰](#)

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