Abstract

The paper presents novel approaches to solving the dynamic economic load dispatch (DELD) problem with valve-point loading effects. In dynamic environments, optimization problems change over time. They are also called time dependent or dynamic time-linkage problems, where decisions made at a given time may affect output obtained in a later time. It is therefore expected of algorithms solving dynamic optimization problems to both locate optimal solutions of the given problem and keep track of such solutions as they change with time. An investigation was made of three optimization methods in conjunction with three smart mutation variants, on benchmark problem cases involving 5 and 10 generating units, the major test cases in the literature with comparative results for other algorithms. The results suggest that the third approach which exploits the dynamic nature of the problem was capable of superior to the other two approaches. Comparisons with all approaches so far in the literature that have addressed these problems show that these evolutionary computation approaches are superior to other algorithms.

References

- G. Sreenivasan, C. H. Saibabu and S. Sivanagaraju, "Solution of Dynamic Economic Load Dispatch Problem with Valve Point Loading Effects and Ramp Rate Limits using
- S. Orike and D. W. Corne, "An Evolutionary Algorithm for Bid-Based Dynamic Economic Load Dispatch in a Deregulated Electricity Market", In Y. Jin and S. A. Thomas (Eds.), IEEE UK Workshop on Computational Intelligence, University of Surrey, Guildford, 9th – 11th September 2013.

**Index Terms**

Computer Science

Artificial Intelligence

**Keywords**

Economic Load Dispatch  Evolutionary Computation  Fitness Evaluation  Ramp-Rates

Valve-Point Effects