



PASSION·FOCUS
POSITIVITY·RESPONSIBILITY



Zhejiang Huaфон ESS Technology Co., Ltd.

HUAFON ESS

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To make energy safer, more efficient, and cleaner

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| COMPANY PROFILE

About Us

What We Provide

About Us



Mission

To make energy safer, more efficient, and cleaner.



Vision

To build an integrated-energy intelligent operation service platform.



Value

Passion, Focus, Positivity, Responsibility

Huafon Group, headquartered in Ruian, Zhejiang, has been committed to growing with the community, customers and employees since 1991, and pursuing sustainable development by breaking through the traditional private business development model, balancing development speed and quality, integrating expansion and optimization, and aligning business with social benefits.

We are one of the largest manufacturers and distributors of polyurethane products in the world, with industrial bases and sales companies in 6 provinces / municipalities and countries along the "Belt & Road", more than 50 wholly-owned or holding companies and nearly 16,000 employees. We offer a dozen of products including polyurethane system polyurethane resin, spandex filament, microfiber material, TPU, nylon 66, adipic acid, and aluminum heat transfer material and rank among companies with highest capacity and market share in China and the world.

Huafon ESS is invested and established by one of China's top 500 enterprises Huafon Group, which represents a firm strategic step forward in new energy industry for Huafon Group.

Huafon ESS is dedicated to making energy safer, more efficient, and cleaner. We strive to build an intelligent platform for integrated-energy operation services, empowering the future of clean energy through the combination of Internet and new energy tech. We provide dynamic integration of in-house smart devices and self-developed AI operation software platform - the Huafon Moose Cloud. Meanwhile, with relentless big data analysis from our platform, we are able to meet customers' needs in all scenarios and improve customer experience significantly.

What We Provide



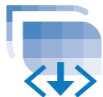
PRODUCTS AND SOLUTIONS

- Moose Cloud
- Moose Cube
- Microgrid Solution
- Containerized ESS
- Commercial and Industrial Solution
- Residential Energy Solution
- Portable Power Station

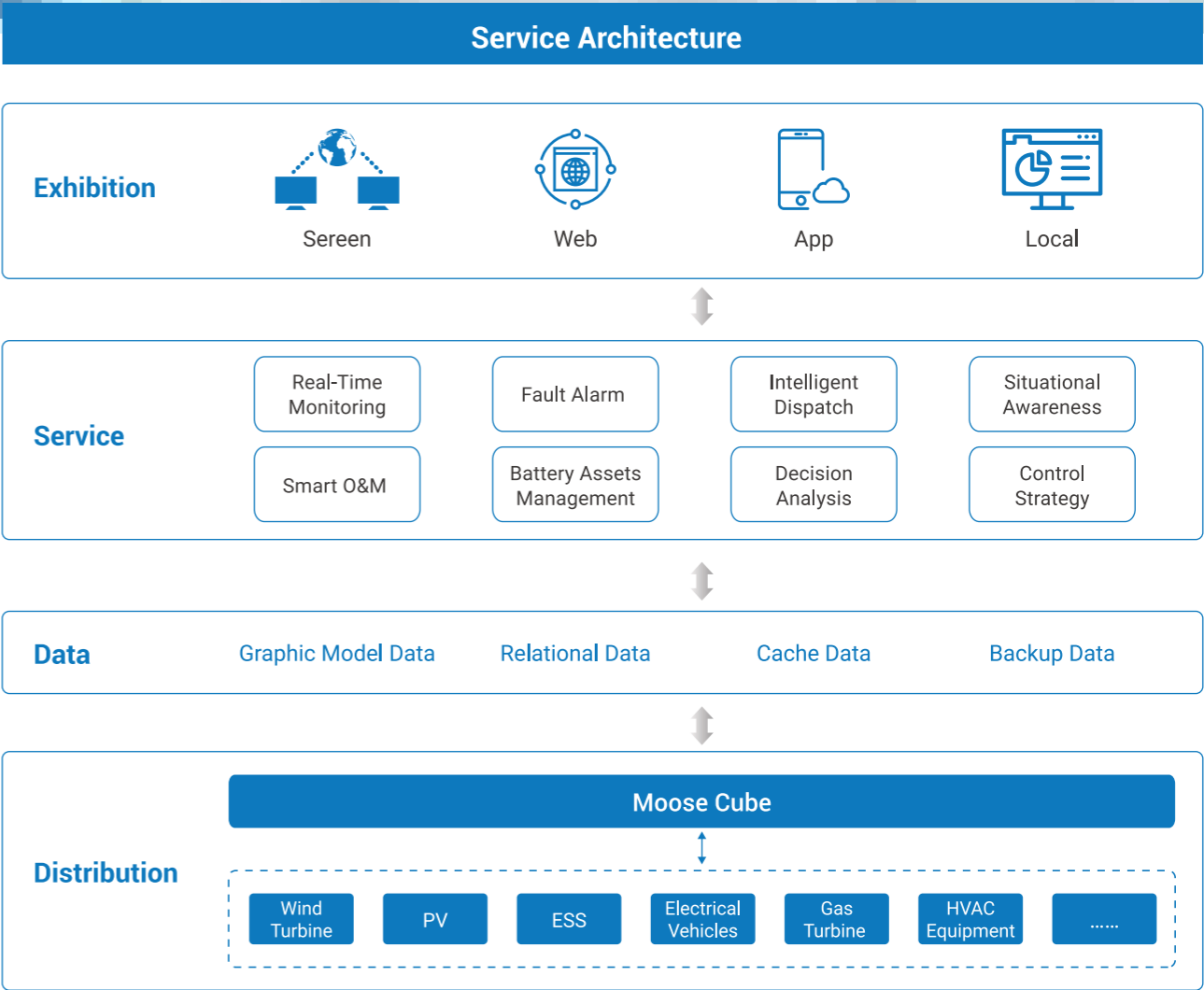
Moose Cloud



Huafon ESS Moose Cloud provides multi-dimensional services, including global display, intelligent topology, comprehensive monitoring, situational awareness, health assessment, energy analysis, and comprehensive diagnosis. It helps users improve power plant production efficiency, reduce energy consumption, and enhance business economic benefits.



