Using The Gray Wolf Optimizer For Solving Optimal Reactive Power Dispatch Problem

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ABSTRACT

This paper presents the use of a new meta-heuristic technique namely gray wolf optimizer (GWO) which is inspired from gray wolves' leadership and hunting behaviors to solve optimal reactive power dispatch (ORPD) problem. ORPD problem is a well-known nonlinear optimization problem in power system. GWO is utilized to find the best combination of control variables such as generator voltages, tap changing transformers' ratios as well as the amount of reactive compensation devices so that the loss and voltage deviation minimizations can be achieved. In this paper, two case studies of IEEE 30-bus system and IEEE 118-bus system are used to show the effectiveness of GWO technique compared to other techniques available in literature. The results of this research show that GWO is able to achieve less power loss and voltage deviation than those determined by other techniques.

KEYWORDS: Gray wolf optimizer; Loss minimization; Voltage deviation minimization; Meta-heuristic technique; Optimal reactive power dispatch

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