Yan power unit steam extraction energy storage

Can steam energy be stored in molten salt and water?
Similarly,data from power plants in Germany and Austria [14,15]show that transferring steam energy to molten salt and water can achieve storage capacities of up to 1000 MWH,much higher than the working capacity and operating time of steam energy storage.

Can steam ejector improve waste heat recovery rate?
Zhang et al. studied a thermoelectric system with a 2 × 350 MW thermal power unit coupled with a steam ejector and used the main steam induced discharge steam to provide the heat source to improve the waste heat recovery rate by 8.66 %.

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 does a single steam source heat storage-release system work?
Figure 2 presents a schematic diagram of the single steam source heat storage-release system. 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.

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.

What is the maximum cycle efficiency of a retrofitted steam system?
The retrofitted system has a maximum cycle efficiency of 70-80 %with low and peak modulation rates of 16.5 % and 11.7 %. Extraction of main steam dominates the peaking rate and cycling efficiency compared to extraction of reheat steam.

The average power ramp rate, power capacity and energy capacity increase with the increment in the number of throttled valves and/or the degree of feedwater bypass. This ...

Solid particles instead of molten salt as a heat storage medium for extracted steam energy storage are essential in thermal power flexibility retrofit. This study constructs a ...

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A new thermal power unit peaking system coupled with thermal energy storage and steam ejector was proposed, which is proved to be technically and economically feasible ...

The results show that the proposed steam extraction method can make the unit operate in the lowest stable load and provide a wider renewable energy access space below ...

To accommodate high penetration of intermittent renewable power, including wind power and photovoltaic power, coal-fired power plants (CFPPs) are forced to enhance ...

Thermal power plants are required to enhance operational flexibility to ensure the power grid stability with the increasing share of intermittent renewable power. Integrating thermal energy ...

The innovation of this research is to use the main steam extraction system to reduce the power output of the CFPP under the minimum stable load, and the heat of the ...

Integrating of steam extraction with heat supply plays a crucial role in enhancing energy system"s stability and economic efficiency. This study focuses on the heat supply ...

Based on the energy storage characteristics of the coal-fired power unit, a load regulation method based on the multi-scale energy storage utilization is proposed. The method ...

It is the country"s first large-scale energy storage project using multi-source steam extraction and steam distribution control technology. The aim is to improve the power ...

For a combined heat and power (CHP) plant, molten salt thermal energy storage (TES) can be added to improve the flexibility to meet the needs of peak shaving. This paper ...

This study simulated the load ramping up transient processes when throttling the extraction steam of high-pressure heaters. The results show that there is a gap between the ...

The concept integrates the TES system with the 350 MW CFPP by extracting the main steam and the reheat steam to exchange heat with the molten salt to enhance the ...

Compressed carbon dioxide energy storage (CCES) systems are beneficial for power grids as they absorb energy from intermittent renewable energy sources. This study ...

Semantic Scholar extracted view of "Design and performance evaluation of a new thermal energy storage system integrated within a coal-fired power plant" by Kezhen Zhang et al.

By storing energy and shifting its release time, the peak-valley profile of power generation can be adjusted,

thereby enhancing the peak-shaving capability of thermal power ...

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