

电力系统

励磁系统附加调差对发电机阻尼特性影响的机制分析及试验

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摘要:

首先研究了附加调差对系统阻尼的影响, 即将附加调差引入菲利普-海佛隆模型, 推导出附加调差提供的阻尼转矩系数增量随附加调差系数变化的曲线是一条二次抛物线, 而且这条抛物线的开口方向和位置与励磁参数、发电机参数、运行状况及系统参数有关。然后分析了附加调差对发电机频率响应特性的影响。仿真计算和现场试验结果表明: 在0.1~2 Hz的低频振荡频段, 较大的附加调差系数对发电机频率响应特性的影响明显, 因此配置电力系统稳定器时计入附加调差的影响是很必要的。

关键词: 励磁系统 附加调差 阻尼 频率响应特性 电力系统稳定器

The Analysis and Testing of the Influence on the Damping Caused by Reactive Current Compensation

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Abstract:

At first the influence of reactive current compensation (RCC) on power system damping is researched, namely leading RCC into Phillips-Heffron model and it is derived that the curve of increment of damping torque coefficient offered by RCC varying with RCC coefficient X_c is a second-degree parabola, and the opening direction of the parabola and its position relate to excitation parameters, generator parameters, operation condition of power system and system parameters. Then the influence of RCC on frequency response of generator is analyzed. Simulation results and on-site testing results show that in the frequency band of low-frequency oscillation from 0.1 Hz to 2 Hz, larger RCC coefficient evidently influences on frequency response characteristic of generator, therefore it is very necessary to take the influence of RCC into account during the setting of power system stabilizer (PSS).

Keywords: excitation system reactive current compensation (RCC) damping frequency response power system stabilizer (PSS)

收稿日期 2010-12-16 修回日期 2011-05-04 网络版发布日期 2011-10-12

DOI:

基金项目:

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