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Reactive Power Cost Evaluation with FACTS Devices in Restructured Power System

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Abstract : It is not always economical to provide reactive power using synchronous alternators. The cost of reactive power can be minimized by optimal placing of FACTS devices in power systems. In this paper a Particle Swarm Optimization- Sequential Quadratic Programming (PSO-SQP) algorithm is applied to minimize the cost of reactive power generation along with real power generation to alleviate the bus voltage violations. The effectiveness of proposed approach tested on IEEE-14 bus systems. In this paper in addition to synchronous generators, an opportunity of FACTS devices are also proposed to procure the reactive power demands in the power system.

Keywords : reactive power, reactive power cost, voltage security margins, capability curve, FACTS devices
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