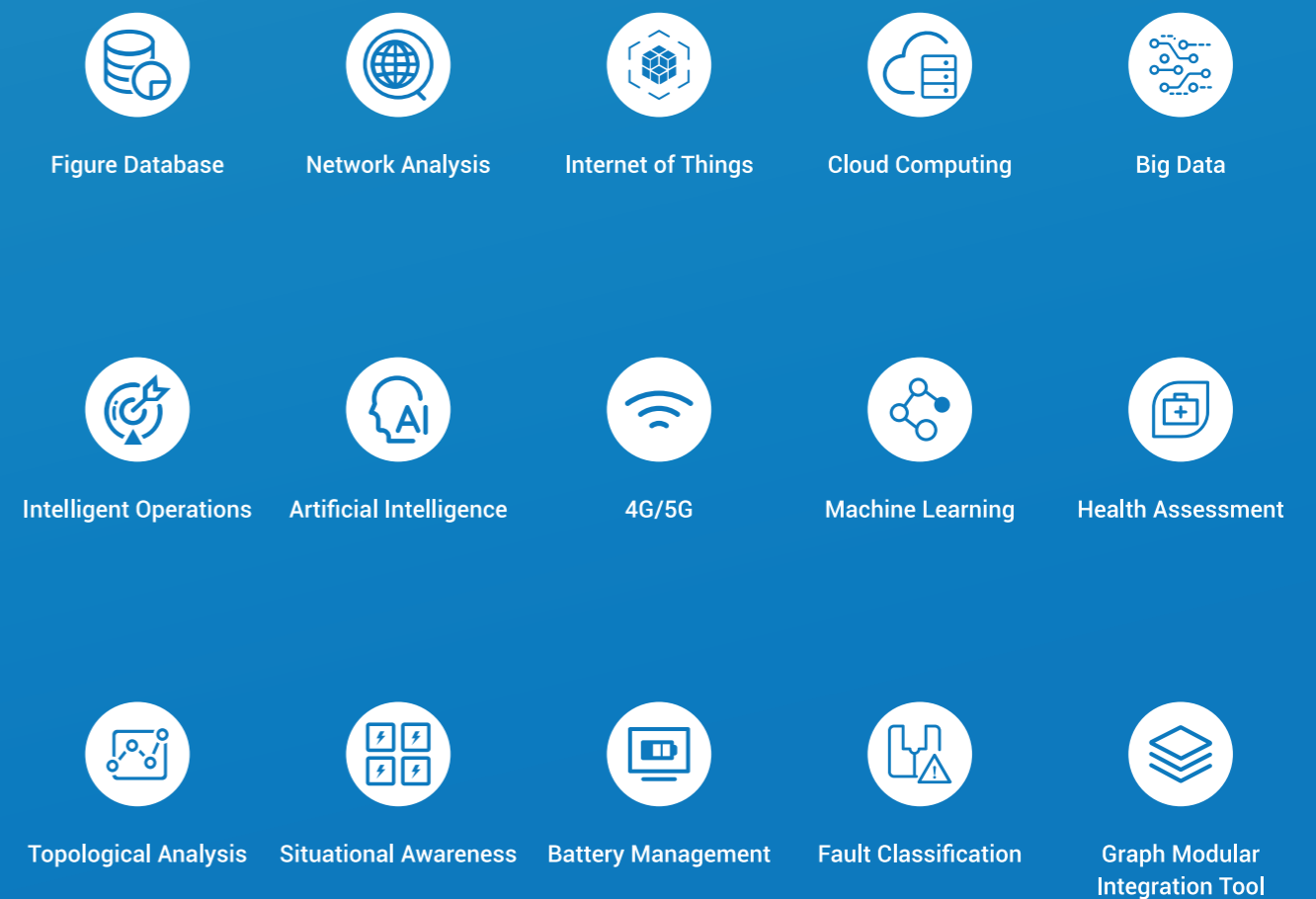
Battery Asset Management — Green Energy with High Efficiency — Cloud-Edge Smart Control		
All Info at a Glance Easy and Fast Operation Intelligent Warning Full Lifecycle Protection of Battery Health	AI + Big Data Accurate Prediction Energy Optimal Scheduling Refined Operational Management	Powerful Edge Computing Cloud-Based Rapid Decision-Making Dynamic Strategy Optimization Meet the Needs of All Scenarios



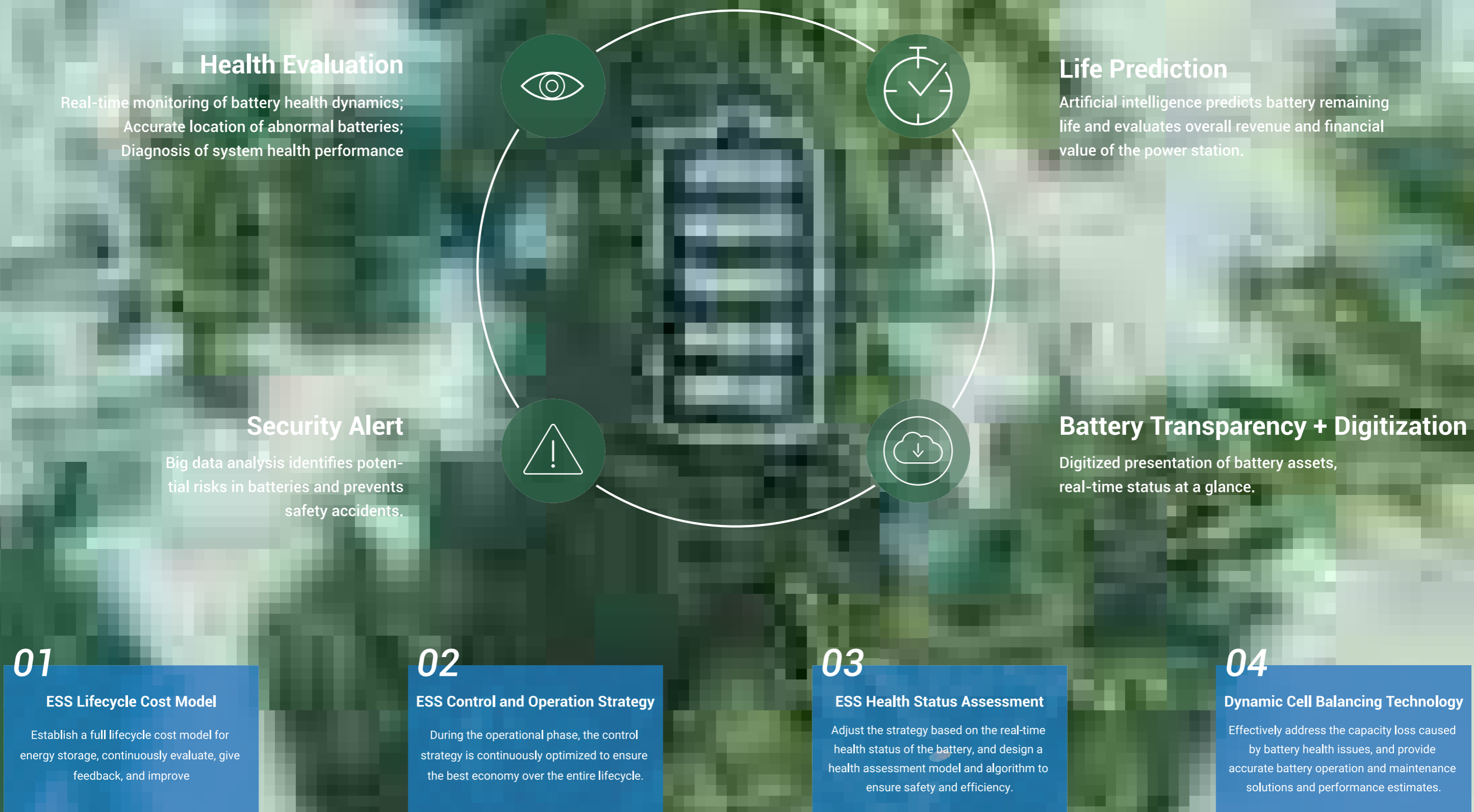
What Moose Cloud Provides



Platform Advantages



• **Battery Assets Management**



Moose Cube





Moose Cube is a central controller specifically designed for Distributed Energy Resources (DER) and Microgrid Systems (MGS). It has functions such as controlling and protecting distributed energy resources, monitoring energy quality, and cloud-edge collaboration. The controller is compatible with various types of devices, such as embedded devices, smart electrical and electronic devices, etc.

