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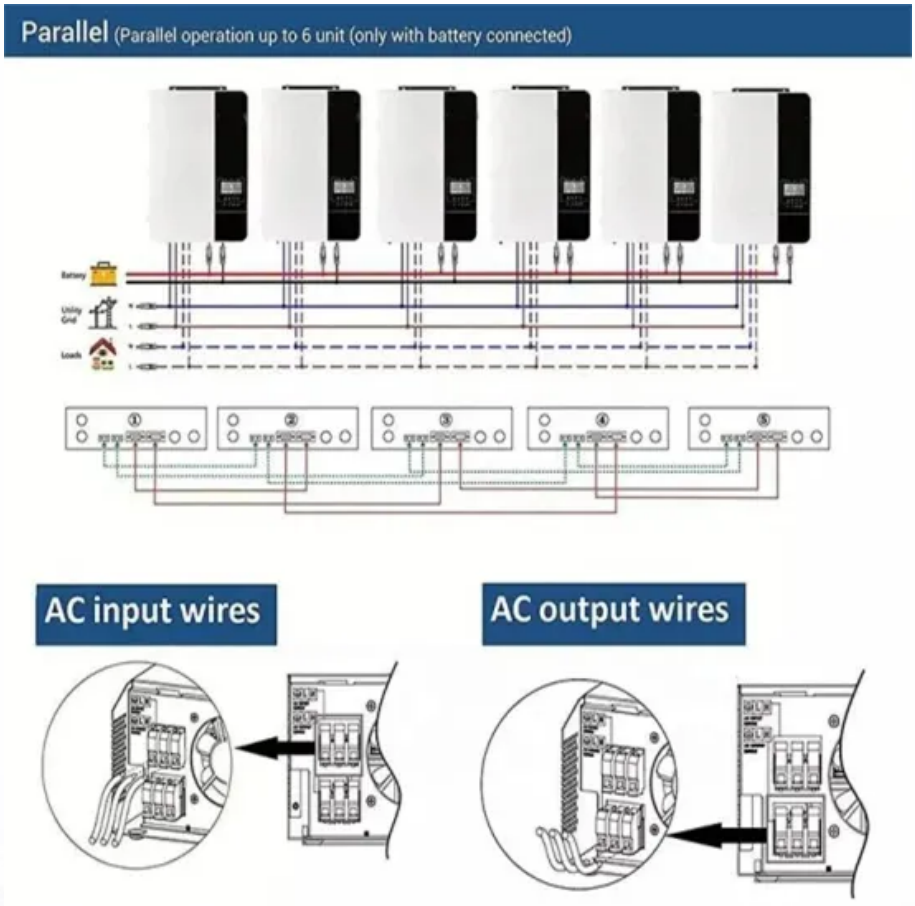
New energy storage configuration



Overview

In view of the increasing trend of the proportion of new energy power generation, combined with the basic matching of the total potential supply and demand in the power market, this paper puts forward the bidding mode and the correspon. In view of the increasing trend of the proportion of new energy power generation, combined with the basic matching of the total potential supply and demand in the power market, this paper puts forward the bidding mode and the corresponding fluctuation suppression mechanism, and analyzes the feasibility of reducing the output fluctuation and improving the stability level of the system by installing energy storage systems. At the same time, through qualitative social utility analysis and quantitative energy storage capacity demand measurement, this strategy fully takes into consideration multiple key factors affecting the amount of energy storage configuration and gives a quantitative calculation formula, which provides new energy suppliers with an optimal cost-effective algorithm to calculate the best e.

Power marketNew energy unitsEnergy storage configurationFluctuation suppression mechanism.

With the rapid development of new energy, whether wind power and photovoltaic power should participate in the market competition becomes one of hot topics for many scholars. From the perspective of market fairness, the participation of new energy in the competition can effectively restore its market attributes and reflect the real power generation costs, which have effective means to cultivate the further development of new energy [1], [2]. On the other hand, the characteristics of fluctuating, randomness and intermittent of new energy power generation lead to its low utilization rate, and it is easy to cause problems such as the decrease of the system rotational inertia, and the difficulty of stable control of the grid frequency, voltage and power angle [3], [4]. With a large number of new energy units connected t.

2.1. Role of new energy units in bidding marketAt present, in order to encourage the fully consumption of new energy, most markets have not required new energy units to participate in market bidding. Affected by the ‘carbon peak carbon neutralization’ policy, new energy generation will see significant growth, both in terms of the total installed capacity and the relative installed proportion have improved significantly. If new energy units are still excluded from the market, it will be difficult to correctly reflect the real supply and demand of the market and to restore the real cost of generation. In

addition, considering the rapid decline in the cost of new energy power generation and the gradual withdrawal of the government subsidy, the new energy selli.

The market supply and demand curves for new energy units entering the market are shown in Fig. 1. In the picture, B1, B2, and B3 are the supply curves when the fluctuation suppression mechanism is not considered, the fluctuation suppression mechanism is considered, and the energy storage facilities are considered, respectively. When a new energy unit is penalized for exceeding the output limit, it is equivalent to increasing its cost, so the curve moves from B1 to B2. When new energy units are equipped with energy storage facilities, the cost of energy storage is hedged against the total amount of penalty, and the output power range increases, so the curve moves from B1 to B3.In addition, D1, D2, and D3 are the dema.

Can energy storage configuration schemes be tailored for new energy power plants?

This paper proposes tailored energy storage configuration schemes for new energy power plants based on these three commercial modes.

Why is energy storage configuration important?

In the context of increasing renewable energy penetration, energy storage configuration plays a critical role in mitigating output volatility, enhancing absorption rates, and ensuring the stable operation of power systems.

What is the optimal energy storage configuration?

Research on optimal energy storage configuration has mainly focused on users , power grids [17, 18], and multienergy microgrids [19, 20]. For new energy systems, the key goals are reliability, flexibility , and minimizing operational costs , with limited exploration of shared energy storage.

What are the different types of energy storage configurations?

New energy power plants can implement energy storage configurations through commercial modes such as self-built, leased, and shared. In these three modes, the entities involved can be classified into two categories: the actual owner of the energy storage and the user of the energy storage.

New energy storage configuration

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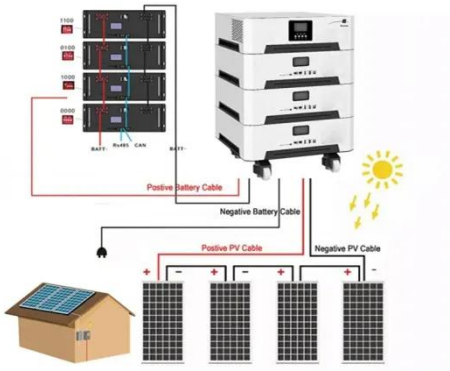

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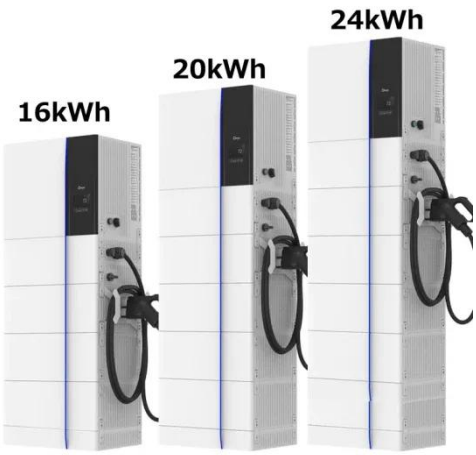

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