

Active Power Flow Control Using a TCSC Based Backstepping Controller in Multimachine Power System

Authors : Naimi Abdelhamid, Othmane Abdelkhalek

Abstract : With the current rise in the demand of electrical energy, present-day power systems which are large and complex, will continue to grow in both size and complexity. Flexible AC Transmission System (FACTS) controllers provide new facilities, both in steady state power flow control and dynamic stability control. Thyristor Controlled Series Capacitor (TCSC) is one of FACTS equipment, which is used for power flow control of active power in electric power system and for increase of capacities of transmission lines. In this paper, a Backstepping Power Flow Controller (BPFC) for TCSC in multimachine power system is developed and tested. The simulation results show that the TCSC proposed controller is capable of controlling the transmitted active power and improving the transient stability when compared with conventional PI Power Flow Controller (PIPFC).

Keywords : FACTS, thyristor controlled series capacitor (TCSC), backstepping, BPFC, PIPFC

Conference Title : ICEET 2014 : International Conference on Electrical Engineering and Technology

Conference Location : New York, United States

Conference Dates : June 05-06, 2014