COMPARISON OF FACTS DEVICES FOR TWO AREA POWER SYSTEM STABILITY ENHANCEMENT

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CERTIFICATE

This is to certify that thesis entitled "**Comparison Of FACTS Devices For Two Area Power System Stability Enhancement**" submitted by Mayur Paul, University Roll no-12/C&I/2010, in the partial fulfillment of the requirement for the degree of Master in Technology in Control and Instrumentation, Department of Electrical Engineering, Delhi Technological University, New Delhi, is an authentic work carried out by him under my supervision. To the best of my knowledge the matter embodied in the thesis has not been submitted to any other university/institute for the award of any degree or diploma.

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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) and Static Var Compensator (SVC) is the shunt device of the flexible AC transmission systems (FACTS) family. When system voltage is low, STATCOM generates reactive power and when system voltage is high it absorbs reactive power where as the Static Var compensator provides the fast acting dynamic compensation in case of severe faults. In this Thesis, the performance of SVC is compared with the performance of STATCOM. Proposed controllers are implemented using MATLAB/SIMULINK. Simulation results indicate that the STATCOM controller installed with two machine systems provides better damping characteristics in rotor angle as compared to two machine system installed with SVC. Thus, transient stability enhancement of the two machine system installed with STATCOM is better than that installed with SVC.

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AC	Alternating Current
DC	Direct Current
IEEE	Institute of Electrical and Electronics Engineers
FACTS	Flexible Alternating Current Transmission System
STATCOM	Static Synchronous compensator
VSC	Voltage Source Converter
GTO	Gate Turn-off Thyristor
IGBT	Insulated Gate Bipolar Transistor
SVC	Static Var Compensator
SSSC	Static Synchronous Series Capacitor
TCSC	Thyristor Controlled Series Capacitor
UPFC	Unified Power Flow Controller
IPFC	Interline Power Flow Controller
GUPFC	Generalized Unified Power Flow Controller
CSC	Convertible Static Capacitor