Types of energy storage people s republic of china

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On 15 July, national plans for energy storage were set out by the Chinese National Development and Reform Commission and National Energy Administration. The main goals of new energy storage development include: Large-scale development by 2025; Full market development by 2030. The guidance covers four aspects:

Since the beginning of the 14th Five-Year Plan period (2021-2025), newly installed new-type energy storage capacity in China has directly promoted investment of more than 100 billion yuan ($13.8 billion), driving synergetic development of upstream and downstream industrial chains, according to China"s National Energy Administration (NEA).

Based on a brief analysis of the global and Chinese energy storage markets in terms of size and future development, the publication delves into the relevant business models and cases of new energy storage technologies (including electrochemical) for generators, grids and consumers.

BESS types include those that use lead-acid batteries, lithium-ion batteries, flow batteries, high-temperature batteries and zinc batteries. China is committed to steadily developing a renewable-energy-based power system to reinforce the integration of demand- and supply-side management.

Mechanical energy storage technologies such as megawatt-scale flywheel energy storage will gradually become mature, breakthroughs will be made in long-duration energy storage technologies such as hydrogen storage and thermal (cold) storage. By 2030, new energy storage technologies will develop in a market-oriented way.

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As of the end of the first quarter of this year, new-type energy storage projects with a capacity of 100,000 kilowatts or more each accounted for 54.8 percent of the country"s total installed capacity.

New-type energy storage refers to energy storage technologies other than conventional pumped hydro energy storage, including electrochemical energy storage, compressed air energy storage, gravity energy storage, and so on.

New-type energy storage facilities can be seen as giant "power banks" that charge when new-energy sources generate a large volume of electricity or when the power consumption is low, and discharge at other times.

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Featuring flexible site selection, short construction periods, and rapid response, these "power banks" help promote the development and utilization of new energy resources and the safe and stable operation of electric power systems.

The 300-megawatt (MW) compressed air energy storage station in Yingcheng, central China"s Hubei Province, started operations on April 9, 2024, turning a salt cavern located 500 meters underground into a giant "power bank" that can store electricity equivalent to the amount consumed by residents in a small and medium-sized city for five hours in an energy storage cycle.

The Fulin sodium-ion battery energy storage station commenced operations in south China"s Guangxi Zhuang Autonomous Region on May 11, 2024, marking the widespread adoption of sodium-ion battery energy storage technology for the first time in the country. Currently, the energy conversion efficiency of the sodium-ion battery energy storage system at this station exceeds 92 percent.

Sodium is more abundant and less expensive than lithium, and sodium-ion batteries perform well in improving versatility, functioning smoothly in temperatures ranging from -40 to 80 degrees Celsius, said Tang Bin, a technical expert from the Electric Power Research Institute of Guangxi Power Grid Co., Ltd., a subsidiary of China Southern Power Grid Co., Ltd.