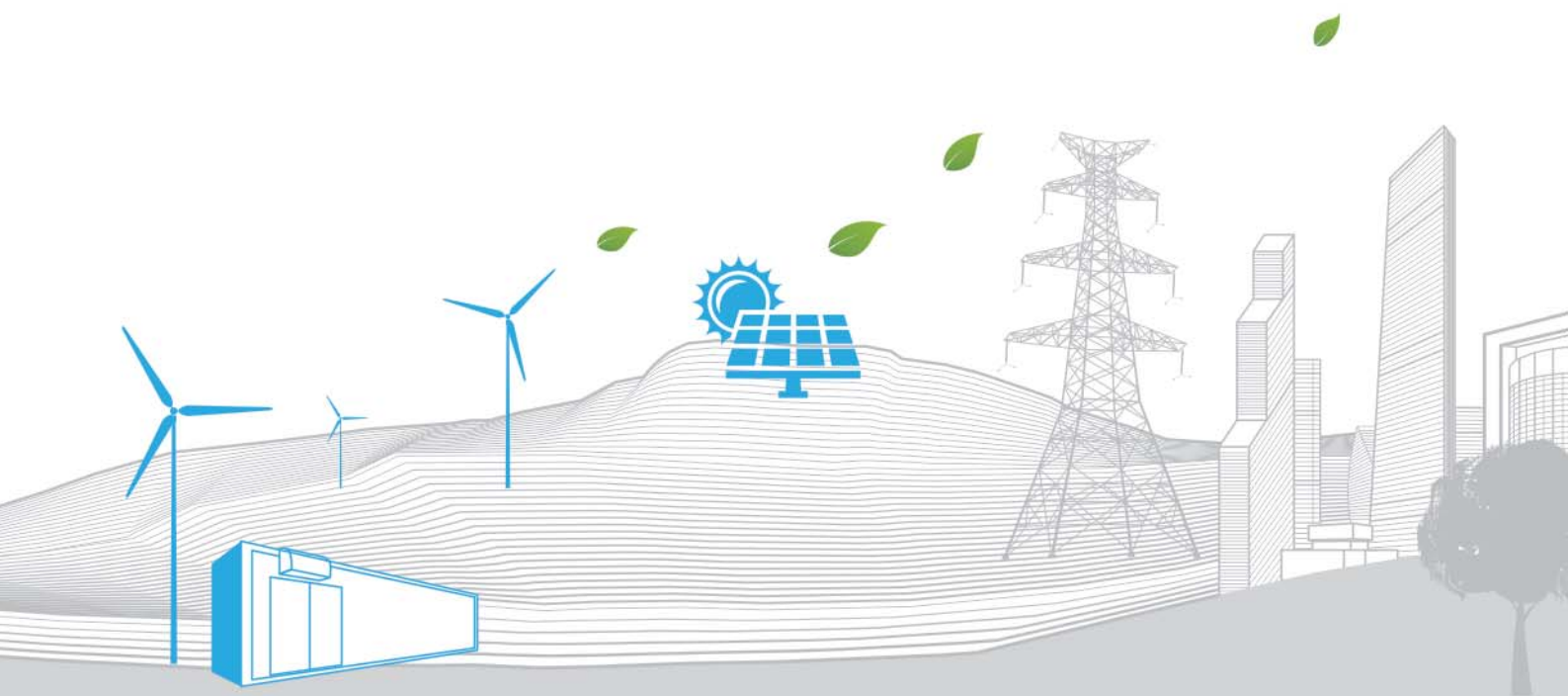




SHANGHAI ELECTRIC GOTION

Contributing to the Two Carbon Goals

SHANGHAI ELECTRIC GOTION NEW ENERGY TECHNOLOGY CO.,LTD.



SHANGHAI ELECTRIC GOTION

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Vision

To be a leader in the energy storage and application industry driven by technological innovation.

