



Connecting Wonderful Life
with Optic-Electric Network

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ENERGY STORAGE SYSTEM SOLUTIONS

ZTT NEW ENERGY INDUSTRY GROUP



ENTERPRISE OVERVIEW

1992

Started in 1992 with fiber optic communication, now ZTT develops multi-industry deployment such as information communication, smart grid, new energy, submarine system, and new material

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Production bases in India, Brazil, Indonesia, Morocco, Turkey and Germany



76 subsidies

More than 16000⁺ staff

Export to 160⁺ countries and regions

Top 500 Enterprises in China

54 branch overseas offices

10 overseas market centers

Top 100 Electronic Information Enterprises in China

Top 100 Electronic Original Enterprises in China

Top 10 Most Competitive Companies for Submarine Cable in the World

Top 500 Listed Companies in China by Market Value

Top 10 Most Competitive Companies in Cable Industry in China

Top 10 Most Comprehensive Competitive Enterprises in Optical Communications Industry in China

More than 2000⁺ National Independent Intellectual Property Rights Patent Authorization

Top 100 Listed Companies on the Main Board of China

Top 10 Most Competitive Companies for Optical Fiber and Cable in the World

Presided over and participated in the formulation of more than 370 industry, national and international standards

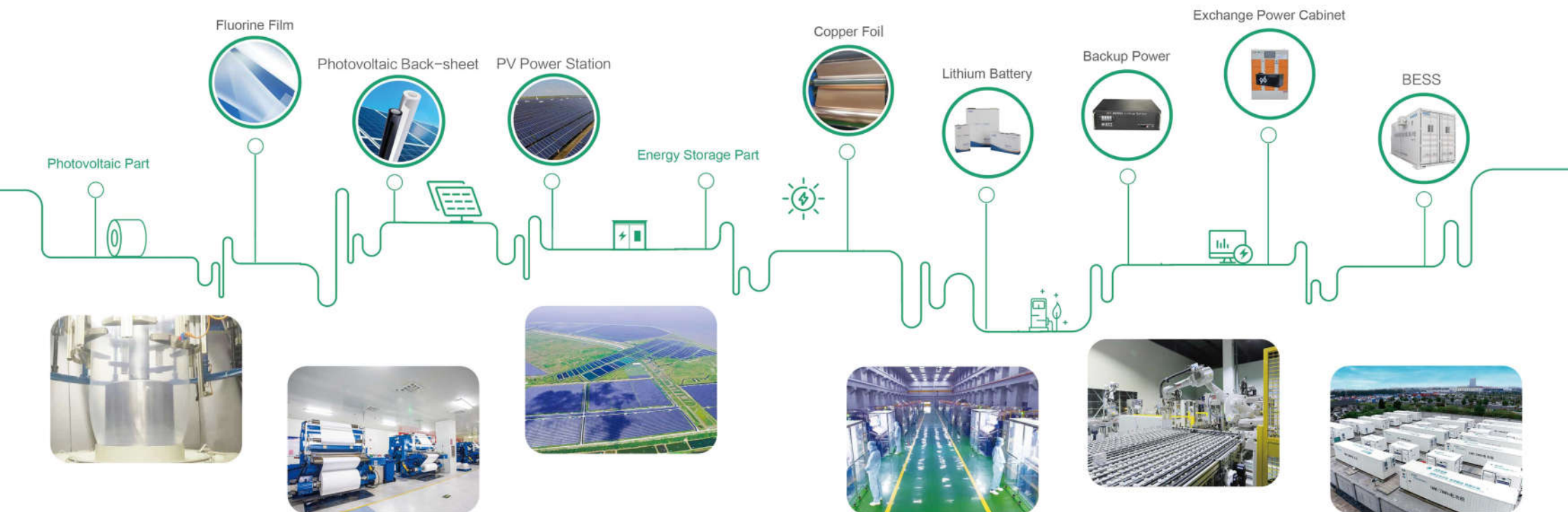
INDUSTRY LAYOUT



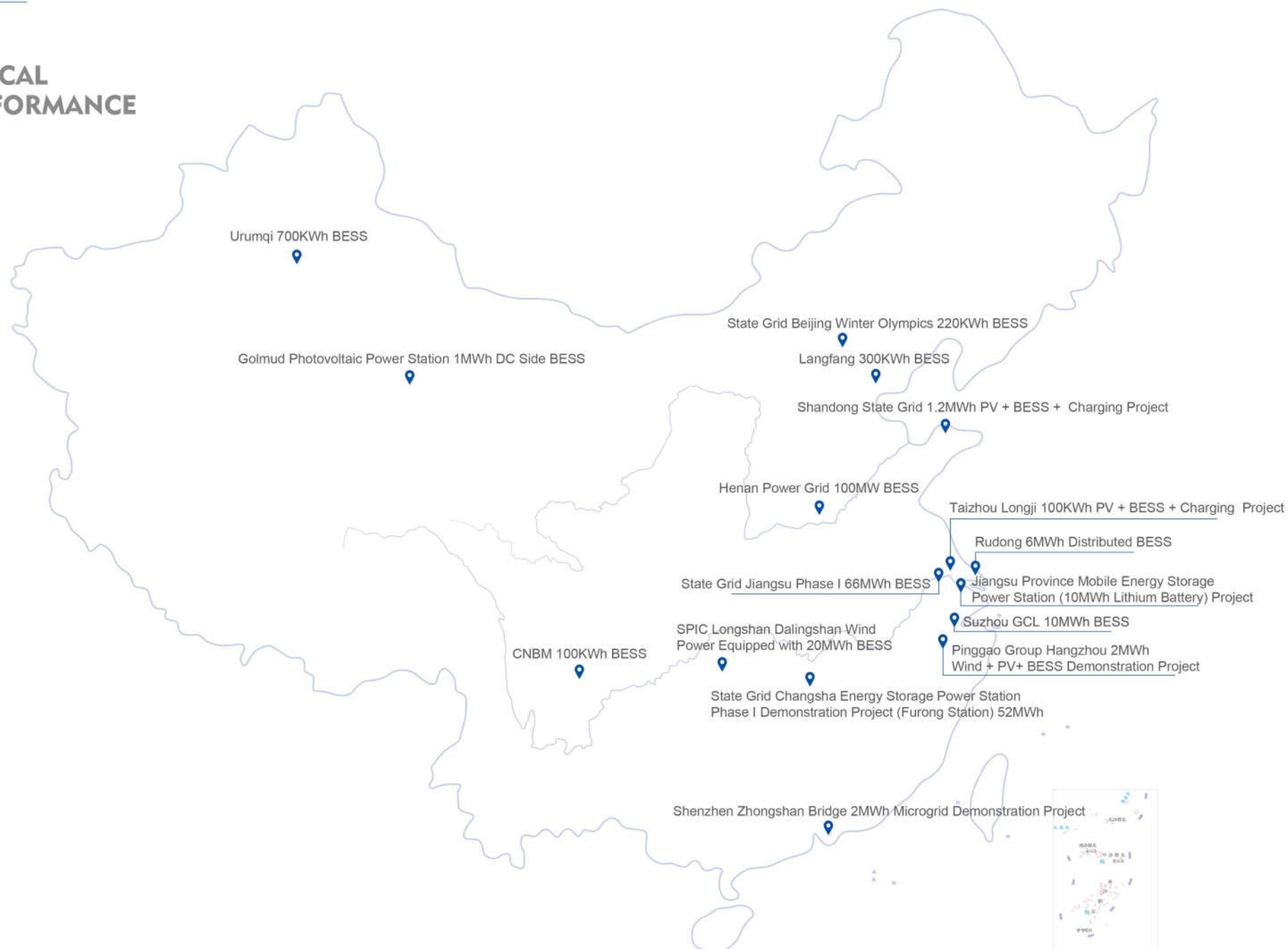
LAYOUT OF NEW ENERGY INDUSTRY

Strong Industrial Chain Advantage, Create Urban New Energy Operator

Deploy in the field of New Energy " Led by distributed photovoltaic , Supported by microgrid core technology, Key material development as breakthrough , and Energy storage system application as highlight". Provide customers with overall green energy solution, including Product design, Equipment manufacturing, Technical support, and Project service. ZTT is committed to be Urban New Energy Operator.



TYPICAL PERFORMANCE



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;
- Provide intellectual support and talent guarantee in terms of technology development, market development, and talent training.



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

- Pass 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.



PRODUCT INTRODUCTION

Spending 12 months and doing thousands of tests, we design long-life and high-safety cells for BESS products, which can meet the 10-year service life under the premise of ensuring product safety and reliability.

