

电力系统

呼辽±500 kV直流工程送端系统次同步振荡仿真分析

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摘要:

基于实时数字仿真系统建立了呼辽±500 kV直流工程次同步振荡问题研究的仿真模型。利用复转矩系数法, 得到了部分运行方式下各机组的机械阻尼特性。阻尼特性表明, 孤岛方式下, 呼辽直流引发送端机组次同步振荡的风险较小, 但交直流运行方式下, 随着固定串补配置量的增加, 机组发生次同步振荡的风险增加, 可控串补可以在一定程度上降低次同步振荡的风险。时域仿真法得到的结论与复转矩系数法一致。为彻底解决送端机组次同步振荡问题, 指出需进一步研究抑制次同步振荡的措施。

关键词:

Simulation Analysis on Subsynchronous Oscillation at Sending End of ±500 kV Power Transmission Project From Hulun Buir to Liaoning

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Abstract:

Based on real time digital simulation system (RTDS), a simulation model is built to research the subsynchronous oscillation (SSO) in ±500 kV DC power transmission project from Hulun Buir to Liaoning. Using complex torque coefficient method, mechanical damping characteristics of generation units under part of operation modes are obtained. The damping characteristics show that under islanded operation mode there is less risk leading to SSO of generation units at sending end of the ±500 kV DC power transmission project; however under the AC/DC operation mode, with the increase of capacity of fixed series compensator (FSC) the risk of occurring SSO of generation units increases and thyristor controlled series compensator can reduce the risk. The results obtained by time-domain simulation conform to those by complex torque coefficient method. Finally it is suggested that measures to thoroughly eliminate SSO of generation units at sending end should be further researched.

Keywords: ±500 kV高压直流输电系统; 次同步振荡; 复转矩系数法; 时域仿真

±500 kV power transmission system subsynchronous oscillation complex torque coefficient method time-domain simulation

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