Mission

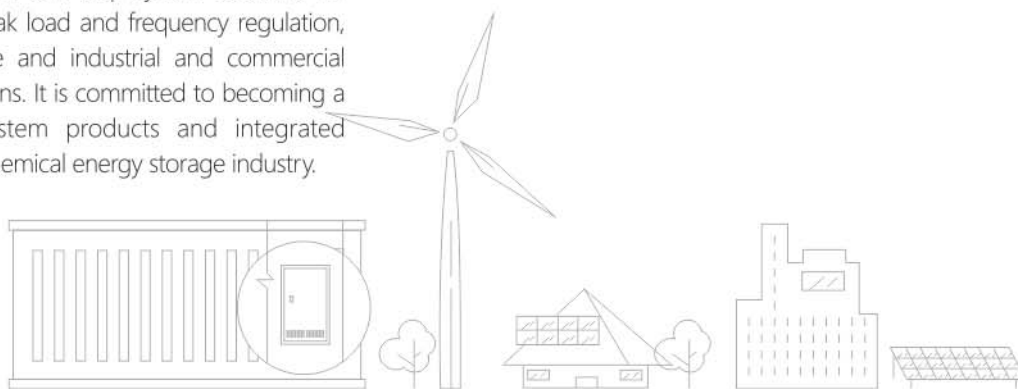
We are committed to providing reliable, safe, high-performance and innovative energy storage products and solutions to meet the needs of the energy storage industry, thus changing the way people consume electricity and making it possible for electricity consumption without time-space constraints.

ABOUT US

As a holding subsidiary of Shanghai Electric Group Company Limited, Shanghai Electric Gotion New Energy Technology Co., Ltd. (hereinafter referred to as the Company) is one of the first pilot state-owned mixed ownership enterprises implementing the Employee Stock Ownership Plan (ESOP).

The Company has long been committed to the technology research and development, engineering application and market development in electrochemical energy storage services, which can cover the entire industrial chain including cells and energy storage systems. With core competitive advantages such as superior battery technology and optimized system integration technology, the Company can provide one-stop system solutions for new energy+storage, peak load and frequency regulation, grid-side energy storage and industrial and commercial energy storage applications. It is committed to becoming a leading supplier of system products and integrated solutions for the electrochemical energy storage industry.

The Company has two major production bases: Nantong Production Base, equipped with large-scale lithium-ion battery energy storage systems, is the most advanced industrial base integrating R&D, testing and production in East China and has a planned annual output of 10 GWh, and a target output of 5 GWh in the first phase of construction was officially reached in September 2020. Kunshan Production Base, with an annual output of 500 MWh, is now producing battery cells with an energy density that has reached an advanced level in the industry after continuous upgrading.



Nantong Production Base



Kunshan Production Base

Covering the entire industrial chain from battery cells to energy storage systems
To become a leading supplier of electrochemical energy storage technology in China

One-stop Smart Energy Storage System Solutions



Backup Power Solutions



BMS

Multi-level protection for system safety
Refined battery control strategies
Multi-layer balanced management of batteries

SCS

Local monitoring and data analysis management
Multi-level coordination and matching protection in the system



Battery Energy Storage System

Ready to install, maintenance-free, unattended operation
Complete safety protection facilities
Support combined use of multiple types of batteries

Smart O&M Management System for ESS

Intelligent algorithm and real-time optimization
O&M big data
Statistics and Analysis



Research & Development



R&D Center

A floor area of **7000m²**

Total annual investment of more than RMB 100 million in R&D

Fully equipped experimental test platform



Expert Team

150+ R&D team members from renowned universities and institutions at home and abroad, with more than **50%** of masters and doctors



Multilateral Cooperation

Cooperating with renowned universities and research institutes at home and abroad



Fully Functional Laboratory

20+ fully functional laboratories

230+ experimental test and measurement equipment



Patent

120+ patents in total



Authoritative Certification

GB/T31484、GB/T31486、GB/T38031、
GB/T 36276、IEC62619、UL1973、UL9540A、
CB、UL1642、EMC、UN38.3

Smart Manufacturing



Digital Production Line

Production and processing
Visual simulation of assembly,
and data-driven production lines



