Optimization of Load Flow with Economic Dispatch Using PSO

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Abstract: *Under normal operating conditions, the generation capacity is more than the total load demand and losses. The objective is to find the real power scheduling of each generator for an interconnected power system under testing condition to minimize the operating cost of the power plant. Hence the generators power is allowed to vary within the given limits to meet the particular load with minimum fuel cost which is called as optimal power flow problem. The objective function of this research is to minimize the fuel cost of the power system for the various loads under consideration by solving the economic dispatch problem (EDP) of real power generation by using MPSO optimization algorithm. We compares the optimization techniques such as Particle Swarm Optimization, Modified Particle Swarm Optimization (MPSO) in a 3-unit generating system to show the effectiveness of the MPSO algorithm. Also by using the optimization technique the power losses of the considered power system were reduced. In the Particle Swarm Optimization (PSO) on the optimization of the power flow in a IEEE system with 30 nodes, which has some nodes with distributed generation. In first place, the mathematical model used for the optimization of the electricity generation costs. Afterwards, this model is applied in a case study with a IEEE system with 30 nodes. The results obtained through PSO are compared to other optimization methods, demonstrating that the cost and losses for the 30-node system are less than the values delivered by other methods. Then the same model is applied for the same power system with distributed generation in some of their nodes.*

Keywords: PHEV, MPPT, EVs, FCSs, MPPT, VSC, HC, HBC

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