Optimal Power Flow of Power Systems Using Hybrid Firefly and Particle Swarm Optimization Technique

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Abstract

This paper presents a new endeavor of using the Hybrid Firefly and Particle Swarm Optimization (HFPSO) technique in tackling the optimal power flow (OPF) problem for electric power networks. The fuel cost optimization represents the main target considering the system constraints. The decision variable of the OPF problem is chosen to be the generators output real power. The HFPSO technique is chosen to optimize the objective function and to determine the optimal solutions of the problem. Many IEEE test systems are included in this study to assure the soundness of the introduced technique such as the IEEE 14-bus, 30-bus, and 57-bus grids. To acquire a sensible outcome, actual load curves are taken into account during the examination. Simulation results are examined then investigated. They show the appropriateness and privilege of the presented HFPSO -based OPF problem over the genetic algorithm (GA) and the particle swarm optimization (PSO).

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