Digital Twin Production System

Equipment interconnection
IoT platform, and big data platform access



System-wide Quality Management

Management of quality objectives and incoming inspection
Full traceability system for the production process



Coordinated Control of Process Quality

Quality inspection standards and process standards
Simultaneous changes for higher real-time capability

After-sale Service



Nationwide Coverage

A number of branches nationwide to provide technical
support in various regions



Quick Response

Quick response and solution after user feedback

Battery Cells

Product Highlights



High Safety Level

Cells are made of highly safe cathode and anode materials and provided with ceramic composite separators, safe function additives and a top cover that protects safety so that the safety of the cells is ensured.



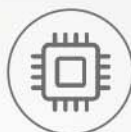
Long Cycle Life

Based on the degradation mechanism of lithium-ion batteries as well as the electrochemical simulation of material systems, a long-life cathode and anode materials-electrolyte system to achieve longer cycle life.



High Efficiency

The electrochemical reaction rate of the ion transmission limitation is improved by the optimized cathode and anode materials and electrolyte and the structural design of electrodes to achieve a higher energy conversion efficiency of cells.



High Quality

Based on a scientific cell design, an international advanced production line is adopted to achieve high-efficiency mass production in a fully automated and intelligent manner, and the consistency of batteries is improved by implementing quality control through the entire process of the production line.



Prismatic Cells

Cell Parameters	88Ah LFP battery cells (Power)	96Ah LFP battery cells (Medium power and long cycle life)	100Ah LFP battery cells (Energy and long cycle life)	105Ah LFP battery cells (Energy)	110Ah LFP battery cells (High energy)
Dimension (L×W×H)(mm)	175×27×200	175×27×200	175×27×200	175×27×200	175×27×200
Weight (g)	2023±40	2020±60	2070±60	2060±50	2070±50
Operating voltage (V)	3.2	3.2	3.2	2.0V-3.65V	2.0V-3.65V
Rated capacity (Ah)	88	96	100	105	110
Discharge rate	6C	1C	0.5C	0.5C	0.5C
Mass energy density (Wh/kg)	≥140	≥150	≥155	≥165	≥174
Ambient cycle life (cycles)	≥3000 (2C/2C)	≥6000 (1C/1C)	≥6000(0.5C/0.5C)	3000	3000

Cylindrical Cells

Cell Parameters	15Ah LFP cell (high energy)	13Ah LFP cell (long cycle life)
Dimension (mm)	Φ33×140	Φ33×140
Weight (g)	266±5	260±5
Operating voltage (V)	3.2	3.2
Rated capacity (Ah)	15	13
Discharge rate	0.5C	1C
Mass energy density (Wh/kg)	≥187	≥157
Ambient cycle life (cycles)	> 2000	> 3000(1C/1C)



ESS Smart Management System

BMS

- Efficient active equalization within and between battery packs
- 1,500 voltage rating designed for HV energy storage systems
- Full-time insulation testing for accurate measurement of the system's insulation resistance
- Intelligent condition estimation for accurate characterization of battery status

OPS

- Comprehensive remote monitoring of operating parameters and status of systems and components
- AI diagnosis-based management of station O&M work orders and related operations
- Statistics and analysis of station performance, comprehensive performance evaluation and strategy optimization
- The use of fault handling knowledge bases and knowledge graph to improve O&M efficiency
- Control and encryption of communication data transmission to ensure data and system security

SCU/SCS

- Adaptable to various communication protocols, such as Modbus, IEC104 and IEC61850
- Adaptive thermal management, load following, power distribution, cell-level management strategies
- Fault coordination protection and handling and video linkage of the energy storage system
- Efficient local data storage, data analysis and reporting functions
- Support cloud access, and Full-mode time-sharing transmission of operational data and status



