Abstract

This research paper presents a new approach for placing the optimal location of FACTS controllers in a multi machine power system using mat lab coding. Using the proposed method, the location of FACTS controller, their type and rated values are optimized simultaneously. Among the various FACTS controllers, TCSC and UPFC are considered. OPF is one of the most important processes in power system, which improves the system performance by satisfying certain constraints. Generally, different optimization methods are used in the literature to solve the OPF problem. In some research works, the optimization process is done by considering total fuel cost or by considering the environmental pollution that occurs during power generation. But in some other research works, FACTS controllers are used to improve the power flow without considering the power generation cost. The OPF problem is one of the most extensively studied topics in the power system community. In power system operation, OPF is an extended problem of ED which considers several parameters such as generator voltage, transformer tap change, SVC, and includes constraints such as transmission line and transformer loading limits, bus voltage limit, and stability margin limit. The main function of OPF is to select the optimal operation state of a power system, in the time of meeting some particular constraints. OPF study plays a key role in the EMS, where the entire operation of the system is regulated in each possible real time intervals.
Solution of Optimal Power Flow Problem Incorporating Various FACTS Devices

References

- T. Orfanogianni, "A flexible software environment for steady-state power flow optimization with series FACTS devices", Diss. ETH Zurich, 2000, pp. 135 S.

**Index Terms**

Computer Science  
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**Keywords**  
OPF  TCSC  UPFC  ED  EMS