

Comparison between Continuous Genetic Algorithms and Particle Swarm Optimization for Distribution Network Reconfiguration

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Abstract : This paper proposes a reconfiguration methodology based on a continuous genetic algorithm (CGA) and particle swarm optimization (PSO) for minimizing active power loss and minimizing voltage deviation. Both algorithms are adapted using graph theory to generate feasible individuals, and the modified crossover is used for continuous variable of CGA. To demonstrate the performance and effectiveness of the proposed methods, a comparative analysis of CGA with PSO for network reconfiguration, on 33-node and 119-bus radial distribution system is presented. The simulation results have shown that both CGA and PSO can be used in the distribution network reconfiguration and CGA outperformed PSO with significant success rate in finding optimal distribution network configuration.

Keywords : distribution network reconfiguration, particle swarm optimization, continuous genetic algorithm, power loss reduction, voltage deviation

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