BMUxxS-P0 (Level 1 BMS)Passively Equalized Battery
Module Management Unit

Item	Parameters
Single voltage acquisition	10~24-channel, 0~5V
Temperature acquisition	22-channel, -40°C~125°C
Passive equalization	100mA
Fan	24V power supply, 5W/unit, 2-channel
CAN	1-channel, 500kbps
Power supply	18~30V
Structural dimension	152(L)×102(W)×30.5(H)mm

BMUxxS-A0 (Level 1 BMS)Actively Equalized Battery
Module Management Unit

Item	Parameters
Single voltage acquisition	10~16-channel, 0~5V
Temperature acquisition	20-channel, -40°C~125°C
Active equalization	2A
Fan	24V power supply, 5W/unit, 2-channel
CAN	1-channel, 500kbps
Power supply	18~30V
Structural dimension	182(W)×129(L)×34(H)mm

BCU-H0 (Level 2 BMS)

Battery Cluster Management Unit



Item	Parameters
Total voltage acquisition	2-channel, 1500V
Temperature acquisition	4-channel, -40°C~125°C
IO	5-channel DI, 5-channel DO
CAN	2-channel, 500kbps
485	1-channel, 9600bps
Power supply	18~30V
Structural dimension	177(L)×117(W)×27(H)mm

BSU-M0 (Level 3 BMS)

Battery Stack Management Unit



Item	Parameters
Screen	10.1"
Resolution	1280×800
Communication interface	2-channel RS485, 1-channel CAN, 1-channel Ethernet, 1-channel USB, 1-channel SD
Software	Modbus/RTU, Modbus/TCP, IEC104, CAN
Power supply	12~24V
Structural dimension	275×181×4mm

SCU-M0 (Level 4 BMS)

Field Control Unit



Item	Parameters
Operating system	linux
Interface	18 serial ports, 8 LANs, and 1 VGA
Function	Support multiple communication protocols, and strategies for thermal management control and optimal control and protection Adapt to multiple energy storage application scenarios
Power supply	AC100~220V
Dimensions	2U(440mm×220mm×88mm)

SCS (local control system at the energy storage station)
Cabinet

Item	Parameters
Operating system	linux
Interface	2 LANs and 1 HDMI
Function	Support current sharing control, frequency regulation, peak regulation, automatic voltage control, etc. of energy storage unit
Power supply	AC220V
Dimensions	2U(1200mm×600mm×800mm)

Energy Storage System

Product Highlights



Environmental Adaptability

High protection level for harsh environments such as sandstorms, high temperature, and salt-spray fog on islands



High Efficiency

Energy efficiency at DC side $\geq 97.5\%$ (high energy products); energy efficiency at DC side $\geq 95.5\%$ (energy product)



Excellent Thermal Design and Thermal Management

Battery cell temperature difference $\leq 5^{\circ}\text{C}$



Safety Performance

System certified by UL9540A



Standardization and Modularization

Assembled shipment, and rapid deployment on site



Reliability

System-wide test platform, with system availability $> 99\%$



Easy O&M

Standardized functional modules supported by a cloud-based expert pool



Industrial and Commercial Energy Storage Product Line

All-in-One Module Series

Product Model	M150	M200
DC-side voltage range	728V~936V	672~864V
Size (L×W×H) / Weight	1000×1100×2400mm / 2.0T	1400×1100×2400mm / 2.4T
Rated power	75kW	100kW
Nominal capacity	160kWh	220kWh
Maximum system efficiency	88%	88%
Protection level	IP54	IP54
Operating temperature	-20~45°C	-20~45°C

All-in-One Container Series

Product Model	SEC-ESS-1.25MW/2.65MWh
DC-side voltage range	672~864V
Size (L×W×H) / Weight	12192×2438×2896mm / 40T
Product platform	0.5P/1000V or below
Protection level	IP54
Operating temperature	-20~45°C

