

Simulation of Neoteric Approach of Improving Power Quality Using Facts Device

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Abstract: Transmission networks of modern power systems are becoming increasingly stressed because of growing demand and restrictions on building new lines. One of the consequences of such a stressed system is the threat of losing stability following a disturbance. Flexible ac transmission system (FACTS) devices are found to be very effective in a transmission network for better utilization of its existing facilities without sacrificing the desired stability margin. Flexible AC Transmission System (FACTS) such as Static Synchronous Compensator (STATCOM) and Static VAR Compensator (SVC), employ the latest technology of power electronic switching devices in electric power transmission systems to control voltage and power flow. A static synchronous compensator (STATCOM) is a shunt device of the flexible AC transmission systems (FACTS) family. The STATCOM regulates voltage at its terminal by controlling the amount of reactive power injected into or absorbed from power system. When system voltage is low, STATCOM generates reactive power and when system voltage is high it absorbs reactive power. In this research work, STATCOM controller based on Genetic algorithm is proposed in single machine infinite bus system (SMIB). Proposed controller is implemented under MATLAB/SIMULNK environment.

Keywords: FACTS, STATCOM, Genetic Algorithm, TCSC, SVC.