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考虑FACTS配置的电网输电能力计算

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摘要
灵活交流输电(FACTS)技术是提高电网输电能力的有效手段。文章基于连续潮流法，将静止无功补偿器(static var compensator，SVC)和可控串联补偿器(thyristor controlled series capacitor，TCSC)的稳态模型加入潮流方程中，建立了计及SVC和TCSC的可用输电能力计算模型。考虑到确定元件安装位置的重要性，利用连续潮流法求取系统极限功率点的输电能力，以该值与网络参数的灵敏度系数作为指标，选择最有利于提高输电能力的SVC和TCSC安装位置。对IEEE 30和IEEE 118节点系统进行的仿真计算证明了所提出模型和方法的有效性。

关键词 可用输电能力；连续潮流；静止无功补偿器(SVC)；可控串联补偿器(TCSC)；电力系统

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Calculation of Power Network Available Transfer Capability Considering Optimal Mounted Positions of FACTS Devices

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Abstract
As an effective means, FACTS can improve transfer capability of power grid. On the basis of continuation power flow, the steady state models of static var compensator (SVC) and thyristor controlled series capacitor (TCSC) are added into power flow equations and an available transfer capability (ATC) model that taking SVC and TCSC into account is built. Considering the importance of deciding the mounted positions of these elements, by means of continuation power flow method the transfer capability at power limit point of power grid is solved and taking the sensitivity coefficient of the obtained transfer capability to network parameters as index, the mounted positions of SVC and TCSC which are most favorable for the improvement of grid transfer capability can be solved. Simulation results of IEEE 30-bus system as well as IEEE 118-bus system prove that both the proposed model and method are effective.

Key words available transfer capability (ATC)；continuation power flow；static var compensator (SVC)；thyristor controlled series capacitor (TCSC)；power system

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