

ECONOMIC CRITERION FOR OPTIMAL CHOICE AND ALLOCATION OF FACTS DEVICES USING GENETIC ALGORITHM

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Abstract

FACTS devices can be used to control power flows. Therefore, providing optimal locations, FACTS devices can be used to achieve the optimal power flow without any constraint violation and thus to increase the utilization of the lowest cost generation in power systems. FACTS types and locations should be reasonably chosen according to their contribution to the general objective of power system economic generation and dispatch. In this research, using the genetic algorithms, the locations of the FACTS devices, their types and rated values are optimized simultaneously. The objective cost function, which consists of the investment costs for FACTS devices and the generation costs, is minimized.

Keywords: FACTS: Flexible AC Transmission System, TCSC: Thyristor Controlled Series Capacitor, TCPST: Thyristor- Controlled Phase Shifting transformer, UPFC: Unified Power Flow Controller, SVC: Static Var Compensator