- Low-code simplifies the development process, and reduces maintenance time and cost.
- Event-driven reduces communication resource waste, enabling digitization and multi-threaded control.
- Complete AOE event-driven control strategy execution framework, adaptable to highly uncertain environments.

Functions

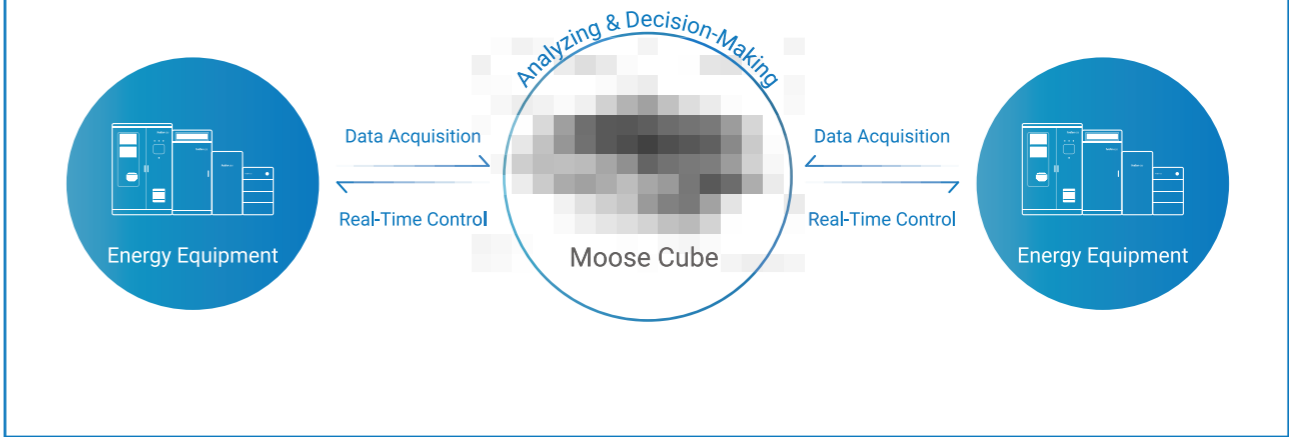
Equipped with various operations, equation solving, optimization model solving and other functions, significantly reducing the amount of code written, minimizing code error rates, supporting collaborative control of multiple controllers, and providing a universal and generalizable control strategy implementation approach for different industrial control scenarios.

 **Lightweight Database**

 **High-Performance Computing**

One device replaces one set of devices

- High Integration
- Plug and Play
- Light and Flexible
- Easy to Maintain



Access Device	Application Field
New Energy	Factory
Traditional Energy	Islands & Mining Areas
ESS	Commercial Complex
Smart Industrial	Energy Station
...	...

Cube Value

Highly Integrated

- The product can be integrated with local EMS, centralized control devices, etc., and one device can replace a set of devices.

Multi-Scenario Application

- Simplifying power control and industrial control into generic mathematical models that are highly adaptable to various scenarios.

Easy To Maintain

- It uses low-code technology to reduce user maintenance difficulty and minimize maintenance time.

Cloud-edge Collaboration

- It has strong edge computing capabilities and can work in synergy with cloud-based intelligent decision-making.

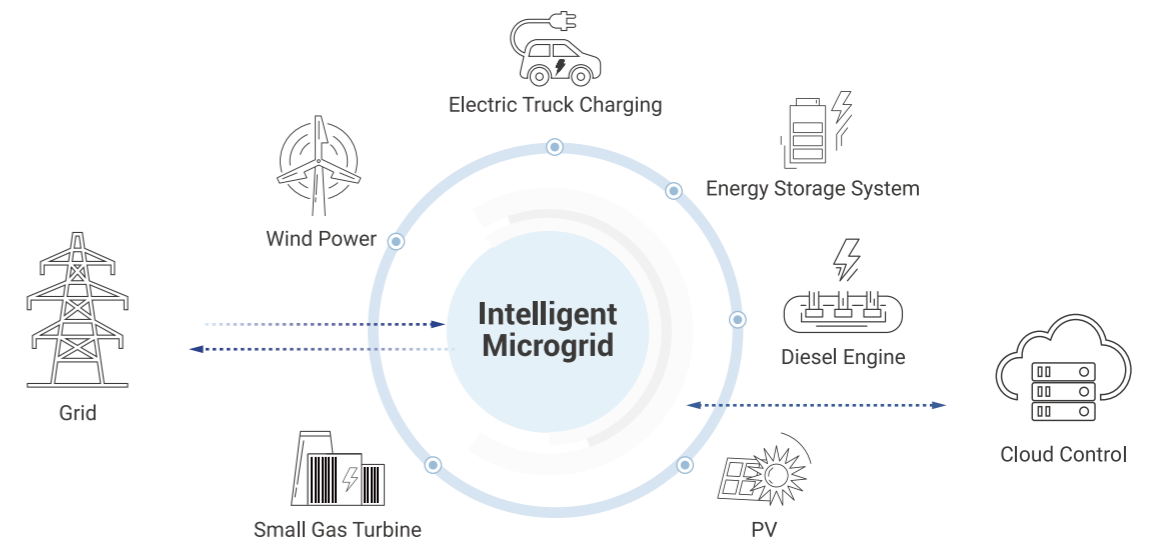
AI Technology

- Supporting more advanced mathematical computations, implementing various intelligent algorithms, and achieving efficient, reliable, and cost-effective optimization operations on its own.

