

Power System Stability Using Multi-Objective Genetic Algorithm NSGA-II

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Abstract: STATCOM is a source of controllable reactive current used to balance reactive power at power system nodes and manage reactive flow in transmission lines. Most prevalent efficient FACTS stand for Flexible AC Transmission Systems components is the Static Synchronous Compensator (STATCOM), which is frequently modeled as a controlled voltage source for reactive current regulation and increased stability of the power system. To improve the stability of the power grid, a unique robust control strategy for STATCOM controller design has been developed. The suggested scheme is characterized as an optimization problem, and the performance and stability of the controller are assessed using the robustness criteria. To change the controllers' coefficients, the proposed model is applied to each of these control systems, and used controller is a PID controller, The Pareto optimal solution is initially discovered using a modified version of the non-dominance-based genetic algorithm (NSGAI). Due to an increase in load and inadequate growth of the producing and transmission capacity, the operating limitations of a modernized integrated power system are getting tighter. Electricity networks occasionally experience small oscillations.

Keywords: Power system Stability, STATCOM, GTO, NSGA