

Investigation of Different Control Strategies for UPFC Decoupled Model and the Impact of Location on Control Parameters

Authors : S. A. Al-Qallaf, S. A. Al-Mawsawi, A. Haider

Abstract : In order to evaluate the performance of a unified power flow controller (UPFC), mathematical models for steady state and dynamic analysis are to be developed. The steady state model is mainly concerned with the incorporation of the UPFC in load flow studies. Several load flow models for UPFC have been introduced in literature, and one of the most reliable models is the decoupled UPFC model. In spite of UPFC decoupled load flow model simplicity, it is more robust compared to other UPFC load flow models and it contains unique capabilities. Some shortcoming such as additional set of nonlinear equations are to be solved separately after the load flow solution is obtained. The aim of this study is to investigate the different control strategies that can be realized in the decoupled load flow model (individual control and combined control), and the impact of the location of the UPFC in the network on its control parameters.

Keywords : UPFC, decoupled model, load flow, control parameters