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

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Index Terms

- Computer Science
- Artificial Intelligence

Keywords

- Economic Load Dispatch
- Evolutionary Computation
- Fitness Evaluation
- Ramp-Rates
- Valve-Point Effects