

An Application of Barnacles Mating Optimizer Algorithm for Combined Economic and Emission Dispatch Solution

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Abstract:

This article proposes an application of recent technique namely Barnacles Mating Optimizer (BMO) to solve Combined Economic and Emission (CEED) dispatch problems. CEED is known as an extension of well-known Economic Dispatch (ED) problem which basically considering not only to minimize the cost of power generation, but also to minimize the emission level from the generated power to the environment. These two objectives are conflicting each other and CEED problem is to find the tradeoff between these two objectives simultaneously while satisfying all the equality and inequality constraints. BMO on the other hand is the recent meta-heuristic technique based on the mating behavior of the barnacles. It will be used to solve the CEED problem by implementing the price penalty and weighting factors in order to obtain the best combination of power generation so that minimization of cost and emission can be achieved. In order to show the effectiveness of proposed BMO, 6 -units and 10-units systems are utilized and compared with the selected techniques available in the literatures.

Keywords: Barnacles Mating Optimizer; Combined Economic and Emission Dispatch; Economic Dispatch; Price Penalty Factor.

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