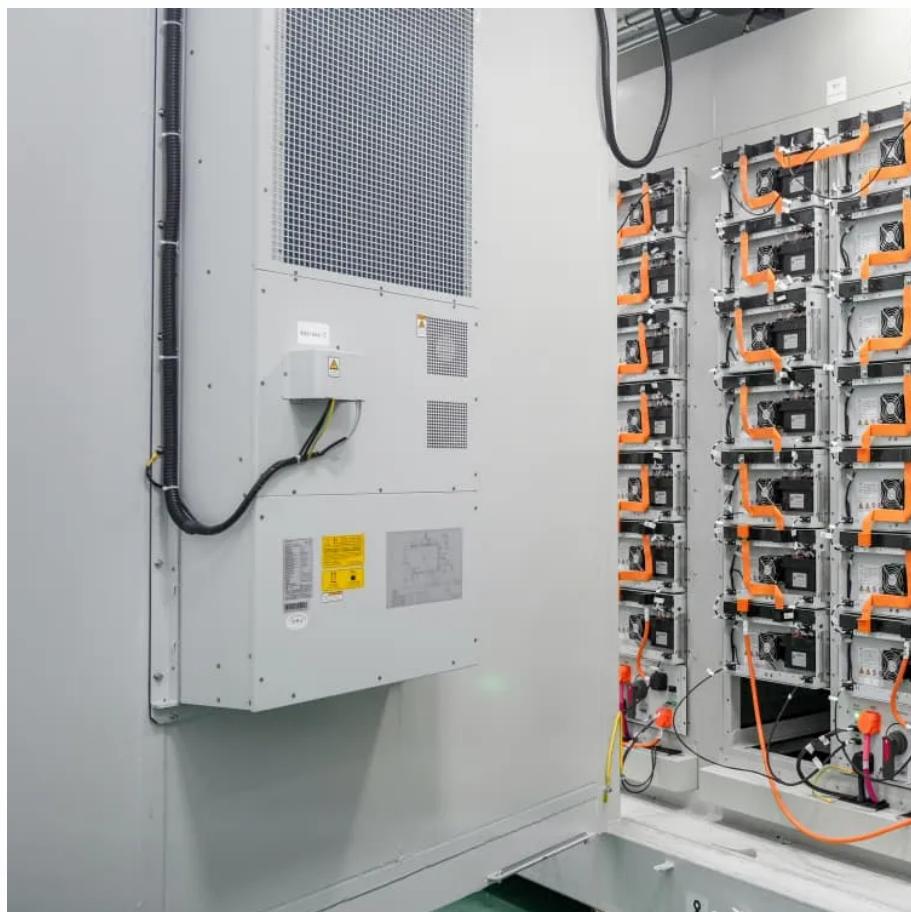




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Wind farm secondary system





Overview

How does secondary frequency regulation affect a wind farm?

Fig. 14. Active power of each VSG under secondary frequency regulation. When $t = 4$ s, the frequency of the power grid suddenly drops from 50.00 to 49.94 Hz, exceeds the frequency dead zone of the power grid, and the primary frequency regulation of the wind farm is triggered.

Should wind farms be included in power grid frequency regulation?

To reduce the impact of wind power access on the system frequency stability and ensure the safe and reliable operation of the power grid, the participation of wind farms in power grid frequency regulation is an inevitable choice and requirement for renewable energy power generation systems (Liu et al., 2022, Wang et al., 2023a, Xi et al., 2018).

What are the different types of wind farm frequency regulation methods?

Wind farm frequency regulation control methods are mainly divided into five technologies: rotor virtual inertia control, load shedding control, frequency droop control, virtual synchronous generator, and energy storage control, as shown in Table 1. Table 1. Comparison of frequency regulation technologies of wind power.

Why do wind farms have a different frequency regulation capacity?

Considering the spatiotemporal differences of wind farms and the different impedance parameters of each VSG, line, and power grid, the frequency regulation capacity of units varies greatly under different wind speeds, which makes it more difficult to distribute the power of the stations.



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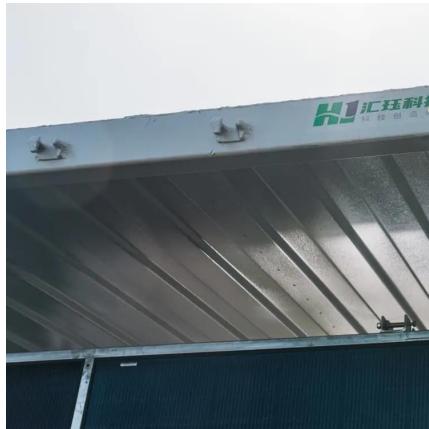
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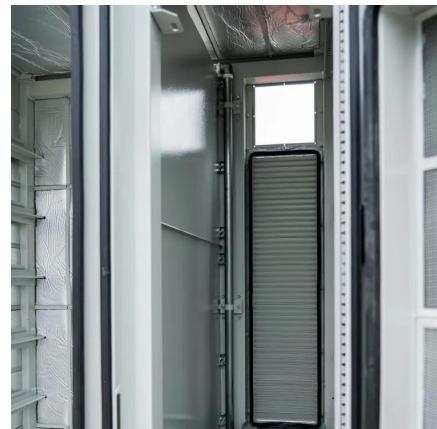
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