Influence of Power Flow Controller on Energy Transaction Charges in Restructured Power System

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Abstract : The demand for power supply increases day by day in developing countries like India henceforth demand of reactive power support in the form of ancillary services provider also has been increased. The multi-line and multi-type Flexible alternating current transmission system (FACTS) controllers are playing a vital role to regulate power flow through the transmission line. Unified power flow controller and interline power flow controller can be utilized to control reactive power flow through the transmission line. In a restructured power system, the demand of such controller is being popular due to their inherent capability. The transmission pricing by using reactive power cost allocation through modified matrix methodology has been proposed. The FACTS technologies have quite costly assembly, so it is very useful to apportion the expenses throughout the restructured electricity industry. Therefore, in this work, after embedding the FACTS devices into load flow, the impact on the costs allocated to users in fraction to the transmission framework utilization has been analyzed. From the obtained results, it is clear that the total cost recovery is enhanced towards the Reactive Power flow through the different transmission line for 5 bus test system. The fair pricing policy towards reactive power can be achieved by the proposed method incorporating FACTS controller towards cost recovery of the transmission network.

Keywords : interline power flow controller, transmission pricing, unified power flow controller, cost allocation