|  |  |  |  |
| --- | --- | --- | --- |
| **Title:** | **Economic power dispatch solutions incorporating stochastic wind power generators by moth flow optimizer** | | |
| **Author(s) Name:** | Mohammad Khurshed Alam | | |
| **Contact Email(s):** | Khurshed709@aiub.edu | | |
| **Published Journal Name:** | International Journal of Advanced Technology and Engineering Exploration, | | |
| **Type of Publication:** | Journal | | |
| **Volume:** | ***Vol 10(100)*** | Issue |  |
| **Publisher:** | Accents Journals | | |
| **Publication Date:** | 23 Feb, 2023 | | |
| **ISSN:** | ***ISSN (Print): 2394-5443 ISSN (Online): 2394-7454*** | | |
| **DOI:** | ***http://dx.doi.org/10.19101/IJATEE.2022.10100161*** | | |
| **URL:** | https://www.accentsjournals.org/journals1.php?journalsId=110 | | |
| **Other Related Info.:** | online | | |
|  | | | |

|  |  |
| --- | --- |
| **Abstract:** |  |
| ***Optimization encourages the economical and efficient operation of the electrical system. Most power system problems are nonlinear and nonconvex, and they frequently ask for the optimization of two or more diametrically opposed objectives. The numerical optimization revolution led to the introduction of numerous evolutionary algorithms (EAs). Most of these methods sidestep the problems of early convergence by searching the universe for the ideal. Because the field of EA is evolving, it may be necessary to reevaluate the usage of new algorithms to solve optimization problems involving power systems. The introduction of renewable energy sources into the smart grid of the present enables the emergence of novel optimization problems with an abundance of new variables. This study's primary purpose is to apply state-of-the-art variations of the differential evolution (DE) algorithm for single-objective optimization and selected evolutionary algorithms for multi-objective optimization issues in power systems. In this investigation, we employ the recently created metaheuristic algorithm known as the moth flow optimizer (MFO), which allows us to answer all five of the optimal power flow (OPF) difficulty objective functions: (1) reducing the cost of power generation (including stochastic solar and thermal power generation), (2) diminished power, (3) voltage variation, (4) emissions, and (5) reducing both the cost of power generating and emissions. Compared to the lowest figures provided by comparable approaches, MFO's cost of power production for IEEE-30 and IEEE-57 bus architectures is $888.7248 per hour and $31121.85 per hour, respectively. This results in hourly cost savings between 1.23% and 1.92%. According to the facts, MFO is superior to the other algorithms and might be utilized to address the OPF problem.*** | |