

# CHINA FENGYUAN ENERGY STORAGE PLANT OPERATION



Where is China's largest pumped storage power station located? Located in Fengning County, Chengde of North China's Hebei Province, the pumped storage power station is installed with twelve 300,000-kilowatt generator units, giving it an installed capacity of 3.6 million kW, the world's largest.



How much electricity will Fengning pumped storage power plant generate? The Fengning pumped storage power plant will be capable of generating 3.424TWh of electricity annually. The electricity generated by the 3.6GW pumped-storage hydropower facility will be evacuated into the Beijing-Tianjin-North Hebei grid through two 500kV transmission lines.



How many pumped-storage hydroelectricity stations are there in Xinyuan? As of the end of May last year, State Grid Xinyuan had 23 pumped-storage hydroelectricity stations in operation, with an installed capacity of 24.67 million kW, accounting for 61 percent of the nation's total.



How many pumped-storage power stations are there in China? It had another 31 pumped-storage power stations under construction, totaling 42.13 million kW in capacity and accounting for 77 percent of the nation's total. China's development of new types of power storage is also on a fast track.



Where is Fengning pumped storage hydroelectric facility located? Image courtesy of ANDRITZ. The Fengning pumped storage hydroelectric facility will be connected with the Beijing-Tianjin-North Hebei grid. The Fengning pumped storage hydropower project is located in the Hebei Province of China. Image courtesy of sasac.gov.cn.

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Why is China's energy storage capacity expanding? BEIJING, July 31 -- China's energy storage capacity is expanding to facilitate the utilization of growing renewable power amid the country's efforts to advance its green energy transition.



The project adopts a combined compressed air and lithium-ion battery energy storage system, with a total installed capacity of 50 MW/200 MWh and a discharge duration of 4 hours. The compressed air energy storage system has an installed capacity of 10 MW/110 MWh, and the lithium battery energy storage system has an installed capacity of 40 MW/90



China's industries for NEVs and energy storage systems are growing rapidly, thereby keeping demand high for cathode materials used in Li-ion batteries. TrendForce's research finds that the demand for cathode materials used in NEV power batteries is projected to surpass 2.15 million tons by 2025.



With the acceleration of supply-side renewable energy penetration rate and the increasingly diversified and complex demand-side loads, how to maintain the stable, reliable, and efficient operation of the power system has become a challenging issue requiring investigation. One of the feasible solutions is deploying the energy storage system (ESS) to integrate with a?



Hydrogen production and storage with renewable energy, cooling in thermal power plants, auxiliary gas for semiconductor and electronics industries, gas for scientific research experiments, etc. Safe operation 1/4 ? The system can monitor its safety, performance and can run automatically. It also allows remote monitoring and fault diagnosis.

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China are available from several different sources, the database "Pumped Storage Tracking Tool" of the IHA a?? International Hydropower Association [5], the "DOE OE Global Energy Storage Database" a?? GESDB [6], and the information available within official documents from the Chinese Government. These different sources present



Located in China's Hebei province, the 3.6GW facility consists of 12 reversible pump generating sets with a capacity of 300MW each and has a power generation capacity from storage of 6.612 billion



A 10-MWh sodium-ion battery storage station was put into operation on May 11 in Nanning, Guangxi in southwestern China, said China Southern Power Grid Energy Storage, the energy storage arm of Chinese grid operator China Southern Power Grid. The energy storage station, built by China Southern Power Grid's Guangxi branch, is the first phase of

## Commercial and Industrial ESS

- Air Cooling / Liquid Cooling
- Plug-and-play Solution
- Renewable Energy Integration
- Modular Design for Flexible Expansion



According to the energy project construction plan of the new power system of a province during the 14th Five-Year Plan, the proposed PSP have a capacity of 11.8 million kW, and the investment cost per unit of power for PSP is set at 5500 yuan/kW, with a discount rate of 8% and an operation and maintenance rate of 2.5% [20], the electrical

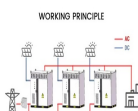


With a total investment of 6.97 billion yuan (\$1.03 billion), the Jiaohe pumped storage power plant, the first of the province's eight planned pumped storage plants during the 14th Five-Year Plan (2021-25) period, is expected to be put into operation in 2029.