High Scalability

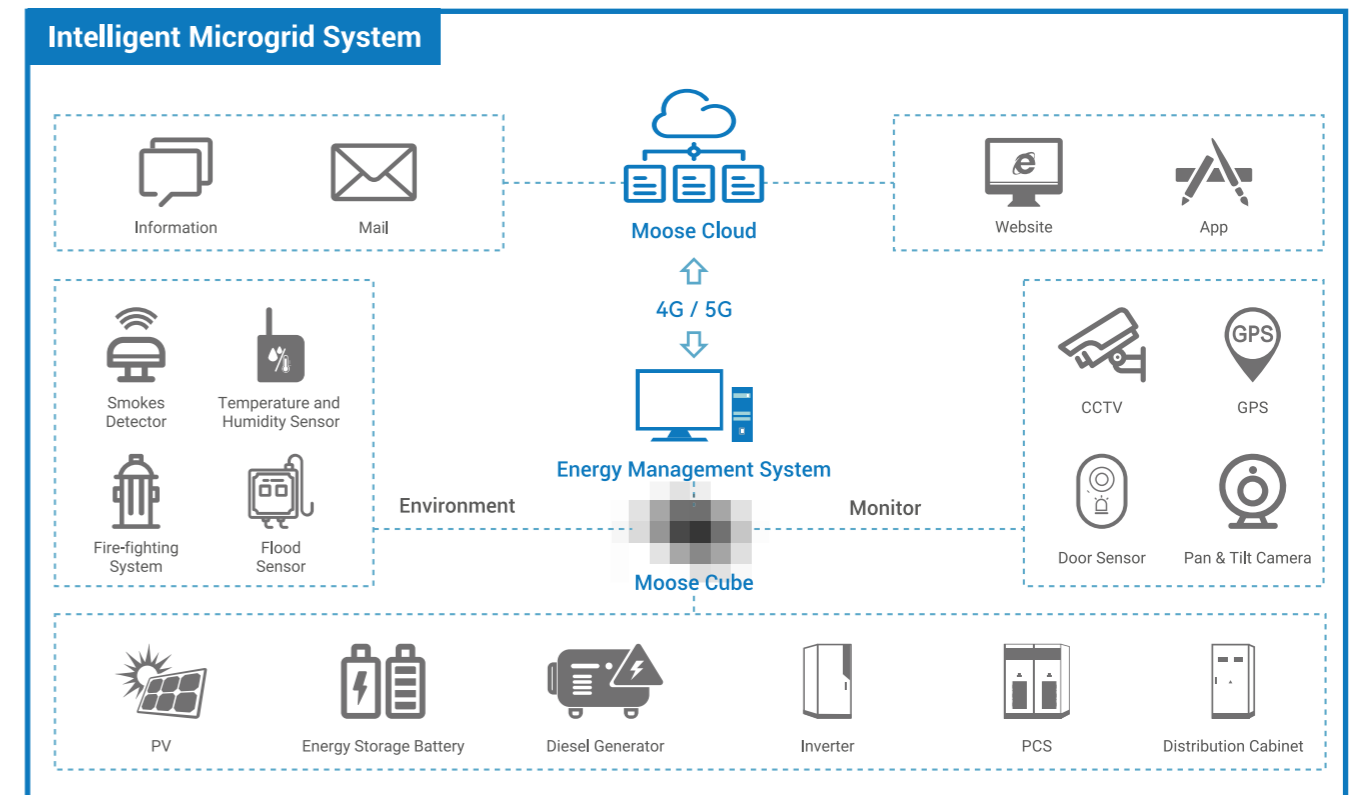
- It integrates mainstream protocol libraries and a universal EMS application, supports hierarchical coordinated control, and has strong scalability.

Microgrid Solution

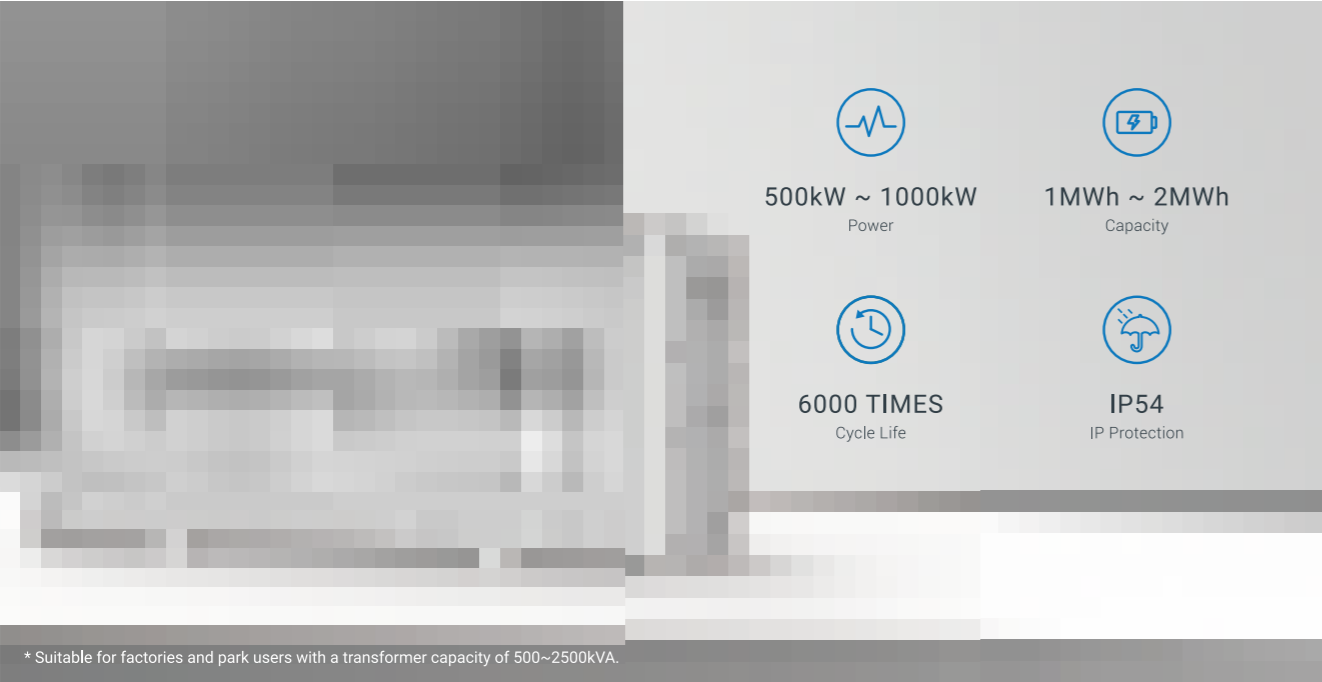


*Applications: islands, mines, remote mountainous areas, industrial parks, etc.

Power Range	Maintenance Cycle	Energy Cost
kW >>> mW	≥ 1000 hours	≥ 50% reduction
Wide power output range available for various scenarios	System maintenance-free time over 1000 hours without manual guard	Compared with pure diesel power, the new energy microgrid solution can reduce up to 50% electricity costs



