

## **Emission and valve point loading cost using superiority of feasible solutions-moth flame optimization**

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### **ABSTRACT**

The optimal power flow (OPF) the most crucial instrument for power facility design and performance is analysis, load scheduling, and cost-effective dispatch. To determine the evidence of a steady state for a power system network, an optimal power flow analysis is required. This study introduces a novel optimization method called Superiority of Feasible Solutions-Moth Flame Optimization (SH-MFO) to answer the optimal power flow problem. As part of the MATLAB development, SH-MFO is implemented on the IEEE-30 bus standard experiment structure network. When compared to the reliable outcomes produced by other algorithms, the current study employing SH-MFO estimates a Generation and Emission Costs 48.6827 /h for minimizing the different fuels, which ultimately proves to be the best value. Analyze the poorest options suggested by the comparison algorithm, it saves money by 0.9873 % per hour. Based on simulation results, the SH-MFO method provides an improved and effective optimization algorithm for optimal power flow problems.

### **KEYWORDS**

Energy Efficiency; Optimal Power Flow; power system optimization; Superiority of Feasible Solutions-Moth Flame Optimization; Valve-point Effect

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