

## MODELING, SIMULATION AND PERFORMANCE ANALYSIS OF FACTS CONTROLLER IN TRANSMISSION LINE

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### ABSTRACT

Flexible AC Transmission Systems (FACTS) devices have been used since 1970s for the development and improvement of dynamic performance of the modern power system. FACTS devices use power electronic components to improve system performance. FACTS controller includes Fixed Capacitor Thyristor Controlled Reactor (FCTCR), Static Synchronous Compensator (STATCOM), Thyristor Controlled Series Compensator (TCSC), Static Series Synchronous Compensator (SSSC), Static VAR Compensator (SVC), Unified Power Flow Controller (UPFC), which are used in the transmission and distribution system to improve power transfer capability and to enhance power system stability. This study has been applied the performance of STATCOM and TCSC in transmission to improve voltage profile of the system. The mathematical model of power system equipped with a STATCOM and TCSC is systematically derived. The presented mathematical model shows that STATCOM and TCSC effects the voltage profile improvement and active and reactive power of the transmission line. This paper shows the result that show the performance of the system for each of the FACTS devices in improving the power flow in the transmission line. All the simulations has been carried out by using MATLAB/SIMULINK software. The simulation result shows the performance of FACTS controller in transmission line.

**KEYWORDS:** Modern Power System, Concepts and Technology, Flexible AC Transmission Systems