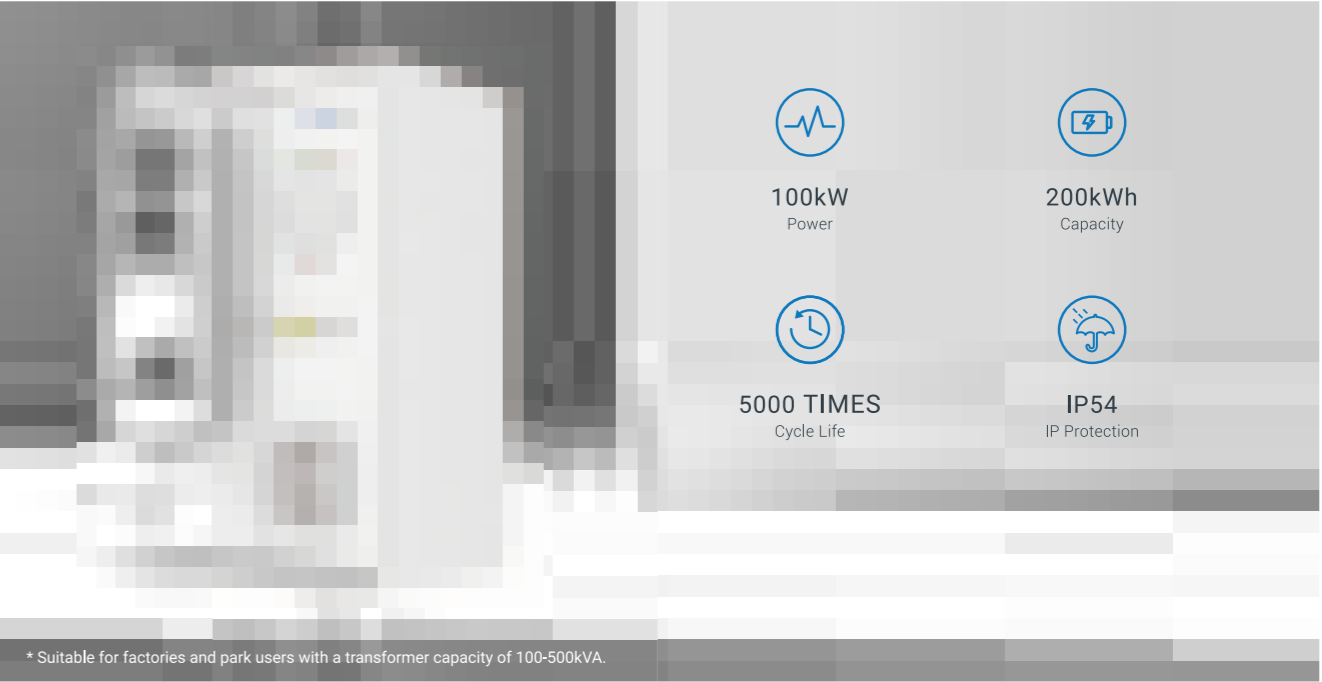
IQ-SERIES Containerized ESS



* Suitable for factories and park users with a transformer capacity of 500~2500kVA.

Model	IQ500 / 1000		IQ1000 / 2000	
Specs	500kW / 1000kWh (20GP)		1000kW / 2000kWh (40GP)	
DC Side				
Battery Type	LFP		LFP	
Cell Capacity	280Ah		280Ah	
Battery Module Connection	1P16S		1P16S	
Battery Module Capacity	14.336kWh		14.336kWh	
Battery System Grouping Method	1P224S*5		1P224S*10	
Battery Module Qty.	70		140	
DC Voltage Range	627.2V ~ 806.4Vdc		627.2V ~ 806.4Vdc	
System Capacity	1003kWh		2006kWh	
C- rate	0.5C		0.5C	
AC Side				
Rated Power	500kW		1000kW	
Rated Voltage	AC380V		AC380V	
Rated Frequency	50Hz / 60Hz		50Hz / 60Hz	
Maximum Discharge Power	500kW		1000kW	
System Parameter				
IP Protection	IP54			
Cooling	Air Conditioner			
Noise Emission	< 68dB (at 1 Meter)			
Altitude	3000m (> 2000m Derating)			
Temperature & Humidity	-30°C~-50°C / -22°F~122°F / 0~95% (No Condensation)			
Overload Capacity	110% @10 min; 120% @1 min			
Communication Protocol	Modbus RTU / Modbus TCP			
Fire Extinguishing	HFC-227ea			
Cycle Life	≥ 6000 Times			
Warranty Period	5 Years			
Size (W*D*H)	6058*2640*2896mm		12192*2640*2896mm	
System Weight	17t		30t	
AI Platform	Moose Cloud (Web), Huaфон ESS App (Mobile)			

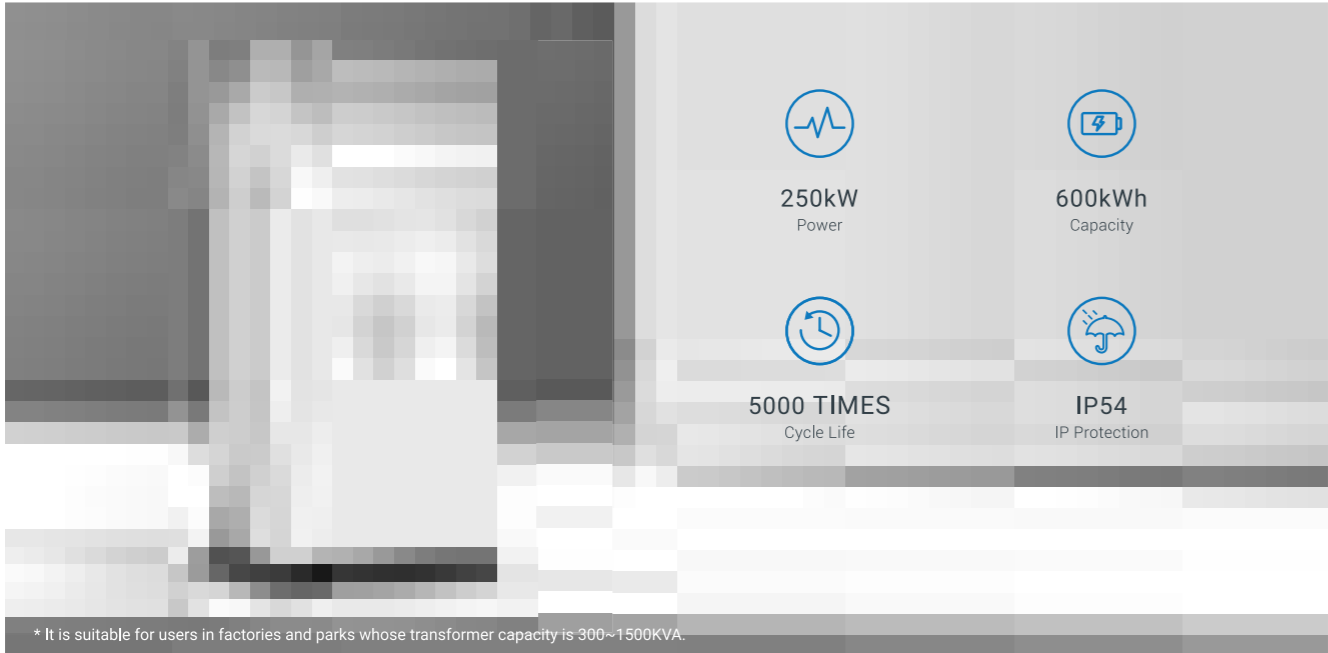
IC1-SERIES All-in-one ESS



* Suitable for factories and park users with a transformer capacity of 100-500kVA.

