

Can a multi-objective weight method reduce uncertainty factors in a microgrid?

The simulation results showed that the multi-objective weight method could diminish the influence of uncertainty factors, promoting the full absorption of renewable energy and full load-bearing. Additionally, the orderly charging and discharging mode of EVs could reduce the operation cost and environmental protection cost of the microgrid.

How to optimize multi-objective energy management for multi-microgrids?

The calculation time and convergence performance of the multi-objective energy management for multi-microgrids are enhanced by dividing the optimization model into two layers, where the upper optimization variables are the outputs of FCs, WT and PVs in each microgrid, and the lower layer variables are the outputs of MTs.

What is a multi-objective multi-microgrid energy management model?

This was addressed in the present study by proposing a multi-objective multi-microgrid energy management model that considered the randomness of EV charging and adopted transmission line losses, operating costs, and carbon emissions as the targets of optimization.

How a grid connected microgrid works?

For a grid connected microgrid, the reliability of microgrid operation has been greatly improved by the support of the distribution network. However, the energy of a distribution network is mainly generated from fossil energy, which cause serious pollution to the environment. Thus, microgrids consist of renewable energy and fuel devices.

What is a microgrid and why is it important?

A microgrid is a small power generation and distribution system involving renewable energy and energy storage devices. It plays an important role in power systems on account of its strong security, high utilization rate of renewable energy, and low operation cost (Tabar et al., 2017).

Does the optimization algorithm improve the economy and Environmental Protection of microgrid?

Therefore, for the microgrid system constructed in this paper, the optimization algorithm effectively improved the economy and environmental protection of the microgrid. Yu Mei: Conceptualization, Methodology, Simulation, Experiment, Data analysis, Investigation, Writing - original draft & editing, Writing - review & editing.

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Additionally, electric vehicles (EVs), as an impact load, could severely affect the safe dispatch of the

microgrid. To solve these problems, a multi-objective optimization model was established ...

X Qing, C Jie, Y Xiu, et al., Dynamic economic dispatch of microgrid with different types of distributed generations, Proceedings of the Chinese Society of Universities for Electric Power System and Automation 25 (4) (2013) 22-28.

Optimal energy management and control aspects of distributed microgrid using multi-agent systems. M. Khan Jie Wang Meiling Ma Linyun Xiong Penghan Li Fei Wu

Multi-objective optimal scheduling of microgrid with electric vehicles Yu Mei a, b, Bin Li a, Honglei Wang a, c, \*, Xiaolin Wang d, Michael Negnevitsky d a Electrical Engineering College ...

The proposed wind-solar-storage microgrid system model contains algorithmic solvers and energy management strategies. The multiobjective optimization method calculates the capacity scaling of the PV,...

DOI: 10.1109/CCDC55256.2022.10033679 Corpus ID: 256877337; Multi-objective day-ahead optimal scheduling of wind-solar microgrid considering V2G technology @article{Shuaishuai2022MultiobjectiveDO, title={Multi-objective day-ahead optimal scheduling of wind-solar microgrid considering V2G technology}, author={LV Shuai-shuai and Wang Hui and ...

The research on multi-agent system for microgrid control and optimization. Author links open overlay panel Muhammad Waseem Khan a b, Jie Wang a. Show more. Add to Mendeley. Share. Cite. ... Multi objective approaches are specified for solving complications in renewable energy systems and few of them suggest them to be applied in the MG. Upgrade ...

To carry out the optimal management of the distributed generation, this paper presents a multi-objective niche evolutionary immune algorithm (MO-NEIA) based on detailed analysis of the distributed ...

[C3 8] Zhuzhu Wang and Lei Wu, " A Review on Control Schemes of HVDC-Integrated Offshore Wind Farms for Fast Frequency Support ", NAPS, 202 4. [C3 7] Kunyu Zuo and Lei Wu, " An Asymptotic Stability Guaranteed Droop-Free Control Scheme for Normalized Active Power Consensus in Microgrids ", IEEE PES General Meeting, 202 3. [C3 6] Zhiming Zhong, Neng ...

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G. Li, W. Liu, B. Jiao, and C. Wang, "Multi-objective optimal planning design method for stand-alone microgrid system," Proceedings of the CSEE, vol. 34, no. 4, pp. ...

