

The simulation results show that the proposed multi-objective optimization model of micro-grid operational management can implement the comprehensive consideration of cost, pollution emission and ...

Optimization methods for a hybrid microgrid system that integrated renewable energy sources (RES) and supplies reliable power to remote areas, were considered in order to overcome the intermittent nature of ...

This paper presents an improved deep reinforcement learning (DRL) algorithm for solving the optimal dispatch of microgrids under uncertainties. First, a multi-objective interval optimization dispatch (MIOD) model for microgrids is constructed, in which the uncertain power output of wind and photovoltaic (PV) is represented by interval variables. The economic cost, network loss, ...

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 storage microgrid including photovoltaics, liquid flow batteries and lithium batteries, to ...

The author proposed a methodology to install the AC& #8211;DC hybrid microgrid to face the scarcity of electricity. The microgrid provided reliable electricity at a competitive price for the consumers and social welfare. ...

Further studies will investigate other approaches to solving multi-objective optimization in microgrids, such as converting multi-stage optimization to single-stage optimization. In addition, it is suggested to consider more reliability indices in the proposed system and to add more flexibility to the system. ... "Day-Ahead Scheduling of Multi ...

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 the process of microgrid dispatching. Aiming at the shortcomings of the traditional multi-objective ...

For instance, based on the maximum uncertainty set, a robust multi-objective optimization model for the operation management of a microgrid is developed for obtaining the optimal Pareto scheduling solutions under the worst-case realization of uncertain renewable ...

In a simulation analysis of the microgrid multi-objective optimization scheduling model based on demand-side management using the chaotic particle group algorithm, the optimization algorithm was ...

In a multi-objective optimization problem, the objectives contain two or more dimensions, and the

conventional MDP will be generalized to multi-objective MDPs. ... 2.1 Microgrid model. The microgrid system model shows the power balance among energy storages (if available), local energy generation, other microgrids, and main power grid.

A new multi-objective optimal scheduling model for MG connection considering the economy and user's satisfaction is built by using membership function: Based on the characteristics of demand response, the deviation between the user's theoretical power demand and the actual power supply is used to quantify the customer satisfaction level, which is a novel ...

Microgrids have been widely used due to their advantages, such as flexibility and cleanliness. This study adopts the hierarchical control method for microgrids containing multiple energy sources, i.e., photovoltaic (PV), wind, diesel, and storage, and carries out multi-objective optimization in the tertiary control, i.e., optimizing the economic cost, environmental ...

The research in this paper is divided into the following steps: (1) constructing a multi-microgrid model primarily based on renewable energy; (2) formulating an optimization model with the objective of minimizing economic costs while ensuring stable system operation and solving it; (3) proposing an improved differential evolution algorithm for optimizing system ...

It is necessary to cut gaseous pollutant emission and develop energy-saving and emission-reducing in microgrid power generation scheduling. An optimization model of multi-objective economic dispatch combined heat and power (CHP) microgrid system considering heating income was presented. The microsources could provide both active and reactive power in the model. A ...

A multi-objective optimization model is established for minimizing the transmission losses, operating costs, and carbon emissions of multiple microgrid systems. Firstly, a novel method is proposed for forecasting electric vehicle charging loads based on a back propagation neural network improved by long short-term memory deep learning ...

This paper develops a multi-objective optimization scheduling model for microgrids in grid-connected mode, focusing on operational costs and environmental protection costs, and employs an improved PSO algorithm to ...

The goal is to optimize multi-objective scheduling for a microgrid with wind turbines, micro-turbines, fuel cells, solar photovoltaic systems, and batteries to balance power and store excess ...

Surplus energy produced by the resources can be converted from AC to DC and stored in the battery and hydrogen storage tanks for future consumption. The microgrid model is designed to facilitate bidirectional energy transfer through the use of bi-directional inverter and ...

Multi-objective Optimization: The manuscript presents a multi-objective optimization model that simultaneously considers the microgrid's total operation cost and emissions. This approach allows for a comprehensive analysis and decision-making process that aims to achieve the best balance between reducing expenses and minimizing the ...

The findings are cleared that microgrid multi-objective optimization in the distribution network considering forecasted data based on the MLP-ANN causes an increase of 3.50%, 2.33%, and 1.98% ...

Introducing a multi-objective model predictive control, with a complex cost function. Improved control accuracy and added flexibility for load sharing between inverters. Faster dynamic response (i.e., 12.5% higher) & lower switching frequency (i.e., 15%) compared ...

Based on the operation plan, power purchase plan, and demand-side management technology of each unit in the system, and considering the comprehensive operating cost of the system and user satisfaction, a wind-storage industrial microgrid is established. Multi-objective optimization model of power grid, and a solution method for multi-objective ...

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.

This paper introduces a multi-stage constraint-handling multi-objective optimization method tailored for resilient microgrid energy management. The microgrid encompasses diesel generators, energy storage systems, ...

For multi-objective optimization applications, ... A multi-objective model predictive controller is presented in this manuscript to tackle the power quality issues associated with microgrids. ... Puig V, Blesa J, Ocampo-Martínez C. Economic model predictive control for energy dispatch of a smart micro-grid system. In: 2017 4th international ...

In this paper, a multi-objective optimization model is proposed to minimize the load curtailments when the generation capacity of an islanded microgrid is less than the load demand. The proposed model minimizes the generation cost and total load curtailments and also minimizes the maximum load curtailment. Furthermore, the impact of the penalty coefficients of total load ...

The cases are given to optimize objective functions in microgrid. These case studies will be analyzed in the next subsection to ensure optimal operation in microgrid. 6.1 Results analysis. This section confirms the superior performance of the proposed optimization method by addressing a multi-objective capacity problem related to resources.



Microgrid Multi-Objective Optimization Model

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