Improved barnacles mating optimizer for loss minimization problem in optimal reactive power dispatch

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ABSTRACT

The solution of Optimal Reactive Power Dispatch (ORPD) can be treated as one of the sub-Optimal Power Flow (OPF) problems where the loss minimization is one of the objective functions to be solved. In this paper, an improvement of recent algorithm namely Improved Barnacles Mating optimizer (IBMO) is proposed to determine the best combination of control variables of power system's components such as generator bus voltages, injected MVAR devices and transformer ratios so that the total transmission loss can be minimized. To assess the performance of IBMO in loss minimization of ORPD, IEEE 57-bus system will be used. The performance of IBMO will be compared with original BMO and Moth-Flame optimizer (MFO) to show the effectiveness of proposed improvement in solving the ORPD problem.

KEYWORDS

Barnacles mating optimizer; Levy flight; Loss minimization; Optimal reactive power dispatch

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