The specific steps for conducting multi-objective energy management of a multi-microgrid system based on the improved MOEA/D, named the multi-objective evolutionary ...

Wang X, Mao X, Khodaei H (2021) A multi-objective home energy management system based on internet of things and optimization algorithms. J Build Eng 33:101603. Article Google Scholar Song C et al (2021) A review of optimal energy management strategies using machine learning techniques for hybrid electric vehicles.

A Generic Transient-performance-improved framework for privacy-preserving distributed microgrid controls [J]. IEEE Transactions on Smart Grid ... Huang Sunhua\*, Yang Shaobo, Wang Jie. Multi-objective energy management strategy for multi-energy communities based on optimal consumer clustering with multi-agent system [J]. IEEE Transactions on ...

Semantic Scholar extracted view of &quot;Optimizing power systems and microgrids: A novel multi-objective model for energy hubs with innovative algorithmic optimization&quot; by Zhangchenlong Huang et al. ..., author={Zhangchenlong Huang and Linlin Xu and Ben Wang and Ji Li}, journal={International Journal of Hydrogen Energy}, year={2024}, url={https ...

Abstract: In this paper, a multi-objective optimization mathematical model is established based on the comprehensive consideration of economy, environment and battery circulating power in ...

DOI: 10.3390/SU13031320 Corpus ID: 234036991; Multi-Objective Optimization of a Microgrid Considering the Uncertainty of Supply and Demand @article{Geng2021MultiObjectiveOO, title={Multi-Objective Optimization of a Microgrid Considering the Uncertainty of Supply and Demand}, author={Shiping Geng and Gengqi Wu ...

Zhang, X., Wang, Z. & Lu, Z. Multi-objective load dispatch for microgrid with electric vehicles using modified gravitational search and particle swarm optimization algorithm. Appl. Energy 306, 118018.

Xu et al. (2016) proposed a multi-objective optimization method based on the two-person zero-sum game weight coefficient method, for a grid-connected composite energy ...

A general model of dynamic multi-objective optimal dispatch is constructed to minimize the operational and environmental costs of microgrid, which takes two independent modules as its core: system ...

To address the configuration of renewable energy generation units and battery energy storage systems in zero-carbon microgrids, the paper proposes a multi-objective optimal configuration ...

The current research on multi-microgrid inter-microgrid trading mainly focuses on trading algorithms and ... identification factor incentive mechanism for dynamic cooperative games and a smart contract supported by a multi-objective evolutionary algorithm. ... Min Wang, Fanglin Zuo, Yuan Chen, Huilin Wang, Jie Zou, Hang Gao & Dongqian Pan ...

In this paper, a multi-objective strategy was formulated including an effective optimal load scheduling which aims to minimize the cost of demand and the emission in a grid-connected ...

The results show that the operation optimization of microgrids has received increasing attention in recent years, and developing countries have shown more interest in this field than developed countries have. Clean and renewable energy is developing to realize the sustainable utilization of energy and the harmonious development of the economy and society. ...

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the operation cost of the microgrid. 3) and ensure the energy optimization management for safe and economic operation of the building microgrid system (Wang et al., 2021; Chang et al., 2022). At present, there has been research progress on the optimal configuration strategy of microgrid energy systems. Liu et al.

In recent years, renewable energy has seen widespread application. However, due to its intermittent nature, there is a need to develop energy management systems for its scheduling and control. This paper introduces a multi-stage constraint-handling multi-objective optimization method tailored for resilient microgrid energy management. The microgrid ...

4.3 Multi-objective Optimization Results. The active power of WT and PV is given priority to be used and the principle of power determined by heat is taken for CHP. The improved self-adaptive genetic algorithm [], roulette selection, multi-point crossover, and multi-point mutation are taken to optimize the active and reactive output of all microsources.

DOI: 10.1016/j.epsr.2022.108181 Corpus ID: 249860895; Multi-objective economic environmental energy management microgrid using hybrid energy storage implementing and developed Manta Ray Foraging Optimization Algorithm

Wang et al. (2021a) established a multi-energy scheduling model for the orderly charging and discharging of EVs and took the minimum total load variance and scheduling cost as the optimization ...

This paper presents a model of multi-objective optimal dispatch of microgrid (MODMG) under uncertainties via the interval optimization (IO) approach.

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