Static Series Compensators

Introduction and some practical Experiences

Dr.M.Arunachalam, FNAE, SMIEEE

Flexible AC transmission system (FACTS) is an enabling technology. FACTS technology helps to operate the transmission line closer to its thermal limit, route the power in the desired direction, have lesser generation reserve margin, limit the fault current and reduce the damage to the equipment and damp the power swing oscillations and thereby increase the transmittable power.

FACTS employees Power Electronics. Unlike mechanical controllers, FACTS controllers are fast acting. This aspect helps to achieve better stability and security of the power system. The basic FACTS controllers are: series, shunt, series-series and series shunt.

In this presentation, series controllers are discussed. The series controllers can be thyristor based or switching converter based depending upon the application requirements. Both the types will be discussed with the emphasis on the design, development, testing and commissioning aspects.

The presentation will also cover the testing of a digital control equipment developed for Thyristor Controlled Series Capacitor (TCSC) controller as a Hardware-in-loop to verify the performance, carried out using the Real Time Digital Simulator (RTDS) at CPRI.