

Solving Nonconvex Economic Load Dispatch Problem Using Particle Swarm Optimization with Time Varying Acceleration Coefficients

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Abstract : A Particle Swarm Optimization with Time Varying Acceleration Coefficients (PSO-TVAC) is proposed to determine optimal economic load dispatch (ELD) problem in this paper. The proposed methodology easily takes care of solving non-convex economic load dispatch problems along with different constraints like transmission losses, dynamic operation constraints and prohibited operating zones. The proposed approach has been implemented on the 3-machines 6-bus, IEEE 5-machines 14-bus, IEEE 6-machines 30-bus systems and 13 thermal units power system. The proposed technique is compared to solve the ELD problem with hybrid approach by using the valve-point effect. The comparison results prove the capability of the proposed method giving significant improvements in the generation cost for the economic load dispatch problem.

Keywords : PSO-TVAC, economic load dispatch, non-convex cost function, prohibited operating zone, transmission losses

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