

STABILITY IMPROVEMENT USING TCSC IN RADIAL POWER SYSTEM

S. N. JAWARKAR AND V. M. JAPE

Abstract

This paper examines the use of TCSC for stability improvement of power system. An appropriate TCSC model for transient stability studies is used. An analysis of locally measurable current controller input signal is conducted for both prefault and post fault system configuration. To illustrate the concept presented in the paper an analytical study of the system is carried out & results are obtained for transient stability analysis with no stability aid, with exciter and with exciter and TCSC controller. Increased demands on transmission, absence of long term planning and the need to provide open access to generating companies and customers have created a tendency towards less security and reduced quality of supply. FACTS technology opens up new opportunities of controlling power and enhancing the usable capacity of present, as well as new and upgraded lines. The possibility that current and therefore power through the transmission line can be controlled enable large potentials of increasing the capacity of existing lines This paper examines the use of TCSC for transient stability enhancement of transmission line system. An analysis of TCSC is conducted, for both prefault and post fault system configurations, by considering three phase to ground fault at the generator terminals. A simple OMIB is considered to illustrate this concept.

Keywords: Transient stability, Stability limits, TCSC, radial power system, impedance, tie line.