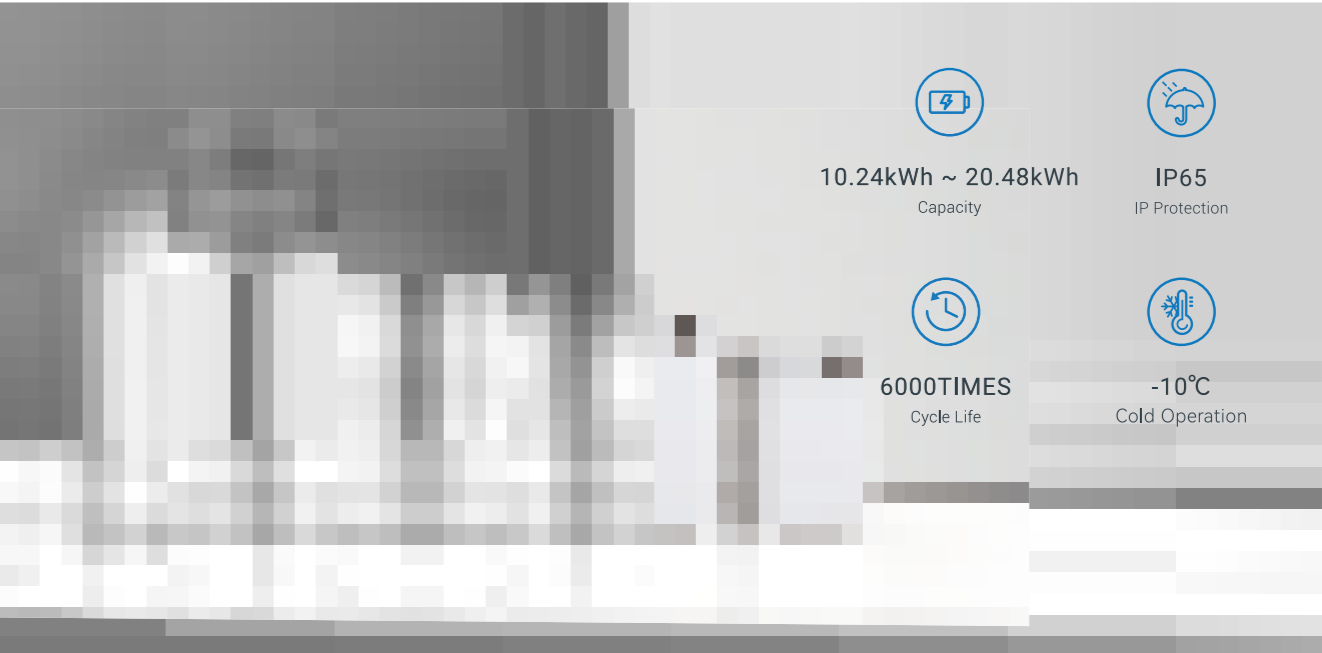
Model	IC1-100200-PN
Spec	100kW / 200kWh
DC Side	
Battery Type	LFP
Cell Capacity	280Ah
Battery Module Connection	1P16S
Battery Module Capacity	14.336kWh
Battery Module Qty.	14
DC Voltage Range	627.2~806.4Vdc
System Capacity	200.704kWh
C-rate	0.5C
AC Side	
Rated Power	100kW
Rated Voltage	AC380V
Rated Frequency	50Hz / 60Hz
Maximum Discharge Power	100kW
Maximum Charge Power	100kW
Isolation Type	N/A
System Parameter	
IP Protection	IP54
Cooling	Air Conditioner
Noise	< 68dB (at 1 meter)
Temperature & Humidity Range	-30°C~50°C / -22°F~122°F / 0 ~ 95% (No Condensation)
Overload Capacity	110%@10min; 120%@1min
Communication Protocol	Modbus RTU / Modbus TCP
Fire Fighting	Aerosol
Size (W*D*H)	1163*1085*2550mm
System Weight	2500kg
AI Platform	Moose Cloud (Web), Huaфон ESS App (Mobile)

IT1-SERIES Battery ESS



Model	IT1-250600
Spec	250kW / 600kWh
DC Side	
Battery Type	LFP
Cell Capacity	280Ah
Battery Module Connection	1P16S
Battery Module Capacity	14.336kWh
Battery Module Qty.	42 (3 Sets)
DC Voltage Range	627.2~806.4Vdc
System Capacity	600.2kWh
C- -rate	0.5C
AC Side	
Rated Power	250kW
Rated Voltage	AC380V
Rated Frequency	50Hz / 60Hz
Maximum Discharge Power	250kW
Maximum Charge Power	250kW
Isolation Type	Optional
System Parameter	
IP Protection	IP54
Cooling	Air Conditioner
Noise	< 68dB(at 1 meter)
Temperature & Humidity Range	-30°C~50°C / -22°F~122°F / 0~95% (No condensation)
Overload Capacity	110%@10min; 120%@1min
Communication Protocol	Modbus RTU / Modbus TCP
Fire Fighting	Aerosol
Size (W*D*H)	PCS:1200*1250*2200mm Battery Cabinet: 1200*1250*2200mm*3
System Weight	PCS:730kg Battery Cabinet: 3000kg
AI Platform	Moose Cloud (Web), Huafon ESS App (Mobile)

HS50 High Voltage Residential ESS



Model	HS5010	HS5012	HS5015	HS5017	HS5020
Battery					
Battery Type	LFP				
Nominal Capacity	10.24kWh	12.8kWh	15.36kWh	17.92kWh	20.48kWh
Nominal Voltage	204.8V	256V	307.2V	358.4V	409.6V
Operating Voltage Range	179.2V~230.4V	224V~288V	268.8V~345.6V	313.6V~403.2V	358.4V~460.8V
Rated. Charging/Discharging Current	25A				
Max. Charging/Discharging Current	50A				
Depth of Discharge (DoD)	90%				
Cycle Life	6000 Times				
General Specification					
Dimension (W*D*H) (mm)	580*400*800mm	580*400*950mm	580*400*1100mm	580*400*1250mm	580*400*1400mm
Weight	134±0.5kg	162±0.5kg	190±0.5kg	218±0.5kg	246±0.5kg
IP Protection	IP65				
Installation	Floor Stand				
Scalability	Support 4 packs in parallel				
Operating Temperature	Charging: 0°C~50°C / 32°F~122°F; Discharging: -10°C~50°C / -14°F~122°F 1				
Storage Temperature	-20°C~55°C / -4°F~131°F				
Cooling	Natural Convection				
Relative Humidity	0%~95% RH				
Max. Operating Altitude	2000m				
Module Connection	4 in Series	5 in Series	6 in Series	7 in Series	8 in Series
Communication	CAN, RS485				
Compatible Inverters	Huaфон ESS, Growatt, Deye, Solis... 2				
AI Platform	Moose Cloud (Web), Huaфон ESS App (Mobile)				
Standard Compliance					
Transport Testing Requirement	UN38.3				
Safety	IEC62619, IEC60730, IEC62477, IEC63056				
EMC	CE-EMC EN 61000-6-1 / -3				

*1 Battery performance decreases when the temperature is below 0°C/32°F or above 40°C/104°F.
*2 Product adapts to multiple brands of inverters, feel free to contact sales if any.

