

عنوان مقاله:

Enhancing Low Frequency Oscillations Damping of a Power System by a TCSC Controlled with Sliding Mode Method

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خلاصه مقاله:

Sliding mode control is an efficient and robust control method widely used in nonlinear systems. Power systems are one of the largest nonlinear dynamic systems which their transient stability analyses have a lot of importance. In this paper, sliding mode control is applied for improving the low frequency oscillations damping of a single machine connected to an infinite bus. The performance of the system is analyzed in normal mode operation, post-fault state, after operation of relays (and opening the breakers in the both ends of the faulty line), and reclosing mechanism which returns the line to service. Here, TCSC is employed as an oscillation damper. TCSC can be considered as a controllable impedance determined by the sliding mode control. In addition, a dynamical observer is proposed for the sliding mode controller. Simulation results demonstrate that, the performance of the power system in damping the low frequency oscillations is improved significantly.

کلمات کلیدی:

sliding mode control, TCSC, Low frequency Oscillation, Symmetrical three phase fault

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