

CONNECTING WONDERFUL LIFE WITH OPTIC-ELECTRIC NETWORK



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ZTT New Energy Industry Group



TYPICAL CASE

ZTT NEW ENERGY INDUSTRY GROUP



PROJECT REFERENCES

National Key R&D Plan South Grid Cascade Utilization Energy Storage Power Station 26MWh

National key R&D plan: The demonstration project of the key project of smart grid technology and equipment, "Key Technologies for the Application of Cascade Utilisation Power Battery Scale Engineering", is the world's first large-scale cascade utilisation energy storage power plant. The main task is to promote the research of retired power battery cascade utilization sorting technology and system grouping technology.



Danyang BESS



Furong BESS



Dagang BESS



Pingdingshan BESS

Grid Side

Zhenjiang East Power Grid Phase I Operated in July 2018

Jianshan 5MW/10MWh (10KV access)
Danyang 12MW/24MWh (35KV access)
Dagang 16MW/32MWh (10KV access)

Henan Power Grid Phase II Operated at the end of December 2018

Jianshan 5MW/10MWh (10KV access)
Danyang 12MW/24MWh (35KV access)
Dagang 16MW/32MWh (10KV access)

Hunan Power Grid Changsha Phase I Operated in April 2019

Furong Substation BESS 26MW/52MWh

New energy generation side ▶

CGN Inner Mongolia 100MW onshore wind power project

- The CGN 100000 kW Smart Wind Storage Project is located in the east of Inner Mongolia. The construction scale of the energy system is 30MW/60MWh (nominal capacity). The preliminary design scheme is one 2.5MW/5MWh unit, a total of 12 units. Each energy storage unit includes one set of 5000kWh energy storage batteries (including BMS) and one set of 2500kW energy storage inverters, and finally the voltage was boosted to 35kV AC through a 2.75MVA box transformer and connected to the booster station through a 1-circuit collector line.
- There is a total of 1 access point for this project's energy storage system, and each access point is equipped with a bi-directional electricity meter to measure the charging and discharging of electricity.
- The main function of the energy storage system is to support the new energy power supply side.

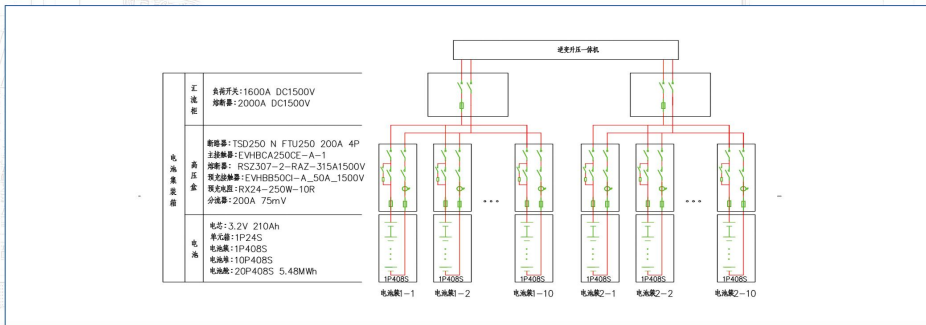
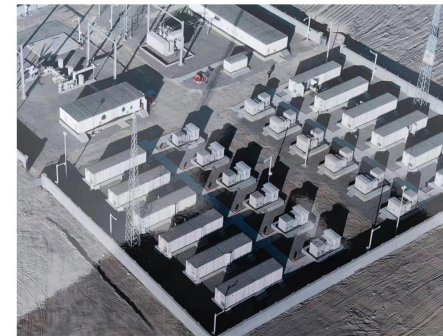


Houqiao 330 Substation Grid Side 200MW/400MWh Shared Energy Storage Demonstration Project

- Houqiao 330 Substation grid side shared energy storage demonstration project is located in the west of Biandangou Town. It is proposed to build a new energy storage system power station based on Iron(III) phosphate battery technology, which will be connected to the grid to carry out auxiliary services for peak shaving and frequency modulation. The total scale of the energy storage power station is 200MW/400MWh energy storage system.
- The energy storage area is divided into 8 zones, each with a capacity of no less than 25MW/50MWh, and the total capacity of the 8 zones is no less than 200MW/400MWh.

China Energy Conservation Chongyang Shaping Project 50MW/100MWh

- The 50MW/100MWh solar energy storage system of China Energy Conservation Chongyang Shaping is a supporting storage project for the 98 MW agricultural photovoltaic complementary power generation project of China Energy Conservation Chongyang Shaping. It is mainly used for auxiliary system peak shaving, while also taking into account system frequency regulation and other auxiliary services. The energy storage system adopts a modular design scheme, consisting of prefabricated battery compartments. The converter and booster integrated machine is connected to the 35kV switchgear of the booster station of the 98 MW agricultural photovoltaic complementary power generation project in Chongyang Shaping, China through two 35KV cables.
- The scale of the energy storage power station system in this phase is 50MW/100MWh, with fully prefabricated compartments arranged. The battery type is Iron(III) phosphate, including 20 sets of 5MWh energy storage battery cabins, 20 sets of 2.5MW converter booster integrated machines, and one set of energy management system. Each inverter boost integrated machine includes two inverters, connected to two battery stacks.