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China Power International Development Ltd (China Power), a subsidiary of China Power International Holding Ltd, is an integrated energy company. The company generates and sells electricity and supplies heat energy. It invests in, develops, constructs, owns, operates and manages coal-fired, natural gas, hydro, wind and photovoltaic power plants.



Multi-energy hybrid energy systems are a promising option to mitigate fluctuations in the renewable energy supply and are crucial in achieving carbon neutrality. Solar-fuel thermochemical hybrid utilization upgrades solar energy to fuel chemical energy, thereby achieving the efficient utilization of solar energy, reducing CO<sub>2</sub> emission, and improving a?]



A Glimpse of Jinjiang 100 MWh Energy Storage Power Station . With the successful operation of the Jinjiang 100 MWh Energy Storage Power Station, SGCC-CATL (Fujian) Energy Storage Development Co., Ltd. (SG-CATL) and China Huadian Corporation Ltd. (CHD) also kicked off a 300 MW/600 MWh energy storage project on July 10, realizing a leap from 100 MWh to 600 a?]



On June 7th, Dinglun Energy Technology (Shanxi) Co., Ltd. officially commenced the construction of a 30 MW flywheel energy storage project located in Tunliu District, Changzhi City, Shanxi Province. This project represents China's first grid-level flywheel energy storage frequency regulation power s



GE Hydro Solutions was selected by Anhui Jinzhai Pumped Storage Power Co, part of state-owned State Grid Xinyuan, in 2017 to supply the four turbines, generator-motors and balance of plant (BOP) equipment for the plant in the county of Jinzhai. China is aiming to have more than 200 pumped hydro energy storage plants with a combined capacity of

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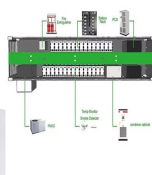
Dr. Yuan is a Full Professor at Southeast University, Nanjing, China. His academic background covers thermochemical valorization of biomass and organic waste, greenhouse gas adsorption and



Location : Ordos, Inner Mongolia Autonomous Region, China Capacity : Phase One: 2GW, Phase Two: 2GW Construction Started : June 2019 Commissioning : Unit-1:2021, Unit-2: 2022 Estimated Investment (Phase One) : GBP775m (\$1.04bn) Developer/Operator : Guodian Power Shanghai miao Owner : China Energy Investment Corporation (China Energy)



In recent years, the rapid growth of the electric load has led to an increasing peak-valley difference in the grid. Meanwhile, large-scale renewable energy natured randomness and fluctuation pose a considerable challenge to the safe operation of power systems [1]. Driven by the double carbon targets, energy storage technology has attracted much attention for its a?)



With the pursuit of green and sustainable development, the installed capacity of new energy sources, led by wind and solar power, has been growing continuously in China in recent years [1].



Operation and Maintenance of the SHES by the energy storage operator: The energy storage operator is responsible for the operation and maintenance of the SHES. Each wind farm also undertakes the Operation and Maintenance (O& M) cost, calculated based on the proportion of annual power generation of wind farms, as shown in Eq.

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Yuan Feng's 50 research works with 657 citations and 12,828 reads, including: High Precision Sea Surface Temperature Prediction of Long Period and Large Area in the Indian Ocean Based on the



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Aerial view of another compressed air energy storage plant in China, which was connected to the grid last month. Image: China Huaneng. Construction has started on a 350MW/1.4GWh compressed air energy storage (CAES) unit in Shangdong, China. There are nine projects in operation or construction stages totalling nearly 700MW of power and over



The economic operation period of nuclear power plants and pumped storage power plants would span the present planned dispatching stage. In addition, it would transition gradually into the



Figure 2: Cumulative installed capacity of new energy storage projects commissioned in China (as of the end of June 2023) In the first half of 2023, China's new energy storage continued to develop at a high speed, with 850 projects (including planning, under construction and commissioned projects), more than twice that of the same period last year.



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A technician inspects a turbine at a wind farm in Hinggan League, Inner Mongolia autonomous region, in May 2023. [WANG ZHENG/FOR CHINA DAILY] China's power storage capacity is on the cusp of growth, fueled by rapid advances in the renewable energy industry, innovative technologies and ambitious government policies aimed at driving a?



State Grid Corporation of China has put into operation a 3.6-GW pumped storage hydropower station in China's Hebei province, the world's largest one in ter Energy Storage. It will operate as a peaking power plant to ensure the stable operation of the grid and balance electricity supplies from large wind and solar parks in Hebei and