

What is the optimal capacity configuration model for a grid-connected microgrid?

An optimal capacity configuration model of the grid-connected microgrid is proposed, which comprehensively considers economic cost, renewable energy utilization efficiency and carbon emissions. Through the combination with the previous work, it provides a new solution to the problem of microgrid planning.

How to evaluate the reliability of a microgrid design?

To evaluate the reliability of the proposed design, reliability concepts for power system application can serve as a basis to which the microgrid-specific aspects can be added. To estimate the significance and the severity of the events leading to the system interruptions, a quantitative reliability analysis is necessary.

Is microgrid a good model for capacity planning?

An optimal grid-connected microgrid capacity configuration model is proposed. A case study is carried out to validate the proposed capacity planning solution. Microgrid is considered an efficient paradigm for managing the massive number of distributed renewable generation and storage facilities.

Why is reliability optimization of microgrids important?

See further details here . Clean and renewable energy is the only way to achieve sustainable energy development, with considerable social and economic benefits. As a key technology for clean and renewable energy, it is very important to research the reliability optimization of microgrids.

How can a grid-connected microgrid improve the reliability of the power supply?

On the premise of ensuring the reliability of the power supply, the microgrid also needs to absorb as much renewable energy as possible to improve the economic and environmental indicators of the system. The structure of the grid-connected microgrid considered in this work is illustrated in Fig. 1.

Is there a capacity planning solution for grid-connected microgrid based on scenario generation?

This paper presented an optimal capacity planning solution for grid-connected microgrid based on scenario generation considering multi-dimensional uncertainties. The efficient DCGAN based scenario generation method is developed to describe the uncertain behaviors of renewable power generation.

Therefore the load loss rate is usually used to characterize the reliability of the island microgrid. Its expression is (Yang et al., 2008) (3.15) ... PSO algorithm is used to ...

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The results show that this method can obtain strong economic benefits, and after the optimal configuration of hydrogen storage capacity, the hybrid microgrid is more in line with the actual project on the basis of ensuring ...

Abstract: This paper focuses on capacity configuration optimization for the stand-alone Wind-PV-Diesel-Battery microgrid. A stochastic optimization model based on conditional value at risk ...

The objective of this paper is to propose a photovoltaic hydrogen storage microgrid in substation. An operation strategy is proposed to ensure the reliability of substation load under normal ...

Considering the strong internal correlation among the variation in wind speed, solar irradiation, energy storage SOC, and electricity load, the PSR evaluation model of the stand-alone microgrid with a known capacity ...

In order to reduce carbon emissions in the lifecycle of multi-energy complementary microgrids, this work proposes a low-carbon configuration optimization model based on the characteristics ...

We selected a reliable engineering problem about capacity configuration of grid-connected wind-solar-storage microgrid system to test the IBWO to verify its reliability in ...

The results show that this method can obtain strong economic benefits, and after the optimal configuration of hydrogen storage capacity, the hybrid microgrid is more in ...

This study took a multi-energy microgrid as its research target, sorted out the energy efficiency and economical models of the key equipment in the microgrid system, presented a double ...

With the increasing use of electric vehicles (EVs), EVs will be widely connected to the microgrid in the future. However, the influence of the disorderly charging behavior of ...

To achieve optimal performance, the capacity configuration of the micro-grid must take into account multiple factors, including economic cost, self-balancing ability, energy waste rate, ...

<p>This paper investigates the issues of topology design and capacity configuration in multi-microgrid (MMG) systems. Firstly, we analyze the limitations of current researches about MMG ...

microgrid and the evident disparities in power output characteristics, the microgrid capacity allocation problem is characterized by high nonlinearity, complexity, and uncertainty. ...

Madathil et al. [9] proposed a microgrid capacity configuration optimization method considering the resilience of the microgrid by adding N-1 security constraints to the optimization model. ...

To evaluate the reliability of the proposed design, reliability concepts for power system application can serve as a basis to which the microgrid-specific aspects can be added. ...

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