30MW/60MWh Energy Storage System in Tuha Oilfield

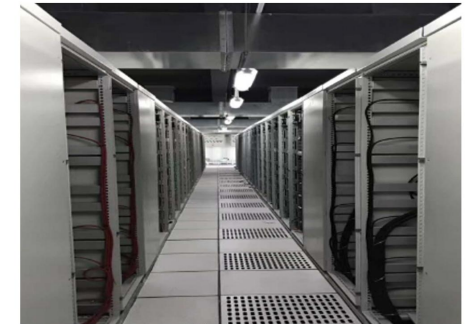
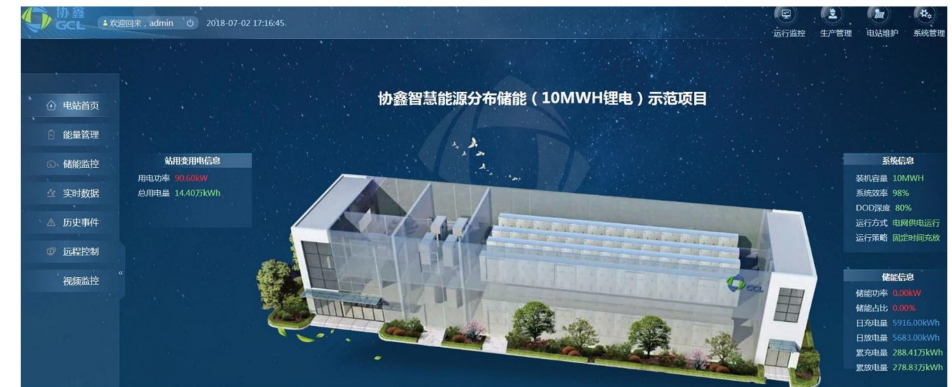
- The proposed site of the 120 MW source network load storage integration project in Turpan region of Tuha Oilfield is located in Dushan County, Turpan region, Xinjiang. The 120 MW photovoltaic power generation will be built in the source network load storage mode, and the 30 MW/60 MWh Iron(III) phosphate physical, electrochemical and energy storage will be built according to 25% of the installed capacity and 2 hours of energy storage.
- The total energy storage capacity for this project is 30MW/60MWh, and the design scheme of a DC 1500V energy storage system is adopted with a grid connected voltage level of 35kV.

User Side

The first innovation in domestic user side energy storage applications – ZTT Intelligent Solar PV + BESS + Charging Demonstration Project

This project is a demonstration project approved by the Jiangsu Provincial Commission of Economy and Information Technology on September 26, 2016. The system configuration can be connected to the grid for operation, achieving peak shaving and valley filling functions; It can also realize off grid operation, use photovoltaic power generation to store energy, and Charging station can use stored energy to meet the vehicle charging demand.

The project installed the first energy storage meter of State Grid, which is the first project to be executed in accordance with the "Regulations on Grid Connection Management of Customer Side Energy Storage System" of State Grid Jiangsu Electric Power Company. The energy management system supporting the project achieves data collection and control of power generation, load, and energy storage systems, and shares data with the national grid, provincial, and municipal power dispatch centers.

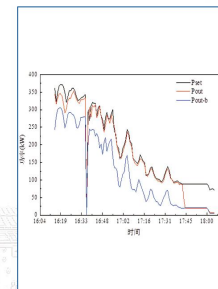
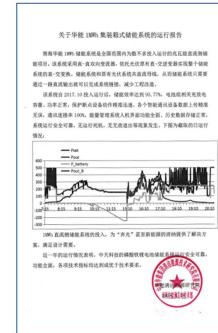


GCL Smart Energy (10MWH Lithium Battery) Distributed Energy Storage Demonstration Project

- The system consists of 8 subsystems of 250kW/1.25MWh, totaling 10MWh, which are connected to the grid on the 10KV side through a step-up transformer;
- The station building is designed with a two-story steel structure and is equipped with a HVAC system, ensuring the reliability of the system's operating temperature;
- Connect and configure line protection, frequency and voltage emergency control and other protective devices; Operating strategy one charging and two discharging;
- Peak shaving and valley filling, as well as demand response services, effectively alleviate the summer peak electricity consumption pressure on the power grid; Can be used as a backup emergency power source to improve the reliability of power supply in the factory area;
- The conversion efficiency of the entire system is 86–90%.

