

The Contribution of SMES to Improve the Transient Stability of Multimachine Power System

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Abstract : Industrialization and population growth are the prime factors for which the consumption of electricity is steadily increasing. Thus, to have a balance between production and consumption, it is necessary at first to increase the number of power plants, lines and transformers, which implies an increase in cost and environmental degradation. As a result, it is now important to have mesh networks and working close to the limits of stability in order to meet these new requirements. The transient stability studies involve large disturbances such as short circuits, loss of work or production group. The consequence of these defects can be very serious, and can even lead to the complete collapse of the network. This work focuses on the regulation means that networks can help to keep their stability when submitted to strong disturbances. The magnetic energy storage-based superconductor (SMES) comprises a superconducting coil short-circuited on it self. When such a system is connected to a power grid is able to inject or absorb the active and reactive power. This system can be used to improve the stability of power systems.

Keywords : short-circuit, power oscillations, multiband PSS, power system, SMES, transient stability

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