

ABSTRACT:

This paper proposes a residue factor method to find the optimal location of the FACTS controllers. Three types of FACTS controllers have been considered, which include thyristor-controlled series compensator (TCSC), Static Var compensator (SVC) and unified power flow controller (UPFC). The effectiveness of this controller depends on its optimal location and proper signal selection in the power system network. The proposed residue factor is based on the relative participation of the parameters of FACTS controller to the critical mode. A simple approach of computing the residue factor has been proposed, which combines the linearised differential algebraic equation model of the power system and the FACTS input and output equations. The placements of FACTS controllers have been obtained for the base case and for the dynamic critical contingences. The effectiveness of the proposed method of placement is demonstrated on 11 bus system and New England 39 Bus system.