

عنوان مقاله:

Optimal Design of Low Frequency Power Oscillation Dampers in Power Systems

محل انتشار:

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خلاصه مقاله:

This paper aims to design optimal Power Oscillation Dampers (POD) based on shunt FACTS devices to mitigate low frequency power oscillations in multi-machine power systems. To make PODs function satisfactorily, placement of FACTS devices, optimal tuning of control parameters and selecting their best input signal have to be carried out properly. Voltage stability analysis and Particle Swarm Optimization (PSO) algorithm are used to find the best location and size of SVC. In addition, the best input signals are selected using Hankel singular values (HSV) and Right-Half Plane Zeroes (RHP-Zeros) techniques. Finally, PODs control parameters are optimized using PSO algorithm to damp out electromechanical oscillations. In addition, simultaneous coordination of FACTS devices and Power System Stabilizer (PSS) is performed to improve damping of local and inter-area oscillation modes. 4 machine-2 area test system is modeled and nonlinear simulations put into practice to show the robustness and effectiveness of the proposed procedure

کلمات کلیدی:

Low frequency power oscillations, FACTS, POD, Signal selection, Heuristic methods

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