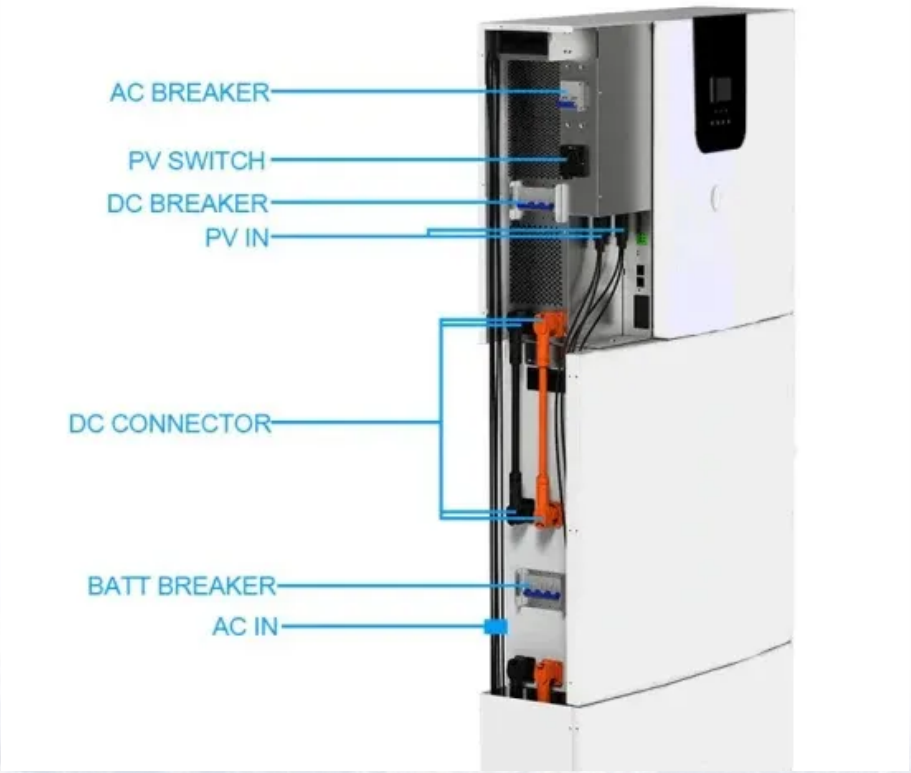
ContainerPower Energy Solutions

China Southern Power Grid Peak and Frequency Regulation Energy Storage



Overview

Since September 2021, in the face of power supply shortages, the China Southern Power Grid's peak-shaving and frequency-regulation power stations have been used as a heavy device for stabilizing the large power grid, giving full play to the role of peak-shaving and valley-filling.What is peak-regulation market mechanism in Northeast China Grid?

For market mechanisms, the deep peak-regulation market has been constructed in Northeast China Grid to cope with the peak-regulation capacity shortage issue (Ma et al., 2019). The peak-shaving auxiliary service market mechanism was established considering both the source-side and demand-side resources (Yang et al., 2021).

How many coal-fired power plants are needed in East China Grid (ECG)?

For example, for most coal-fired power plants in East China Grid (ECG), at least one unit is required to be kept on considering the demand of station service and the lack of auxiliary boiler. In our proposed evaluation method, we will take such constraints into account.

Why is peak-regulation important in power grids?

Peak-regulation in power grids needs to follow the fluctuation of renewable energy generation in addition to the variable load demands. Moreover, the wind power curve usually shows opposite increasing trend to the load curve, which requires more peak-regulation supply to guarantee the secure operation of power grids.

Can nuclear power units participate in load following of power grids?

In some countries, such as France and America, nuclear power units have been allowed to participate in load following of power grids. Considering operation security, nuclear power units in China operate at rated capacity smoothly in most circumstances and scarcely provide peak-regulation service to power grids.

Can a system operator justify the adequacy of peak-regulation capability?

The system operator can easily justify the adequacy of peak-regulation capability for the given peak load and valley load. By comparison, the optimization model-based evaluation methods can derive the evaluation results when the feasible dispatch strategy exists, but cannot provide inadequacy criteria when the problem is infeasible.

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