

# THE ENERGY STORAGE INDUSTRY IS IN URGENT NEED OF TECHNOLOGICAL BREAKTHROUGHS



How do energy storage technologies affect the development of energy systems? They also intend to effect the potential advancements in storage of energy by advancing energy sources. Renewable energy integration and decarbonization of world energy systems are made possible by the use of energy storage technologies.



Why is energy storage technology needed in China? In China, RES are experiencing rapid development. However, because of the randomness of RES and the volatility of power output, energy storage technology is needed to chip peak off and fill valley up, promoting RES utilization and economic performance.



What role does energy storage play in the future? As carbon neutrality and cleaner energy transitions advance globally, more of the future's electricity will come from renewable energy sources. The higher the proportion of renewable energy sources, the more prominent the role of energy storage. A 100% PV power supply system is analysed as an example.



Is energy storage a precondition for large-scale integration and consumption? So to speak, energy storage is the precondition of large-scale integration and consumption of RES. However, China's energy storage industry is at the exploration stage and far from commercialization. This restricts the development of RES to certain extent. For this reason, this paper will concentrate on China's energy storage industry.



What are the challenges in the application of energy storage technology? There are still many challenges in the application of energy storage technology, which have been mentioned above. In this part, the challenges are classified into four main points. First, battery energy storage system as a complete electrical equipment product is not mature

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and not standardised yet.

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Which energy storage technologies can be used in a distributed network? Battery, flywheel energy storage, super capacitor, and superconducting magnetic energy storage are technically feasible for use in distribution networks. With an energy density of 620 kWh/m<sup>3</sup>, Li-ion batteries appear to be highly capable technologies for enhanced energy storage implementation in the built environment.



The 14th Five-year Plan is an important new window for the development of the energy storage industry, in which energy storage will become a key supporting technology for renewable energy and China's goals of peak a?|



In 2020, under the direction of the National Development and Reform Commission to promote energy storage and lay a solid foundation for industrial development, the Ministry of Education, the National Development a?|



Pumped storage is still the main body of energy storage, but the proportion of about 90% from 2020 to 59.4% by the end of 2023; the cumulative installed capacity of new type of energy storage, which refers to other types of a?|



1. Introduction. In order to mitigate the current global energy demand and environmental challenges associated with the use of fossil fuels, there is a need for better energy alternatives and robust energy storage systems that will a?|

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A new report compiled by energy storage industry experts utilising extensive research discusses the current state of safety in battery energy storage systems (BESS), offering actionable insights to mitigate risks.



High deployment, low usage. To promote battery storage, China has implemented a number of policies, most notably the gradual rollout since 2017 of the "mandatory allocation of energy storage" policy (, a?)



Within the industry, we often say that we have been able to catch up to 90% or even 95% of the technological capabilities of the pioneers in each of the technological subfield a?)



Through analysis of two case studiesa??a pure photovoltaic (PV) power island interconnected via a high-voltage direct current (HVDC) system, and a 100% renewable energy autonomous power supplya??the paper elucidates a?)