

Peak-shaving power station second-stage power generation





Overview

How does peak shaving affect a power plant?

Combustion efficiency may decrease during peak shaving, especially under low-load operation, which can lead to an increase in the overall coal consumption rate, significantly affecting the power plant's operational costs.

What is joint peak shaving mechanism of virtual energy storage and CCPP?

The joint peak shaving mechanism of virtual energy storage and CCPP is shown in Figure 2, which fully considers the adjustable characteristics of virtual energy storage to achieve elastic adjustments of the demand-side response, as well as the complementary characteristics of carbon capture power plants. Figure 2. Joint peak shaving strategy.

How to reduce peak shaving pressure of thermal power units?

During peak periods, the output of wind power is small. Lowering the demand for the two types of IDRs can play a role in peak shaving, which can alleviate the peak shaving pressure of thermal power units (conventional and carbon capture).

Can a two-stage dispatch model be used for joint peak shaving?

Based on these, this paper establishes a day-ahead and intraday two-stage dispatch model for the joint peak shaving of virtual energy storage and carbon capture power plants. Initially, it examines the working principles of carbon capture devices and their potential advantages in peak shaving.

How does HPD improve peak shaving flexibility in combined CHP plants?

Peak shaving flexibility in combined CHP plants is enhanced by HPD through the efficient separation of electrical and thermal energy. Deep peak shaving capacity is expanded by integrated energy storage, including CAES and molten salt thermal storage, by offering an external energy buffer.



What is the peak shaving capacity of CFPP?

Peak shaving capacity of 68.732 MWh, enhances CFPP flexibility, and demonstrates good economic feasibility (NPV: \$2.6851 million, PBP: 15.194 years). Low RTE of 58.79 %, with considerable heat loss during storage. Peak shaving factor increases from 3.86 % to 14.29 %, power generation increases from 8.43 MW to 45.23 MW.



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Two-Stage Optimization Model of Centralized Energy Storage

Therefore, a two-stage optimization model for grid-side BESS is proposed. First, the carbon emission model of thermal power units considering BESS is proposed to describe ...

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Peak-shaving cost of power system in the key scenarios of ...

Finally, the model is solved and the peak-shaving cost and unit output under the optimal scheme are obtained. This example shows that the model can effectively evaluate the ...

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Two-Stage Optimization Strategy for Managing ...

2.1 Combined Optimization of Peak Shaving and Frequency Regulation In the day-ahead plan, the output of each power supply is usually ...

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Peak Shaving Strategy of Concentrating Solar Power Generation ...

According to the multi-time-scale characteristics of power generation and demand-side response (DR) resources, as well as the improvement of



prediction accuracy along with the approaching ...

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Day-Ahead and Intraday Two-Stage Optimal Dispatch ...

Based on these, this paper establishes a day-ahead and intraday two-stage dispatch model for the joint peak shaving of virtual energy storage and carbon capture power ...

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Capacity optimization of photovoltaic storage ...

A two-layer hydrogen storage power generation system capacity optimization configuration model was established, an improved particle swarm ...

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100MW Dalian Liquid Flow Battery Energy Storage and Peak shaving Power

On October 30, the 100MW liquid flow battery peak shaving power station with the largest power and capacity in the world was officially connected to the grid for power ...

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Study on Peak Shaving Strategy of Pumped Storage Power ...

Study on Peak Shaving Strategy of Pumped Storage Power Station Combined with Wind and Photovoltaic Power Generation Published in: 2017 International Conference on Computer ...

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Comparative investigation on heat pump solutions for peak shaving ...

Their energy utilization efficiency, exergy efficiency, coal consumption rate of power generation with varying operating conditions, and heat-power decoupling characteristics are ...

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Investigation on the allowable load ramping-up rate and wet-to ...

Therefore, in this paper, firstly, a comprehensive dynamic model of a coal-fired power plant, including a boiler recirculation system in deep peak-shaving work conditions and ...

