Constrained Elitist Genetic Algorithm for Economic Load Dispatch: Case Study on Nigerian Power System

Abstract

The Economic Load Dispatch problem concerns the determination of the optimal combination of power generators' outputs with the lowest generation cost for a defined level of load. The problem arises from the fact that there are rated limits of generators' power output, fuel costs of power plants are different, energy should be balanced, and plants are not located at the same distance from load centers. This work proposes the use of a novel technique - constrained elitist genetic algorithm (CEGA) in optimizing real power scheduling for the Nigerian power system. The approach was tested and evaluated against related approaches with same test data, where it exhibited superior performance to attempts so far previously reported in the literature.

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Index Terms

Computer Science

Power Systems

Keywords

Economic Load Dispatch  Elitism  Genetic Algorithm  Optimization  Power System