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Economic dispatch of hydrothermal system by gravitational search algorithm (GSA) with valve-point effect

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Abstract:

The daily economic dispatching of hydrothermal system (DHS), which is a large-scale dynamic nonlinear constrained optimization problem, plays an important role in economic operation of electric power systems. This paper proposes a novel enhanced gravitational search algorithm (GSA) to solve DHS problem. These are non-convex economic dispatch problems including the valve-point effect. The feasibility and using the GSA methods in solving the economic dispatching load in hydro thermal systems at Matlab are simulated by computer and the simulation results are compared and analyzed with and without the valve-point effect. The proposed programming computer aided is applied on a hydro thermal system and by analyzing the results, efficiency and ability of using method (GSA) is proposed in comparing to other methods.

Keywords: Cascaded reservoirs, Economic dispatching, Gravitational search algorithm, Heuristic search strategy