

Is Residential Energy Storage a hot Trend?

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In response to a reduced reliance on fossil fuels in recent years, the need for renewable energy has grown rapidly. Energy storage is regarded as an important technology to support new power systems. It has attracted a great deal of attention, especially the rapid growth of residential energy storage. These household systems bring great potential value to customers and the power grid.

Energy storage can capture energy at one time for use at a later time, when and where it is most needed. There are several methods to store energy, such as mechanical, thermal, electrical, chemical, and electrochemical. In this chapter, home electrochemical storage energy will be discussed in detail. A home energy storage system that is more commonly equipped with a battery can power the home and grid by battery discharge. The typical components of an energy storage system are solar modules, controllers, inverters, energy storage batteries, loads, etc.

The global residential energy storage market is grabbing more and more shares. Why do people choose residential energy storage? A variety of factors may be involved as follows.

1. With increased energy prices, most people hope to reduce energy use from the grid and become less reliant on electricity. Battery storage gives a home greater control over energy usage and bills and enables higher self-consumption rates. Firstly, PV supplies power to the household loads and then charges the battery with excess power. Finally, the remaining power is delivered to the grid. When there is no PV, the battery discharges to supply the load. This method maximizes the cost efficiency of energy storage systems and helps users save on bills.
2. Financial savings is regarded as a reason for wanting a battery. Due to the large price difference between peak and valley electricity, homeowners often need to reduce power consumption during peak demand periods. When low prices occur in the energy market, homeowners will buy electricity directly from grid. In turn, the battery discharges in order to save money.
3. Grids in many regions are under increasing strain. For example, Grid assets are aging. The incidence of severe weather is rising. These trends can lead to higher costs and threaten to increase local power outages. Equipped with a home energy storage system, the battery retains a certain amount of power. Once the electricity is cut off, the battery discharges to power the loads. It greatly mitigates power supply risks, especially in remote areas underserved by grid infrastructure.
4. Peak-shaving refers to leveling out peaks in electricity use and is usually applied in C&I . But in fact, it can also be done at the level of a residential customer in order to reduce energy costs. In certain countries, the demand for residential electricity peak shaving has already come. When the power consumption is higher than the limit value, it will be sharpened by battery discharge to eliminate short-term demand spikes and reduce electricity bills.

In recent years, in order to meet address climate change and sustainable development goals, the transition from fossil fuel to renewable energy production has been urgently needed in the international community. Since residential energy storage help make power grids more cost-effective, reliable, resilient, and safe, more and more

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people tend to have their own storage systems or consider adding a battery later. The home battery storage system will be a trend and make sense over time. It will also push human life and the natural world toward an environmentally friendly future.

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