HS100 Low Voltage Residential ESS

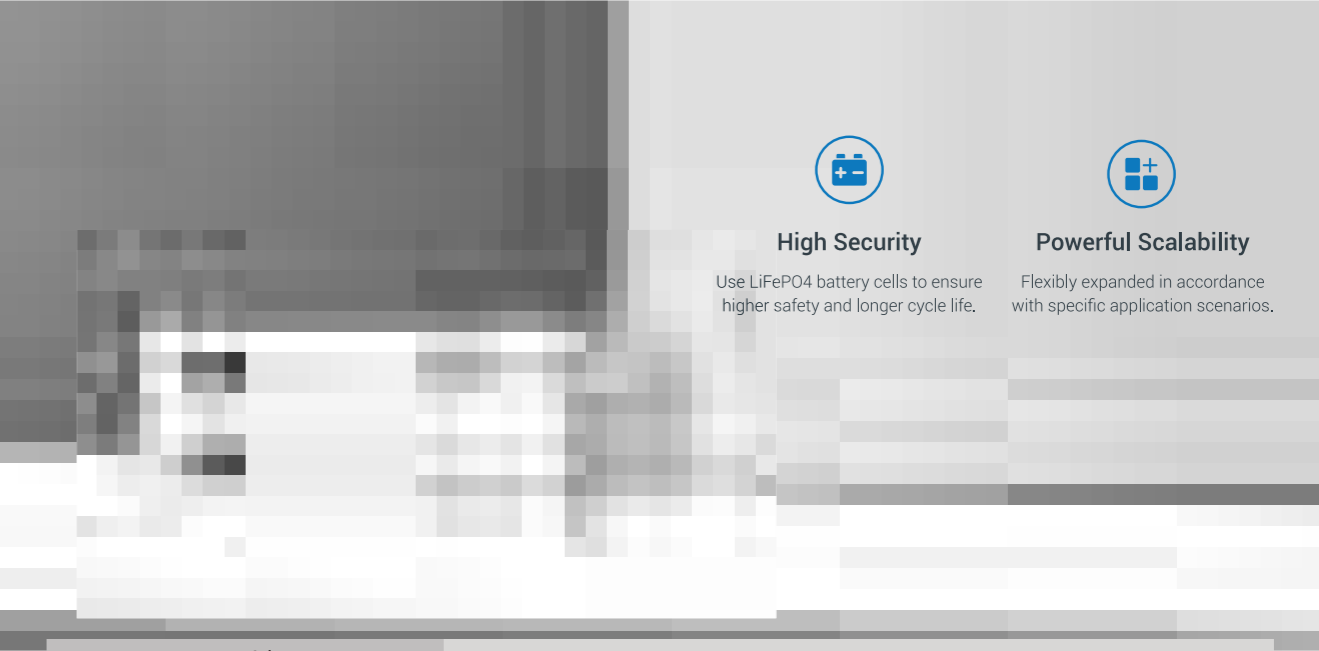


Model	HS1005	HS10010	HS10015
Battery			
Battery Type	LFP		
Nominal Capacity	5.12kWh	10.24kWh	15.36kWh
Nominal Voltage	51.2V		
Operating Voltage Range	44.8~57.6V		
Rated. Charging/Discharging Curren	50A	100A	100A
Max. Charging/Discharging Current	100A	120A	120A
Depth of Discharge (DoD)	90%		
Cycle Life	6000 Times		
General Specification			
Dimension (W*D*H)	600*250.5*615mm	600*250.5*1095mm	600*250.5*1580mm
Weight	69±3kg	132±3kg	195±3kg
IP Protection	IP65	IP65	IP65
Installation	Floor Stand (Standard), Wall Mounted (Optional)		Floor Stand (Standard)
Operating Temperature	Charging: 0°C~50°C / 32°F~122°F; Discharging: -10°C~50°C / 14°F~122°F ¹		
Storage Temperature	-20°C~55°C / -4°F~131°F		
Cooling	Natural Convection		
Relative Humidity	0% ~ 95% RH		
Max. Operating Altitude	3000m		
Module Connection	/	2 in Parallel	3 in Parallel
Communication	CAN, RS485		
Compatible Inverters	Huaфон ESS, Growatt, Deye, Solis... ²		
AI Platform	Moose Cloud (Web), Huaфон ESS App (Mobile)		
Standard & Certification			
Transport Testing Requirement	UN38.3		
Safety	IEC62619, IEC60730		
EMC	CE-EMC EN 61000-6-1 / -3		

*1 Battery performance decreases when the temperature is below 0°C/32°F or above 40°C/104°F.

*2 Product adapts to multiple brands of inverters, feel free to contact sales if any.

BM512 Low Voltage Battery Module

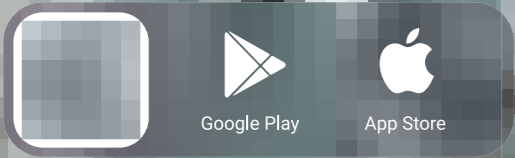


Model	BM512
Battery	
Battery Type	LFP
Usable Capacity	5.12kWh
Nominal Voltage	51.2V
Operating Voltage Range	44.8V ~ 57.6V
Rated. Charging/Discharging Current	50A
Max. Charging/Discharging Current	100A
Depth of Discharge (DoD)	90%
Cycle Life	6000 Times
General Specification	
Dimension (W*D*H)	468*429*190mm
Weight	49±1kg
IP Protection	IP20
Operating Temperature	Charging: 0°C~50°C / 32°F~122°F; Discharging: -10°C~50°C / 14°F~122°F ¹
Storage Temperature	-20°C~55°C / -4°F~131°F
Cooling	Natural Convection
Relative Humidity	0% ~ 95% RH
Max. Operating Altitude	3000m
Communication	CAN, RS485
Compatible Inverters	Huafon ESS, Growatt, Deye, Solis... ²
Standard & Certification	
Transport Testing Requirement	UN38.3
Safety	IEC62619, IEC60730
EMC	CE-EMC EN 61000-6-1 / -3

*1 Battery performance decreases when the temperature is below 0°C/32°F or above 40°C/104°F.

*2 Product adapts to multiple brands of inverters, feel free to contact sales if any.

Residential ESS



Huaфон ESS

Cloud / App modes offer intelligent and optimized control policy

► Self-consumption

It stores electricity easily and provides power at night, to double the green energy usage in your house, which is also the most effective way to reduce carbon emission and gain energy independence.

► Time-of-use

By time-based, the BESS will charge and discharge intelligently, that is, it will charge in off-peak hours, and discharge in peak hours seamlessly. We ensure users the most cost efficient control.

► Backup Power

There is much less anxiety when your house experiences an electrical blackout. BESS will be turned on and provide you safe and reliable stored power, giving peace of mind.