Large Air-cooled Energy Storage Product Line

2P16S Series

Product Model	SEC-ESS-1.25MW/3.24MWh	SEC-ESS-2.5MW/2.95MWh
DC-side voltage range	672~864V	672~864V
Size (L×W×H) / Weight	12192×2438×2896mm / 45T	12192×2438×2896mm / 43T
Product platform	0.5P/1000V or below	1P/1000V or below
Protection level	IP54	IP54
Operating temperature	-20~45°C	-20~45°C

2P20S Series

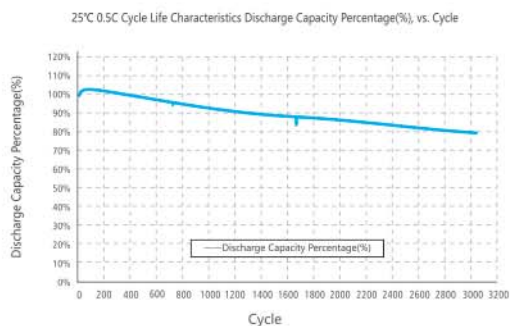
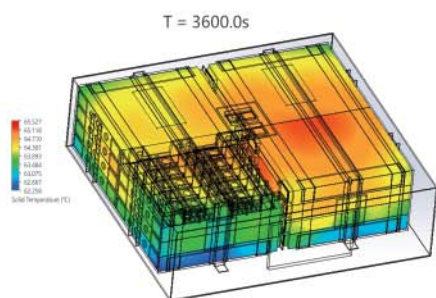
Product Model	SEC-ESS-1.25MW/3.76MWh	SEC-ESS-2.5MW/3.34MWh
DC-side voltage range	952~1224V	952~1224V
Size (L×W×H) / Weight	12192×2438×2896mm / 52T	12192×2438×2896mm / 49T
Product platform	0.5P/1500V or below	1P/1500V or below
Protection level	IP54	IP54
Operating temperature	-20~45°C	-20~45°C

Backup Power System



High Safety Level

- LFP material with higher safety factor and good thermal stability
- Electrical safety redundancy design to ensure overcurrent protection
- Full thermal management validation to control cell temperature rise and temperature consistency
- Special battery management system for ESS to monitor the batteries in real time



High Energy Density

- High energy ratio and high storage energy density
- Small size, light weight, space saving
- High tolerance to operating temperatures and long cycle life



- One-third the size of a lead-acid battery
- Comprehensive over-voltage, over-current and over-temperature protection functions
- Remote smart O&M management



Rack Mounted Backup Power System

Model	SECPS-4850	SECPS-48100	SECPS-48150	SECPS-48200
Dimension (W×D×H)(mm)	442×330×132	442×420×132	442×540×132	442×530×244
Weight (kg)	22	40.5	58	75
Cell specification (Ah)	52	105	52	105
Rated voltage / Rated capacity	48V / 50Ah	48V / 100Ah	48V / 150Ah	48V / 200Ah
Maximum charge-discharge rate	1C	1C	1C	1C
Protection level	IP20	IP20	IP20	IP20



UPS Backup Power System

Model	SEC28R1P16S10M04A-01 52Ah-4C-Two-wire system	SEC28R1P16S10M04A-02 52Ah-4C-Three-wire system	SEC27R1P16S8M03A-01 105Ah-2C-Two-wire system	SEC27R1P16S8M03A-02 105Ah-2C-Three-wire system
Battery cell type	IFP-52Ah	IFP-52Ah	IFP-105Ah	6IFP-105Ah
Battery module	1P160S	1P160S	1P160S	1P160S
Rated capacity of battery cabinet (1C,100%DOD,25°C)	52Ah	52Ah	105Ah	105Ah
Nominal energy of battery cabinet (1C,100%DOD,25°C)	26.624kWh	26.624kWh	53.76kWh	43.01kWh
Effective energy of battery cabinet (1C,90%DOD,25°C)	21.83kWh	21.83kWh	48.38kWh	48.38kWh
Nominal voltage	512V	±256V	512V	±256V
Operating voltage range	448V ~ 576V	±224V ~ 288V	448V ~ 576V	±224V ~ 288V
Continuous charge / Discharge rate 0°C ~ 40°C/-10°C ~ 40°C	0.5C/4C	0.5C/4C	0.5C/2C	0.5C/2C
Dimension (W×D×H)(mm)	600×850×1600	600×850×1600	600×850×1600	600×850×1600
Weight (kg)	≤550	≤550	≤550	≤550
Operating temperature / Altitude	10°C ~ 35°C / ≤2000m			
Protection level	IP20			

