

A New Genetic-Based Tabu Search Algorithm For Unit Commitment Problem

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Summary

This paper presents a new algorithm based on integrating the use of genetic algorithms and tabu search methods to solve the unit commitment problem. The proposed algorithm, which is mainly based on genetic algorithms incorporates tabu search method to generate new population members in the reproduction phase of the genetic algorithm. In the proposed algorithm, genetic algorithm solution is coded as a mix between binary and decimal representation. A fitness function is constructed from the total operating cost of the generating units without penalty terms. In the tabu search part of the algorithm, a simple short term memory procedure is used to counter the danger of entrapment at a local optimum by preventing cycling of solutions, and the premature convergence of the genetic algorithm. A significant improvement of the proposed algorithm results, over those obtained by either genetic algorithm or tabu search, has been achieved. Numerical examples also showed the superiority of the proposed algorithm compared with two classical methods in the literature. (C) 1999 Elsevier Science S.A. All rights reserved.

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