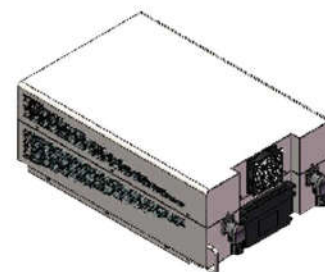


86Ah Cell Series Battery Pack



Series and Parallel Mode	12S4P
Nominal Voltage	38.4V/30–43.8V
Nominal Capacity	344Ah@25°C
Nominal Power	13.2kWh@25°C
Dimension	578 × 240 × 678mm
Weight	115kg
Internal Resistance	≤3mΩ
Continuous Charge and Discharge Rate	≤0.5C
Upper Limit of Clustered Nominal Voltage	1000V

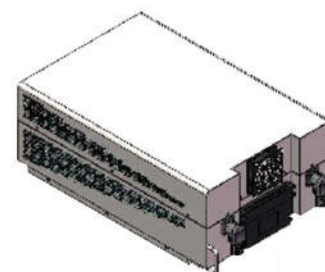
105Ah/210Ah Cell Series Battery Pack



Series and Parallel Mode	16S2P
Nominal Voltage	51.2V/40–58.4V
Nominal Power	10.24kWh@25°C
Cooling Method	Air Cooling
Dimension	400 × 235 × 650mm
Weight	85kg
Internal Resistance	≤4mΩ
Continuous Charge and Discharge Rate	≤1C
Upper Limit of Clustered Nominal Voltage	1500V



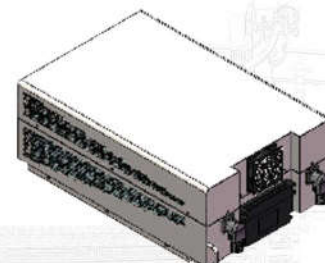
Series and Parallel Mode	24S2P
Nominal Voltage	76.8V/60–87.6V
Nominal Capacity	172Ah@25°C
Nominal Power	13.2kWh@25°C
Dimension	578 × 240 × 678mm
Weight	115kg
Internal Resistance	≤6mΩ
Continuous Charge and Discharge Rate	≤1C
Upper Limit of Clustered Nominal Voltage	1000V



Series and Parallel Mode	16S1P
Nominal Voltage	51.2V/40–58.4V
Nominal Power	11.52kWh@25°C
Cooling Method	Air Cooling
Dimension	400 × 235 × 650mm
Weight	85kg
Internal Resistance	≤4mΩ
Continuous Charge and Discharge Rate	≤1C
Upper Limit of Clustered Nominal Voltage	1500V



Series and Parallel Mode	16S2P
Nominal Voltage	51.2V/40–58.4V
Nominal Capacity	172Ah@25°C
Nominal Power	8.8kWh@25°C
Dimension	447 × 238 × 630mm
Weight	75kg
Internal Resistance	≤4mΩ
Continuous Charge and Discharge Rate	≤1C
Upper Limit of Clustered Nominal Voltage	1000V



Series and Parallel Mode	18S1P
Nominal Voltage	57.6V/45–65.7V
Nominal Power	11.52kWh@25°C
Cooling Method	Air Cooling
Dimension	400 × 235 × 650mm
Weight	90kg
Internal Resistance	≤5mΩ
Continuous Charge and Discharge Rate	≤1C
Upper Limit of Clustered Nominal Voltage	1500V

Large Capacity, Efficient, Safe Battery Compartment



Item	Parameter	Remark
Rated Capacity	3.5MWh	Customer can select the capacity according to container size.
Rated Charge and Discharge Rate	0.5C-1C	
Voltage Range	768V~1331.2V	
Energy Conversion Efficiency	≥95%	DC side Charge/Discharge
HVAC Design	Constant Temperature System	
Noise	≤65db	1m from the bottom
Size	40HC	Customized
Firefighting System Configuration	HFC-227ea/FM200, High-pressure Mist	Fully Automatic Control System
Security Configuration	Real-time Video Monitor	Alarm, Face recognition, Temperature probe is Configurable
Operating Environment Temperature	-30℃~50℃	
Altitude	≤4000m	Need notes when ≥4000m

PRODUCT
INTRODUCTION

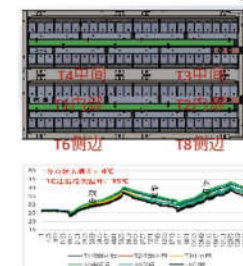
High Degree of Automation

The new battery pack adopts integrated aluminum row welding and flexible circuit board technology. The series and parallel connections of cells and voltage temperature sampling all adopt laser welding. The whole process is completed on a fully automated production line. Not only it greatly reduces the manufacturing cost, but the stability of the products is highly improved.



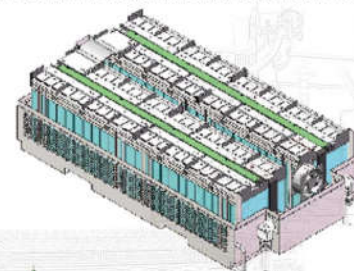
Good Temperature Uniformity

With the help of simulation analysis tools, we have done many multiple simulations on the new battery pack of its heat dissipation scheme. After experiments, the inlet and outlet air modes and air duct types of incoming samples have been improved. Now the temperature inside the battery pack can be controlled below 4 degrees.



