

Optimal Dynamic Economic Load Dispatch Using Artificial Immune System

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Abstract : The dynamic economic dispatch (DED) problem is one of the complex, constrained optimization problems that have nonlinear, con-convex and non-smooth objective functions. The purpose of the DED is to determine the optimal economic operation of the committed units while meeting the load demand. Associated to this constrained problem there exist highly nonlinear and non-convex practical constraints to be satisfied. Therefore, classical and derivative-based methods are likely not to converge to an optimal or near optimal solution to such a dynamic and large-scale problem. In this paper, an Artificial Immune System technique (AIS) is implemented and applied to solve the DED problem considering the transmission power losses and the valve-point effects in addition to the other operational constraints. To demonstrate the effectiveness of the proposed technique, two case studies are considered. The results obtained using the AIS are compared to those obtained by other methods reported in the literature and found better.

Keywords : artificial immune system, dynamic economic dispatch, optimal economic operation, large-scale problem

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