

Comparison Study On Economic Load Dispatch Using Metaheuristic Algorithm

**Type:** Research Article**Subject:** Engineering**Id:** 820805**Status:** Published**Submission Date:** November 4, 2020**Acceptance Date:** March 17, 2021**DOI:** [10.35378/gujs.820805](https://doi.org/10.35378/gujs.820805)**Editor****Section Editor**

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Assigned Date: November 4, 2020

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Authors**Primary Author**

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Primary Language: English

Abstract (en)

This paper presents an approach to overcome economic load dispatch (ELD) using a metaheuristic algorithm. Economic load dispatch (ELD) is one of the most important problems in a power system, and solving it quickly is extremely important. The main problem that will be addressed in this paper is how to optimize the economy of the power grid with various operational limitations, the loss in transmission line power, and consider minimizing the fuel costs produced. In this study, some of the newest metaheuristics inspired by nature will be explored, namely Seagull Optimization Algorithm (SOA), Marine Predator Algorithm (MPA), Sine Tree-Seed Algorithm (STSA), Chimp Optimization Algorithm (ChOA), Equilibrium Optimizer (EO), and Giza Pyramids Construction (GPC). The performance appraisal of the method applied in this study was tested using 2 case studies, namely a system with 3 and 6 power system units. The results are presented by comparing between metaheuristic and mathematical methods. The experimental results is showed that the Sine Tree-Seed Algorithm (STSA) is presented the best performance with various case studies with constraints.

Keywords (en)

Economic load dispatch, Metaheuristic, Optimization, Nature inspired algorithm

References

1. [1] Aribowo, W., "Tuning for Power System Stabilizer Using Distributed Time-Delay Neural Network," *SINERGI*, 22(3): 205–210, (2017).
2. [2] Khan, I., Li, Z., Gu, W. and Xu, Y., "Distributed control algorithm for optimal reactive power control in power grids", *International Journal of Electrical Power and Energy Systems*, 83: 505–513, (2016).
3. [3] Liang, H., Liu, Y., Shen, Y., Li, F. and Man, Y., "A Hybrid Bat Algorithm for Economic Dispatch With Random Wind Power," in *IEEE Transactions on Power Systems*, 33(5): 5052–5061, (2018).

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Author's note to the Editor

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Decision Letter

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Decision Letter-1

Dear Widi ARIBOWO,

Decision: Minor Revision

Editor Comment: Dear Widi ARIBOWO,

The review process of your paper is over now. Based on the referee evaluations we decided that the paper can be accepted for publication provided that some minor revisions are made. You can find the revision requests in the referee reports.

I would like to thank you for your interest in our journal.

Best Regards.

Reviewer Reviews

Reviewer-1

Comments and Suggestions for Author: Dear Editor, The authors present to the potential of six metaheuristic methods, namely, Seagull Optimization Algorithm, marine predator algorithm , Sine Tree-Seed Algorithm , Chimp Optimization Algorithm, Equilibrium Optimizer , and Giza Pyramids Construction in solving economic load dispatch problems. The manuscript contains an interesting overview of the existing methods. Especially proposed method algorithms are attractive for power system. The work presented in this article is of great importance in the power system. The paper is clear and well written. The methods can contribute to the literature. In my opinion, the running time of the algorithms should be compared in the article. The power system diagram must be added in Section 3. Although it is written that the analysis is made for a power system containing 3 and 6 thermal units, this is not enough. Section 3 needs to be expanded and revised with power system schema.

Recommendation: Minor Revision

Reviewer-2

Comments and Suggestions for Author: This is a good paper.

Recommendation: Minor Revision

Decision Letter-2

Dear Widi ARIBOWO,

Decision: Accepted

Editor Comment: Dear Widi Aribowo,
It is my pleasure to inform you that your paper has been accepted for publication.
I would like to thank you for your interest in our journal.
Best Regards,
Timur

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M. Timur AYDEMİR  Section Editor

Thanks

March 18, 2021 at 12:47:04 PM

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