Optimal Placement of TCSC for Reactive Power Planning Using Grasshopper Optimization Algorithm Considering Line Outage (N-M)

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Abstract:
Increment of power demand in power system can cause a rapid reduction in voltage profile that can disrupt the system stability thus make an entire system failure as the system has to work under contingencies and stress conditions. In this paper, Grasshopper Optimization Algorithm (GOA) has been applied for solving the reactive power planning, considering a line outage occurs in the system with Thyristor Controlled Series Compensator (TCSC) which minimizes transmission power loss. Standard IEEE-30 bus test system has been applied to the test system. Optimal setting of all control variables, namely locations and the sizes of the TCSC has been determined by GOA and power flow analysis method. The investigation is carried out via simulation using MATPOWER and MATLAB software.

Keywords TCSC; Optimization; Transmission loss; Line outage; GOA

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