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Optimal location of UPFC in power systems using Biogeography-Based Optimization (BBO)

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Abstract:

this paper presents the application of biogeography based optimization (BBO) algorithm to find optimal location and parameter setting of unified power flow controller (UPFC) for minimizing generation cost and real power losses. UPFC is one of the most complete and the most comprehensive of FACTS devices that many researches have used to control the flow and reduce system losses. BBO is a novel evolutionary algorithm that is based on the mathematics of biogeography. Biogeography describes how species migrate from one island to another, how new species arise and how species become extinct. Simulations are performed on IEEE 14 bus system for optimal location and parameter setting of UPFC and the results show the efficiency and robustness of BBO algorithm.

Keywords: Biogeography based optimization, FACTS, UPFC