

# Design of temperature control system for energy storage power station

What is a coordinated control strategy for thermal power plants?

A novel coordinated control strategy, informed by the characteristics of distributed energy storage and power ramping stages of thermal power plants, is proposed.

Can energy storage be orderly utilized in a thermal power plant?

If all energy stored in the boiler and regenerative systems of thermal power plant can be orderly utilized, the operational flexibility of thermal power plant will be significantly enhanced. The issue, how to achieve orderly utilization of the energy storage within a total power plant, remains unanswered. The novelty of this study are as follows.

Can thermal power plants maintain power grid stability?

Control performance of steam temperature and pressure is significantly improved. Operational flexibility in thermal power plants has assumed a growing significance in maintaining power grid stability primarily driven by the increased penetration of intermittent renewable energy sources.

What is the control strategy based on orderly utilization of energy storage?

In summary, the control strategy based on the orderly utilization of energy storage inside the total power plant realizes the trade-off between high-efficiency and flexibility while improving the control performance of regulated parameters.

Which control strategy considers systematic utilization of energy storage within a power plant?

To evaluate the performance of the control strategy that considers the systematic utilization of energy storage within a power plant (Revised control IV), an ultra-supercritical double-reheat power plant is selected as a reference case.

Can thermal energy storage reduce the minimum load of power plants?

Richter et al. pointed out that the thermal energy storage can decrease the minimum load of power plants and increase the flexibility. Sun et al. decreased the minimum load to 3.7-8.3 % of the nominal load by integrating thermal energy storage tanks within thermal power plants.

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