

Applying Sequential Particle Swarm Optimization Algorithm to Improve Power Generation Quality

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Abstract

Swarm Optimization approach is a heuristic search method whose mechanics are inspired by the swarming or collaborative behaviour of biological populations. It is used to solve constrained, unconstrained, continuous and discrete problems. Swarm intelligence systems are widely used and very effective in solving standard and large-scale optimization, provided that the problem does not require multi solutions. In this paper, particle swarm optimisation technique is used to optimise fuzzy logic controller (FLC) for stabilising a power generation and distribution network that consists of four generators. The system is subject to different types of faults (single and multi-phase). Simulation studies show that the optimised FLC performs well in stabilising the network after it recovers from a fault. The controller is compared to multi-band and standard controllers.

Keywords: Particle swarm optimization, Fuzzy logic controller, Power system stabilizer and Adaptive neuro fuzzy interference system, Multi band stabilizer.

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