Power plant peak load steam storage

Compared with solar power tower plants (SPT) with steam as working fluid, molten salt power tower plants with thermal energy storage have better decoupling ability and higher ...

Traditional coal-fired power plants (CFPPs) face significant challenges in rapidly responding to load fluctuations with the increasing integration of renewable energy into the grid, making flexibility ...

However, the load ramp rate of CFPPs under deep peak shaving is rarely discussed, despite its significance to the overall flexibility performance of CFPPs. This paper proposes a steam ...

Abstract We formulate the concept of a multi-functional energy system, called storage plant, as a possible solution to cover the variable residual load that appears in most countries after introducing ...

Deploying molten salt heat storage (MSHS) in the CFPP can effectively enhance its peak shaving capability and reduce the limitations of carbon capture on wide range operation of the ...

The incorporation of molten-salt energy storage enables the decoupling of the boiler from the turbine, thus enabling the regulation of the output power during low-load operation. And the ...

Meanwhile, load fluctuations are smoothed by the boiler system through thermal storage in metal pipes and the steam-water working medium, whereas on the turbine side, energy storage is ...

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 ...

We formulate the concept of a multi-functional energy system, called storage plant, as a possible solution to cover the variable residual load that appears in most countries after introducing ...

The rapid growth of renewable energy applications demands enhanced flexibility in conventional coal-fired power plants. To address this challenge, A novel hybrid thermal energy ...

Controlling the superheated steam temperature (SST) is essential for the safe and efficient operation of combined cycle power plants, but it has become challenging due to frequent load ...

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 accumulator | Find ...

In the FLEXI- TES joint project, the flexibilization of coal-fired steam power plants by integrating thermal

energy storage (TES) into the power plant process is being investigated.

The increasing penetration of renewable energy requires greater operational flexibility of thermal power plants, as dispatchable power sources are essential to balance the power supply and ...

However, the primary methods for the absorption of surplus steam in the current deep peak-shaving technologies predominantly involve external equipment storage or outward heat supply, ...

To facilitate the integration of greater amounts of renewable energy into the power grid, it is crucial to enhance the peak shaving capabilities of conventional thermal power units. This paper ...

The increasing integration of renewable energy necessitates coal-fired power plants to operate flexibly at low loads for grid stability. However, conventional coal-fired power plants face ...

While continuously ensuring industrial steam supply, it can increase the deep peak shaving capacity to below 30% of the rated load. The highest load of the power generation unit under ...

However, the load ramp rate of CFPPs under deep peak shaving is rarely discussed, despite its significance to the overall flexibility performance of CFPPs. This paper proposes a steam accumulator ...

Till now, tuning the load response rate [4] and adjusting the load range of the unit [5] are the two prevailing ways to achieve operating flexibility in coal-fired power plants. The former ...

The combination of nuclear power generation and the CES technologies provides an efficient way to use thermal energy of nuclear power plants in the power extraction process, ...

Abstract The flexibility transformation of coal-fired power plants (CFPP) is of significant importance for the new power system primarily based on new energy sources. Coupling thermal ...

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