COMPARISON BETWEEN INERTIA AND CONSTRICTION VARIANTS OF PARTICLE SWARM OPTIMIZATION FOR ECONOMIC DISPATCH PROBLEM

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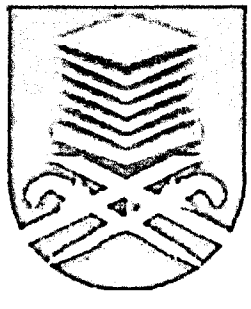

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ABSTRACT

Economic Dispatch (ED) is very critical and essential part in electrical power system since it gives impact to the total generation cost of the system. The objective of ED is to obtain the minimum total generation cost with optimal power generator output while satisfying several constraints. In order to achieve the ED objective, an optimization technique will be required to find the optimal combinational power generator output of the system. In this study, an optimization technique called Particle Swarm Optimization (PSO) had been applied in solving ED problem. Two main variants, known as Constriction Factor (CF) and Inertia Weight Factor (IW) are adopted in this study as the optimization technique. A comparison had been done between these two variants of the PSO algorithm to identify which is the best variant of PSO in solving the ED optimization problem in power systems. To evaluate the proposed method, a six unit generating power system was tested in order to obtain the minimum cost of generator. PSO algorithm used in this study was implemented by using MATLAB 7.6.0 (R2008a). The experimental results show that the Constriction Factor PSO method has the capability for obtaining higher-quality solutions in solving the ED problem while at the same time have good performance in terms of to minimize total generation cost and have shorter time taken in optimization process.

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