CASES OVERVIEW



Typical Grid-side ESS Project Cases

49.99MW/49.99MWh*2

Grid-side Energy Storage Project in Kent, England

- First large-scale BESS project in overseas market
- Multi-scenario application



32MW/64MWh

Grid-side Shared Energy Storage Power Station Project in Qinghai

- The first shared energy storage project invested by a third party in China
- The largest station building-based energy storage power station in China

100MW/200MWh

Independent Energy Storage Power Station Project in Jinzhai County, Anhui

- The first independent 100 MW energy storage power station in Anhui Province
- The first shared energy storage pilot project in Anhui Province



Typical Power-Side ESS Project Cases

26MW/13MWh

Frequency Regulation and Energy Storage Station Project of Yangxi Power Station in Guangdong

- The frequency regulation project with the highest K value in Guangdong
- 200 m from the sea



2.5MW/20MWh

Integrated Solar Power and Energy Storage Project in Tibet

- The solar power and energy storage project at the highest altitude and the largest scale in China
- Weak Grid Support Pilot Project with Long-life Backup Power

10MW/10MWh

Project in Shencun Town, Xuanzhou District, Anhui

- One of the first batch of wind power supporting energy storage projects in Anhui Province



Typical Industrial and Commercial side ESS Project Cases

3MW/12MWh

Smart Energy Storage Pilot Project in Minhang Industrial Park, Shanghai

- The largest commercial and industrial energy storage project in Shanghai
- A smart energy project co-invested by State Grid Shanghai Integrated Energy Services Co., Ltd.



1MW/1MWh

Wind and Solar Storage-Charging Microgrid Project in Shantou, Guangdong

- A microgrid project in high salt fog environment
- Provide black start service for large WTGS

Photovoltaic-Diesel-Storage Microgrid Project in Dubai

A photovoltaic-diesel-storage microgrid pilot project in high temperature and sandstorm environment



10MW/40MWh

Energy Storage Project of Lianyungang Binxin Steel Co., Ltd.

- One of the first batch of customer-side energy storage projects involved in the pilot application of grid-assisted services



Typical Backup Power Project Cases for 5G Communication Base Station



ZTE 5G Communication Base Station Project

Case Overview

The Company provides its independently developed and produced backup power products in batches to Soft Bank, an overseas customer of ZTE, for the construction of 5G communication base stations. This project makes the Company the sole supplier of high-end products for projects of Soft Bank with the highest quality requirements among ZTE's customers. This cooperation also signifies that the Company's backup power series products have met the high-quality requirements of overseas customers for the products and formally entered the high-end overseas backup power market.

Achievements of Cooperation

The Company has signed a global strategic cooperation agreement with ZTE so that its products are available in Thailand, Syria, Libya, Brazil, Pakistan, Indonesia, Italy, Macedonia and other countries worldwide.

Fiberhome Communication Base Station Project in Indonesia

Case Overview

The Company provides its independently developed 3U backup power products in batches to Fiberhome, the second largest operator in Indonesia, for the construction of 5G communication base stations.

Achievements of Cooperation

The cooperation between the Company and Fiberhome has achieved a win-win situation for both parties, with good benefits from orders and a bright future.



