Steam energy storage peak load regulation

How can peak load regulation flexibility be transformed?
The demonstration project for the transformation of peak load regulation flexibility through extracting steam and molten salt heat storageat the Hebei Longshan Power Plant of CHN Energy Investment Group (CHN Energy) started construction recently.

Why do power generation units need peak load regulation?
This allows the units to meet the needs of grid load regulation and make room for new energy power generation. When the power grid is at peak load, the heat stored in the heat storage system during the load regulation can be released to increase the peak load capacity of the power generation units.

What is a single steam source heating storage strategy?
In the single steam source heating storage strategy, a portion of the live steam enters the preheater and heat exchanger, facilitating sensible heat exchange with cold molten salt. This process converts the cold molten salt into hot molten salt, which exhibits improved liquidity following heat exchange.

How long will the peak load regulation capacity increase?
Upon completion,the plant's unit peak load regulation capacity will increase by 100 MW,for up to four hours; the peak load capacity will be increased by 47 MW,and the heat release time will be no less than six hours.

What is the maximum thermal load under minimum steam admission?
Under conditions of minimum steam admission,the maximum thermal load reduces to 102.92 MW,with the corresponding generation load at 153.53 MW.

What is a multi-steam source energy storage mode?
The multi-steam source energy storage mode is proposed based on the heat transfer characteristics of molten salt. Compared to the single steam source storage mode,the multi-steam source configuration demonstrates higher heat storage and thermal efficiency while maintaining the same peak shaving capacity during the storage phase.

In this paper, the heat transport and load response characteristics of the molten salt STP plant in the regulation process are studied, aiming at serving the development of the ...

The coal-fired power plant (CFPP) coupled with the molten salt thermal energy storage system is a potential way to improve its flexibility and peak-shaving ability. The steam ...

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???: ????, ??, ????, ?????, ????, ??? Abstract: The integration of thermal power plants with heat storage technology can enhance the decoupling capability of ...

Electric heat storage technology has broad prospects in terms of in-depth peak shaving of power grids, improving new energy utilization rates and improving the environment.

With the increasing pressure of the strengthening the peak load regulating capability for the cogeneration units in North China, very few attention has been pai

Abstract With the development of renewable energy and the increase of peak-valley load difference, amounts of power grids in Chinese urban regions present great ...

With the increasing penetration of renewable energy in China, the primary frequency regulation (PFR) performance of coal-fired units plays more critical role in sustaining ...

The results indicate that under heat storage mode, similar peak shaving depths are achieved with both single-steam source and multi-steam source heating strategies.

This paper takes an industrial extraction heating unit as the research object, introduces a heat storage device into the steam bypass and proposes two schemes for ...

In summary, most of the literature focuses on the control strategy of a single-objective configuration of energy storage in terms of economic cost or life cycle and the control ...

The results indicate that, to achieve efficient load regulation from 0% to 100% for a 1000 MWe S-CO 2 CFPP, the priority configuration for thermal energy storage is CO 2 TES, ...

Regulating the thermal system configuration can improve the ramp-up rate of the coal-fired power plants during peak shaving transient processes, while it may bring penalties in ...

The optimal configuration of the rated capacity, rated power and daily output power is an important prerequisite for energy storage systems to participate in peak regulation ...

With the rapid development of China"s social economy, the peak-valley difference in electricity load, and the randomness of electricity demand increases. To introduce ...

technology is needed to further improve the load variation rate and to increase the peak regulation benefits. In this paper, the molten salt is utilized to constructed the "Carnot battery" based on ...

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