Abstract:

In this paper, a dynamic model of Unified Power Flow Controller (UPFC) is developed to improve the power transfer capability (PTC) through the transmission line. Improvement of the bus voltages profiles along with the reduction of total power losses is also intended with UPFC's presence. The UPFC shunt and series controllers are developed based on Fuzzy Logic (FL) which has been designed as a stand-alone module in PSCAD environment. Sinusoidal pulse width modulation (SPWM) technique is applied as a modulation technique to generate switching signals for the converter switches. The proposed UPFC controller is tested by using IEEE-5 and 14 bus systems with various case studies. The performance of the proposed controllers is also compared with different control methods. From the test results, significant improvement of PTC has been achieved with the minimization of total power losses.