Typical UPS Backup Power Project Cases

Nantong Production Base

60kVA/172kWh UPS Project

Project Configuration

UPS: VERTIV 60kVA

Battery: Shanghai Electric Gotion 409.6V105Ah,
with 4 packs in parallel and a total capacity of 172 kWh

Backup time: 2h



Lithium ion Battery System HVDC Project of Baidu

Project Configuration

HVDC: Zhongheng Electric 300kVA

Battery: Shanghai Electric Gotion 409.6V52Ah,
with 4 packs in parallel and a total
capacity of 84 kWh

Backup time: 15min

UPS Project of Kehua Financial Center

Project Configuration

UPS: Kehua 75kVA

Battery: Shanghai Electric Gotion 409.6V105Ah, with a total capacity of 43 kWh

Backup time: 30min

UPS Project of Kehua and Shanghai Customs College

Project Configuration

Backup time: 15min

Battery: Shanghai Electric Gotion 409.6V52Ah, with a total capacity of 21kWh

UPS: Kehua 60kVA



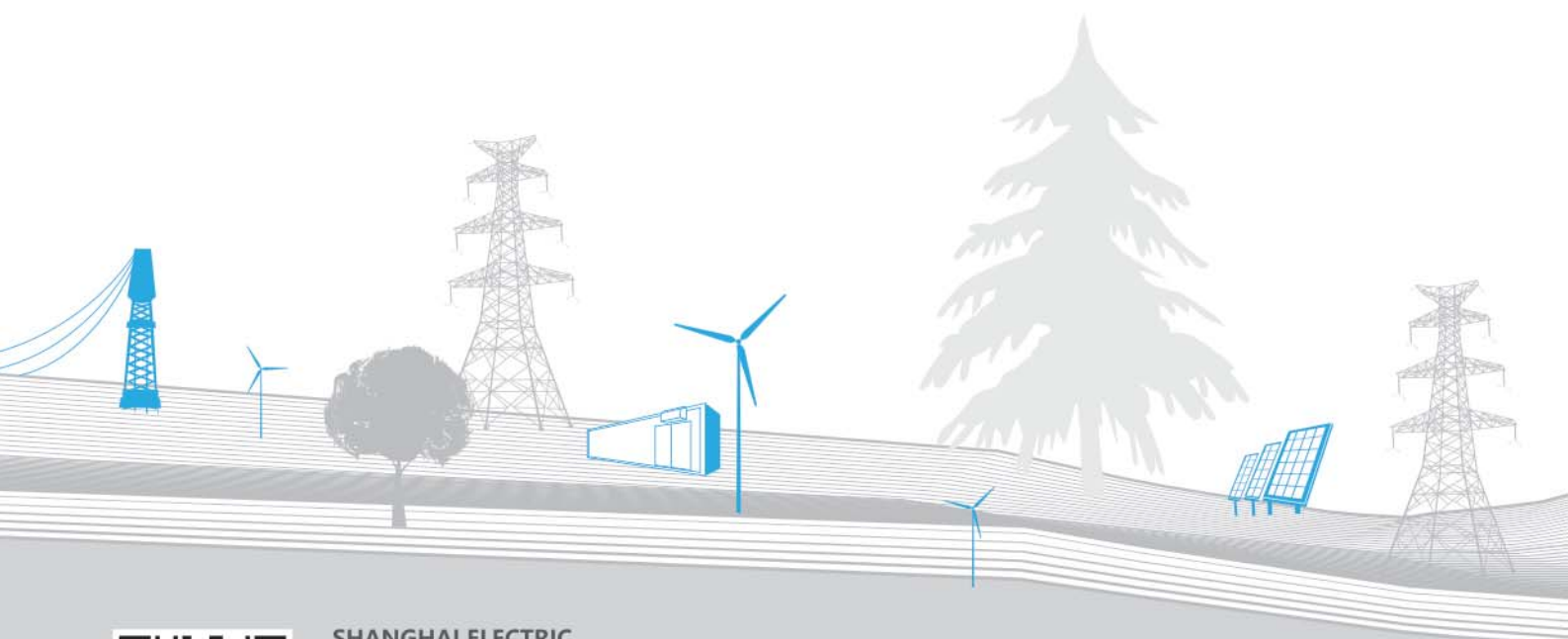
HONORS & CERTIFICATIONS

Quality Certificates



Honors & Patents





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