Abstract

Modeling, simulation and comparison of the performance of IPFC (series-series) and UPFC (series-shunt) FACTS controllers for voltage stability enhancement and improvement of power (real and reactive power) transfer capability have been presented in this paper. A simple transmission line system is modeled in MATLAB/SIMULINK software. Initially, basic transmission line system model is simulated. After simulating this uncompensated model, power flow results are obtained. The power profile has been studied for an uncompensated system. Results obtained for the uncompensated system are then compared with the results obtained after compensating the system using IPFC (series-series) and UPFC (series-shunt) FACTS devices. The simulation results demonstrate performance of the system with the inclusion of the above (IPFC and UPFC) FACTS devices in improving the voltage stability and power profile. All simulations have been carried out in MATLAB/SIMULINK environment.

References

- N. G Hingorani & Laszlo Gyugyi, “Understanding FACTS: concepts and

- Abhijit Chakrabarti & Sunita Halder, Power System Analysis Operation and Control.
- S. Muthu krishnan and Dr. A Nirmal Kumar, Comparison of Simulation and Experimental Results of UPFC used for Power Quality Improvement; International Journal of Computer and Electrical Engineering, Vol 2, No. 3, June 2010.
- Dr. B. R. Gupta & Er. Vandana Singhal, Power System Operation and Control.
- Mehdi Ahmadi Kamarposhti and Mostafa Alinezhad, Comparison of SVC and STATCOM in Static Voltage Stability Margin Enhancement; World Academy of Science, Engineering and Technology 50 2009.
- Ahad Kazemi and Babak Badrezadeh, Modelling and Simulation of SVC and TCSC to Study their Effects on Maximum Loadability point; EPRI technical report EL-4365, April 2000.
Comparison of the Performance of IPFC (series-series) and UPFC (series-shunt) FACTS Controller in Power Systems

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Index Terms

Computer Science
Control Systems

Keywords

FACTS  voltage profile  IPFC  UPFC  voltage security  PSPICE