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The Selection of the Optimal Load Dispatch for Electric Generation Systems Using Ant Lion Optimization: A Comparison Approach

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Abstract: This paper illustrates the Antlion optimization algorithm (ALO) to solve the optimal load dispatch (OLD) of three electric generation facilities to meet the systems' loads that minimize the fuel consumption costs while satisfying transmission and operation constraints. The proposed ALO algorithm is applied to a three, six, and twenty-unit test systems for the OLD and the best fuel cost. Then, the results are compared to benchmark problems to prove the algorithm's effectiveness. The numerical outcomes showed that the proposed ALO algorithm has a good potential to achieve the best OLD with minimal fuel costs for small sized problems such as three and six-generator systems, whereas for large sized problems such as twenty-generator system, the performance was less effective.

Keywords: Antlion Optimization, Optimal Load Dispatch, Fuel Cost