ZTT Hekou 6MWh Energy Storage Power Station Demonstration Project

- The system consists of three subsystems of 500kW/2MWh, with one subsystem connected to a 630KVA step-up transformer and the other two subsystems;
- Connect to a 1250kVA double split step-up transformer and boost to 10kV grid connection;
- Adopting a container cluster layout (6 sets of 40HC containers and 1 set of power distribution 40HC box), it is aesthetically pleasing and concise, which can reduce land area while also reducing infrastructure construction cost;
- Operation strategy two charging and two discharging;
- Used for peak shaving, valley filling, and load tracking on the 10kV side of ZTT Headquarters Park, combined with photovoltaic technology to effectively smooth photovoltaic output and improve power quality;
- The average conversion efficiency of the entire system is 86~91%.

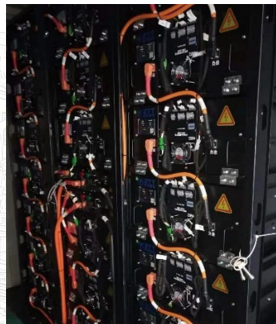


Huaneng Golmud Photovoltaic Industrial Park DC Side 1MWh Energy Storage System

- The energy storage power station of this project is connected to the DC side of the photovoltaic power station, storing the "limited generation" electricity for abandoned light, and achieving profits through smooth grid connection during peak shifting, providing a new solution for the industry's "abandoned light" problem;
- The project abandons the traditional AC coupling scheme and adopts the DC side grid connection. The DC side of the Solar inverter is coupled through DC/DC equipment for energy storage;
- Following the emission limit curve issued by the dispatch center to the photovoltaic power station, energy storage is carried out when the photovoltaic power is abandoned, and replenishment is made when the photovoltaic power is insufficient to reduce photovoltaic waste and improve photovoltaic utilization efficiency. Smooth photovoltaic power output and improve the quality of photovoltaic grid connected power;
- The energy storage power station of the project has a good ability to accurately track power grid scheduling, and the efficiency of the energy storage system can reach 95.77%. During the same period, four suppliers simultaneously supplied (Nandu, Xiendi, and Fengguoyuan Zhongtian), and as of now, only the ZTT system continues to be in normal use.

500kWh Transportable BESS Project

- The mobile container energy storage system jointly built by the project and Shenzhen NYY Technology will be applied to the site of the diesel engine used on the Shenzhen–Zhongshan Bridge (similar to the Hong Kong–Zhuhai–Macau Bridge, the Shenzhen–Zhongshan Bridge is the second bridge, the bridge from Shenzhen to Zhongshan);
- The system can be lifted and moved at any time as needed, with high flexibility;
- Diesel engine power generation prioritizes equipment load supply, and surplus electricity enters the energy storage system;
- Equipment load peak diesel engine and energy storage system output simultaneously;
- During the refueling period of the diesel engine, the power is supplied by the energy storage system;
- Equipped with parallel and offline switching function.



Solar PV + BESS + Charging (On/ Off grid) system

- The project is located at No. 99, Tongren Road, Nantong Economic and Technological Development Zone. The project is a new 1MW/5MWh Solar PV + BESS + Charging integration project. The new parking space is used to install solar PV carports and Charging station, and the open space is used to install BESS. The project configuration is as follows

Solar PV system: 384.48KWp

BESS: 1MW/5MWh

Charging station: 2 fast charges and 8 slow charges

- The project is equipped with ZTT's third generation BESS. Adding life prediction analysis system, new inverter booster and high-power STS seamless switching new generation of energy storage station monitoring and EMS, ground transferring AGC/AVC to participate in the auxiliary service function.

SCIENCE AND TECHNOLOGY INNOVATION

First "Intelligent Manufacturing Demonstration Enterprise" in the Domestic Lithium Battery Industry by MIIT

- Has a National enterprise technology center, a post-doctoral research station and an enterprise research institute;
- Establish an innovative cooperation platform with 5 institutes of the Chinese Academy of Sciences;
- Establish a R&D cooperation platform with 6 national research institutes;
- Establish industry-university-research cooperation relationships with 15 domestic key universities, including Tsinghua University and Zhejiang University;



Undertake National Innovation Projects

- Undertake 4 "863" national high-tech research projects;
- Undertake 6 national key research and development projects during the 13th Five-Year Plan period;
- Undertake 570 national, provincial and municipal technological innovation projects;
- Core products fill the domestic gap and replace imports.



PRODUCT CERTIFICATION

- Passed ISO9001, ISO14000, OHSAS18001 Three-standard System Certification, SA8000 Social Responsibility System Certification, TS16949 System Certification;
- Certified by authoritative organizations in Europe and America, with UL, CE, MSDS, UN38.3 and other Safety and Transportation Certifications; the products have passed various tests of the new national standard, and equipped with CNAS Laboratories.

