Abstract

The main objective of this paper is to find the optimal location and control parameters settings of Unified Power Flow Controller (UPFC) with regard to power loss minimization. The proposed
algorithm is based on steady state power injection model of UPFC. In this paper, two Evolutionary optimization techniques, namely Differential Evolution Algorithm (DE) and Genetic Algorithm (GA) are employed to solve optimal power flow problems. IEEE 14 bus & IEEE 30 bus test power systems are used for studies. The obtained results indicate that both techniques can successfully find the optimal location and control parameter settings of UPFC, but DE is faster than GA from the time perspective.

Reference

Electrical and Electronics Engineers.

- Pai, M.A., 2005, “Computer Techniques in power system Analysis”.

**Index Terms**

Computer Science  
Evolutionary Computation

**Key words**

Optimal power flow  
Power loss minimization  
Genetic Algorithm  
Differential Evolution  
Evolutionary Optimization technique