Low Cost of PACK

The new battery pack design adopts no small module design scheme. The cells are grabbed by the manipulator and directly put into the container for grouping. Removing the original small module and saving the packaged parts of the small module reduces the cost of PACK.



DC High Voltage Technology Upgrade

The 1500V energy storage system platform (renovation of the original 721 project) will be completed in the first quarter this year. We will conduct comprehensive testing and verification of its safety and functionality, which provides guarantee for ZTT to seize the 1500V energy storage market.



TYPICAL PERFORMANCE

State Grid Jiangsu Phase I 66MWh BESS

Eastern Zhenjiang Power Grid Phase I BESS (ZTT as a general contractor), can meet the daily electricity consumption of 170,000 residents during the peak period of electricity consumption. The energy storage power station provides a new green means to alleviate the contradiction between power supply and demand caused by the rapid development of power consumption and the high-quality development of the power grid.



State Grid Hunan Phase I Changsha Furong Station 56MWh BESS



Changsha Furong Energy Storage Station is the largest station-type energy storage project in China. The project is located in the city center and close to large residential areas. The customer has put forward strict requirements on the safety and environmental protection of the project. ZTT provides a series of constructive opinions based on past project experience, successfully completes the project construction, and wins the appreciation of leaders at all levels in the State Grid.

State Grid Jiangsu Phase II Kunshan Energy Storage Station 193.6MWh, World's Largest Single Energy Storage Station



State Grid Kunshan Energy Storage Power Station 110.8MW/193.6MWh (ZTT supplies 48MWh). The station will be incorporated into the Jiangsu Power Grid's "Source, Grid, Load, and Storage" intelligent and friendly interactive system. Upgrade its intelligent interaction capabilities by mutual support through power supply, grid, users and energy storage. Especially in the event of a power grid failure, with a millisecond response to a load of 100,000 kilowatts, it can add a "firewall" to the safe operation of the large power grid and ensure the safe and stable operation of the power grid.

National Key R&D Plan South Power Grid EV Battery Energy Storage Power Station 26MWh

National Key R&D Plan: Smart Grid Technology and Equipment Key Special Project "Key Technology of EV Battery Scaled Engineering Application". It is the world's first large-scale EV battery energy storage power station, and its main task is to promote the research on selecting retired EV batteries technology and system grouping technology.



Huaneng Golmud Photovoltaic Industrial Park DC Side-1MWh BESS



This project is a DC-side 1MWh BESS, to support the built PV power station. It provides a new solution for the "light waste" problem. The project uses a specially designed container, which is not restricted by the installation environment. Its specially designed temperature control system ensures the efficient operation of the battery system in high altitude and high temperature difference areas. And the system adopts the DC side connection scheme to facilitate the transformation of existing photovoltaic power plants, no additional investment required.

SPIC Longshan Dalingshan Wind Power Equipped with 20MWh BESS



In order to alleviate the increasingly prominent consumption problem of new energy in Hunan, the implementation of new energy + energy storage is imminent. The supporting energy storage project of the Longshan Dalingshan Wind Power Project, which is undertaken by ZTT, is the first new energy side configuration storage project in Hunan Province. The energy power station project has significant demonstration significance, and plays an active role in promoting the development of the energy storage industry chain in Hunan Province and ensuring the safe, stable and efficient operation of the Hunan Power Grid.

Nantong New Energy Industrial Park Distributed User-side Energy Storage Power Station 10MWh



The station-type energy storage system has an off-grid and grid-connected working mode. Through the EMS based on the SCADA system, it can achieve peak-shaving and valley-filling, power dispatch, planning curve, load tracking dynamic response, voltage support, emergency power supply, active/no power adjustment and other control operation strategies, while realizing unattended, remote monitoring, cloud platform data storage, and analysis functions, to get maximum economic benefits with optimal energy efficiency.

Hekou Industrial Park Energy Storage Project 6MWh



This project is a containerized energy storage system, which has many advantages such as small land area, convenient installation and transportation, short construction period, strong environmental adaptability, and high intelligence. It has an off-grid and grid-connected working mode. Through EMS, it can achieve peak-shaving and valley-filling, power dispatch, planning curve, load tracking dynamic response, voltage support, emergency power supply, active/no power adjustment and other control operation strategies, while realizing unattended, remote monitoring, cloud platform data storage, and analysis functions, to get maximum economic benefits with optimal energy efficiency.

China Mobile Shanghai Lin'gang Data Center Energy Storage Pilot Project 2MWh

This project is China Mobile's first large-scale BESS used in data center. After putting into operation, it has effectively realized demand-side management, eliminated the peak-valley difference between day and night and smoothed the load. ZTT BESS can ensure greater flexibility in its data center operation.