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(PDF) Auxiliary Service Market Model Considering the ...

Then, considering that the pumped-storage power station has both source-load characteristics, the peak-shaving value of the pumped-storage power station is deeply ...

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Peak-Shave Scheduling for Multi-Source Power Generation ...

This study focuses on a wind-solar-hydro-storage multi-source power generation system, target at peak-shaving Schemes by conducting 24h day-ahead scheduling of energy ...

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What does energy storage peak-shaving power ...

Minimizes the need for additional power generation assets. A significant aspect of peak shaving involves the ability of these stations to ...

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Smart Grid Peak Shaving with Energy Storage: Integrated Load

The energy storage system can be used for power peaking, avoiding the cost of waste caused by installing generator sets to meet the peak load. The energy storage system can fully utilize the ...

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Enhancing peak-shaving capacity of coal-fired power plant by ...

However, conventional coal-fired power plants face limitations in peak-shaving capacity, efficiency, and economic feasibility. To address these challenges, this study ...

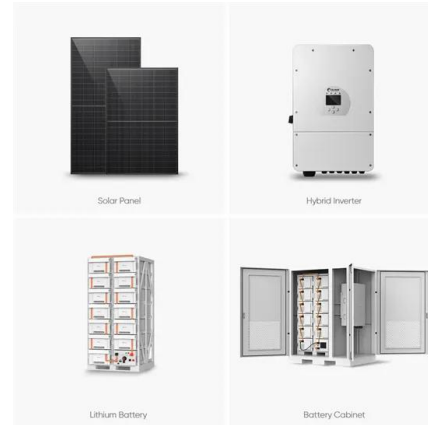
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Two-Stage Optimization Model of Centralized Energy ...

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Flexible peak shaving in coal-fired power plants: A ...

Grid stability amidst the global energy transition and the pursuit of carbon neutrality is critically dependent on enhancing the flexible peak-shaving capability of Coal-Fired Power ...

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What does energy storage peak-shaving power station mean?

Minimizes the need for additional power generation assets. A significant aspect of peak shaving involves the ability of these stations to absorb excess energy generated during ...

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Two Stage Stochastic Optimization Scheduling of Power System

In response to this challenge, this paper introduces an optimal scheduling methodology grounded in a two-stage stochastic model tailored for power systems, which ...

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Enhancing peak-shaving capacity of coal-fired power plant by ...

Download Citation , On May 1, 2025, Shutao Xie and others published Enhancing peak-shaving capacity of coal-fired power plant by coupling molten salt energy storage and steam ...

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Study on Peak Shaving Strategy of Pumped Storage Power Station ...

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[Two-Stage Optimization Strategy for Managing ...](#)

To solve this problem, a two-stage power optimization allocation strategy is proposed, in which electro-chemical energy storage participates in peak regulation and frequency regulation.

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Design and performance analysis of deep peak shaving scheme ...

Design and performance analysis of deep peak shaving scheme for thermal power units based on high-temperature molten salt heat storage system

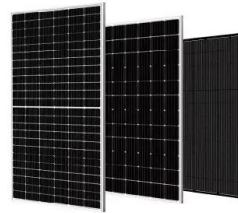
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Two-Stage Optimization Model of Centralized Energy Storage

Abstract As the proportion of renewable energy increases in power systems, the need for peak shaving is increasing. The optimal operation of the battery energy storage ...

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Optimal allocation of battery energy storage systems for peak shaving

Charging a BESS during off-peak periods and discharging it during peak periods can decrease the peak demand on the power grid. This peak-shaving process can help to ...

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Peak shaving strategy optimization based on load forecasting: ...

The rapid growth of renewable energy and electricity consumption in the tertiary industry and residential sectors poses significant challenges for deep peak regulation of ...

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Two-Stage Optimization Strategy for Managing

To solve this problem, a two-stage power optimization allocation strategy is proposed, in which electrochemical energy storage participates in peak regulation and ...

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