VSC-HVDC直流电压的鲁棒控制策略研究

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摘要： 在VSC-HVDC系统分析、设计过程中最棘手的问题是如何处理非线性系统中的不确定性。注意到在*d-q*同步旋转坐标系下的VSC-HVDC连续时间状态空间模型中直流电压微分方程为非线性，针对其物理过程易受到不确定性的外界干扰的影响设计了鲁棒控制器。通过仿真与线性控制器进行了比较，结果表明鲁棒控制器增加了VSC-HVDC系统的稳定性。

关键词： 高压直流输电；电压源型换流器；鲁棒控制；不确定性

Research of Robust Control Strategy for DC-Bus Voltage of VSC-HVDC Systems

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Abstract: The most difficult issue in analysis or design of a VSC-HVDC system is how to deal with uncertainty of the nonlinear system. Taking notice of the DC voltage differential equation being nonlinear over an equivalent continuous-time state-space model of VSC-HVDC system in the synchronous *dq* reference frame, a robust control model is proposed to satisfy stability requirements in the external interference of the uncertainty circumstances. Simulation study has been done in order to compare the robust control model with the linear control model, showing that the former works better than the latter in remaining the stability of VSC-HVDC system.

Key words: HVDC; VSC; robust control; uncertainty

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