Abstract

In recent decades, with a large increase in power demand, fuel cost, and limited fuel supply it has become very essential to run the power systems with minimum cost so that the committed units serve the expected load demand. The basic objective of Economic Load Dispatch (ELD) is to distribute the total generation among the generation units in operation, in order to meet the
load demand at minimum operating cost while satisfying the system equality and inequality constraints. Nature inspired computing techniques like Artificial Neural Networks (ANN) are preferred for solving ELD problems because they do not impose any restrictions on the shape of the fuel cost curve and are capable of providing good solution quality, and higher precision solutions very close to the global optimum. In this paper, the application of Fuzzy c-means based Radial Basis Function Network (RBFN) to ELD is proposed in order to minimize the error function through a self adaptive process until the error is less than a given tolerance leading to a best solution. The applicability and viability for practical applications has been tested on two different power systems, viz., a IEEE 30 bus 6 unit test system and a 20 unit test system and the experiments were carried out on MATLAB R2008b software. Comparison of the results with the conventional Lambda Iteration method demonstrates the effectiveness of RBFN in solving ELD problems based on fuel cost, power loss, total generated power, algorithmic efficiency, and computational time.

Reference

A Self-Adaptive Fuzzy C-means based Radial Basis Function Network to Solve Economic Load Dispatch Problems


Y. Labbi, D. Ben Attous. "A hybrid GA–PS method to solve the economic load dispatch
A Self-Adaptive Fuzzy C-means based Radial Basis Function Network to Solve Economic Load Dispatch Problems


**Index Terms**

Computer Science

Power Systems

**Key words**

Economic load dispatch

Fuzzy c-means clustering

Radial Basis Function Network

algorithmic efficiency

computational time

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