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Wind power and energy storage complementary scheduling

Overview

In order to solve the problem of insufficient peak-regulating capacity of the power system after the grid connection of wind power, photovoltaic and other large-scale renewable energy sources, a complementary, coordinated and optimized dispatching strategy for multi-energy storage systems of wind, water and fire is proposed.How does collaborative scheduling improve wind power integration?

It substantially improves the system's wind power integration rate, leading to a reduction in the curtailment rate by 2.37 %. In intra-day optimization, the proposed collaborative scheduling model that integrates high-energy loads and energy storage effectively mitigates the fluctuation of wind power prediction errors in the day-ahead phase.

Is a multi-time scale sustainable scheduling strategy for wind power consumption effective?

An effective multi-time scale sustainable scheduling strategy for wind power consumption is proposed, considering the combined utilization of high-energy load and energy storage. This work makes significant contributions in the following aspects:.

What is the optimal scheduling model for a hydro–wind–solar multi-energy complementary system?

Zhang et al. developed a short-term optimal scheduling model for a hydro–wind–solar multi-energy complementary system, aiming to minimize the curtailment of wind and solar power while maximizing the total generation capacity of cascade hydropower stations.

What is a hydro–wind–solar complementary system?

The hydro–wind–solar complementary system typically treats hydropower, wind power, and solar power as an integrated system.

Can high-energy loads and energy storage be integrated in a scheduling

model?

This optimization process significantly elevates the system's wind power consumption capabilities, demonstrating the effectiveness of integrating high-energy loads and energy storage in the scheduling model. Enhancing the robustness of the proposed model by introducing a comprehensive analysis of the economic aspects.

Do energy storage units improve wind power consumption?

Through case analysis, it was demonstrated that this strategy improved the system's wind power consumption capacity and significantly enhanced the utilization rate of high-energy loads. In addition, energy storage units, as an important controllable flexibility resource in power systems, are an effective means to promote wind power consumption.

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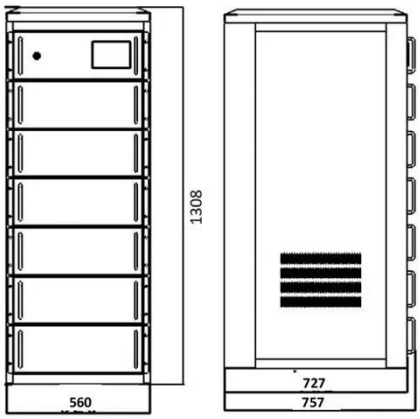

Multi energy complementary optimization scheduling method for wind

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Layered Optimization Scheduling for Wind, Solar, Hydro, and Energy

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