

**OPTIMALLY SIZING OF STATIC VAR COMPENSATOR USING
BEES ALGORITHM FOR COST MINIMIZATION**

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ABSTRACT

This thesis presents the application of Bees Algorithm (BA) technique to find the optimal sizing of Static Var Compensator (SVC) to achieve the power system economic generation and dispatch. Installing an SVC at appropriate locations in the network can help stabilize weak system and minimize line losses. In order to determine the size of SVC, an optimization technique will be required if the location has been identified. While finding the optimal sizing, SVC operation limits are taken as constraints in the operation. Furthermore, their investment costs are also considered. Simulation results validate the efficiency of this approach in minimizing the overall system cost function, which includes generation cost and the investment cost of the SVCs. In this thesis, Bees Algorithm that is inspired by honey bees' foraging behavior is proposed to find the optimal sizing of SVC so that the objective can be achieved. Bees algorithm is a kind of Swarm-based optimization algorithm that mimic nature's methods to drive the search towards the optimal solution. In order to demonstrate the effectiveness of the algorithm, IEEE26 Bus system is used.

Keywords-Static Var Compensator (SVC), Voltage Deviation, Cost function, Economic generation, Bees Algorithm.

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