An application of barnacles mating optimizer for solving economic dispatch problems

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ABSTRACT

This paper presents an application of a new nature-based optimization algorithm namely Barnacles Mating optimizer (BMO) to solve the well-known economic dispatch (ED) problem in power system operation. ED is one of the classical optimization problems which draws a lot of attention of power engineers as well as researchers globally in order to obtain the minimum cost of power generation by fulfilling all the constraints and demand. The practical constraints will be considered in this paper such as prohibited operating zones, ramp rate limits and generation operating limits. BMO on the other hand is the new algorithm based on behavior of barnacles seeking for mating. BMO will be adopted in finding the optimal combination of power generation so that the minimum cost can be achieved without violating any constraints. 6-units and 15-units case systems will be utilized to show the effectiveness of BMO compared with other recent algorithms.

KEYWORDS

Barnacles mating optimizer; Cost minimization; Economic dispatch; Nature-based optimization; Power system operation

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