

论文

异步化汽轮发电机和PSS装置阻尼特性的比较研究

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摘要:

建立了加装PSS并考虑等效阻尼绕组作用的同步汽轮发电机单机无穷大系统线性化数学模型;同时建立了双通道励磁控制策略下异步化汽轮发电机在同步旋转X-Y轴系下的单机无穷大系统线性化数学模型。利用所建模型,对加装PSS后同步汽轮发电机的阻尼特性与采用双通道励磁控制策略的异步化汽轮发电机进行了分析和比较。通过比较,揭示了加装PSS后同步汽轮发电机阻尼特性得到改善的原因,分析了异步化汽轮发电机阻尼特性与励磁控制系数的关系,指出异步化汽轮发电机的同步转矩系数和阻尼转矩系数与发电机运行状态无关,明确异步化汽轮发电机在提高电力系统稳定性方面比PSS装置更具优势。

关键词: 异步化汽轮发电机 电力系统稳定器 阻尼特性 电力系统稳定性

Damping Characteristics Analysis for Asynchronized Turbo-generators andAsynchronous Turbo-generator With PSS

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Abstract:

The one-machine infinite-bus system of linearized mathematics model of the synchronous turbo-generator (STG) was established with power system stabilizer (PSS) and under the consideration of the machine damper winding effect. The one-machine infinite-bus system of linearized mathematics model of the asynchronized turbo-generator (ASTG) was also established with dual-passage excitation control strategy under the synchronously rotational X-Y coordinate. The damping characteristics of the ASTG and the STG with PSS in the system was analyzed and compared. The reason why the damping characteristics of the STG with PSS was improved is opened out. The relationship between the damping characteristics and the excitation control parameters of the ASTG was investigated. The results show that the damping torque coefficient and the synchronous torque coefficient of the ASTG are independent of the operational status of generators, so the ASTG has advantage of the STG with PSS in improving the stability of power systems.

Keywords: asynchronized turbogenerator power system stabilizer damping characteristics stability of power systems

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