JoyDeer 600 Portable Power Station



Model		P600
Wi-Fi / Bluetooth	App	OTA
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Battery Health Monitoring		Soft/Bright/SOS Lighting
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Specification		
Power	600W	
Capacity	635Wh	
Battery Type	Li-NCM	
Cycle Life	1,000+ Cycles to 80% Original Capacity	
Dimension	289x187x180mm (11.38*7.36*7.09in)	
Weight	6.5kg	
Discharge Temprature	-20°C~40°C / -4°F~ 104°F (±41°F)	
Charging Temprature	0°C~40°C / 32°F~104°F (±41°F)	
Material	PC+ABS, UL 94V-0	
Certifications	MSDS, UN38.3, PSE, FCC, CE, UL, ROHS	
Output		
AC Output	2 Ports (110V/120V/220V/230V, 50Hz/60Hz)	
USB-A	3 Ports (18W Max)	
Type-C	1 Port (100W Max)	
12V DC (Vehicle output)	1 Port (120W Max)	
DC5521	2 Ports (120W Max)	
Input		
DC5525	120W Max	
Type-C	100W Max	
Vehicle Input	120W Max	
Solar Panel Input	100W Max	

TECHNICAL ADVANTAGES

Proprietary Intelligent Manufacturing
Top Universities' Professionals

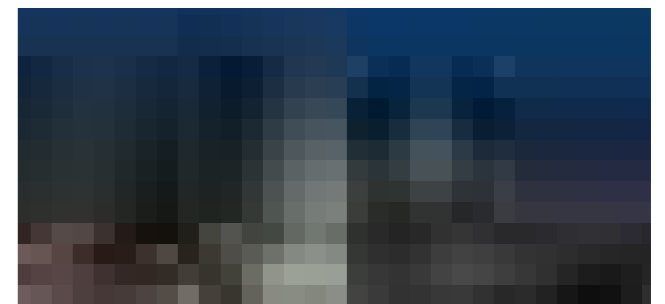
Proprietary Intelligent Manufacturing

Huafon ESS owns large manufacturing facilities, adopting the latest intelligent manufacturing technologies to drastically improve production efficiency and ensure high product quality.



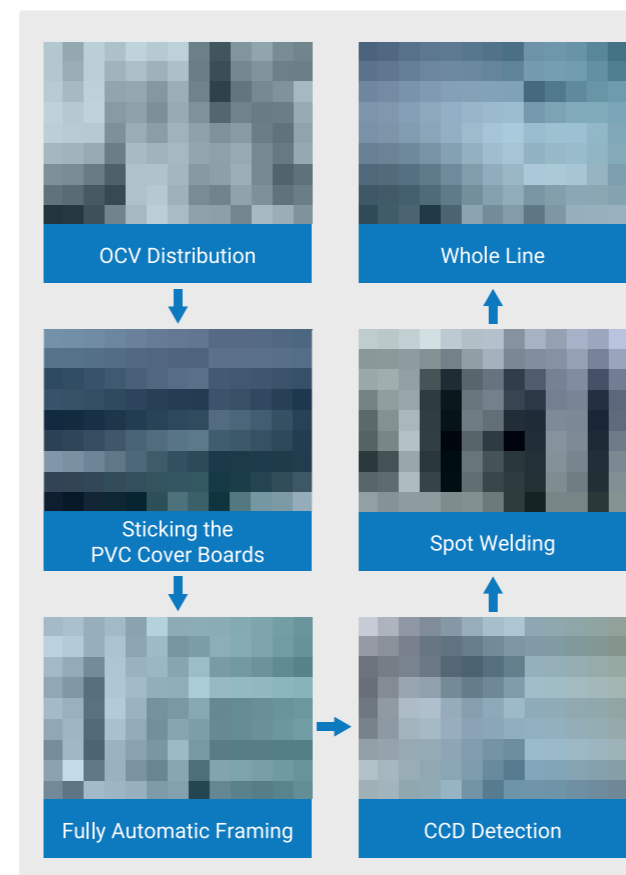
Top Universities' Professionals

Huafon ESS established a new energy joint R&D center with well-known universities, and has a number of intellectual property rights such as inventions, utility models, and copy rights in the fields of energy management, battery safety analysis, and multi-energy control.

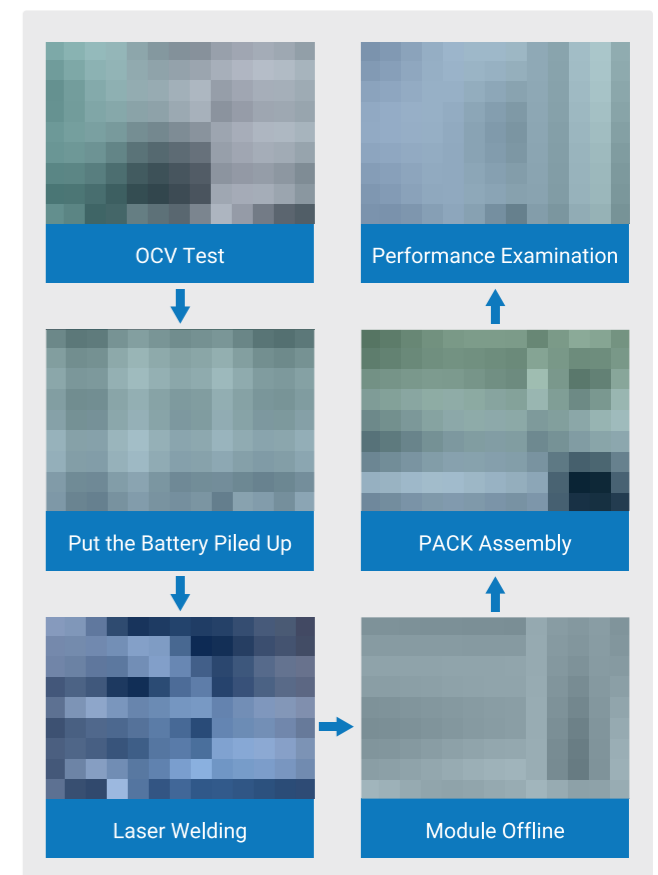


Automated Production Line

Cylindrical Production Line



Square Shell Production Line



PROJECT CASES

1. Energy Management Project of Xianghua Cloud Center
2. Energy Management Project of Alibaba Data Center
3. Energy Storage FM project of Zhaoqing Thermal Power Plant
4. New Energy Micro-grid for State Grid Corporation
5. Photovoltaic Energy System of Shandong Power Grid
6. Power Supply Project for Sinopec Drilling Platform
7. Intelligent Operation Service Platform for Zhejiang Energy
8. Xinmei Low-carbon Factory Management Platform Project
9. Residential ESS Project for Hubei Ranger Station
10. Photovoltaic Power Station Operation Project in Australia
11. Residential ESS Separate Machine in Northern Europe
12. All-in-one Residential Photovoltaic ESS in Nigeria
13. Competitive Portable Power Station

Project Cases



1

Energy management project of Xianghua Cloud Center

70.08MWh

Jiangsu, China

This is the largest energy storage project for data centers in China. We provided it with Huaфон Moose Cloud Platform and BESS. On the one hand, the peak power consumption of the data center is reduced through peak shaving management. On the other hand, it was used as a backup power source to reduce the configuration of diesel engines to save costs.



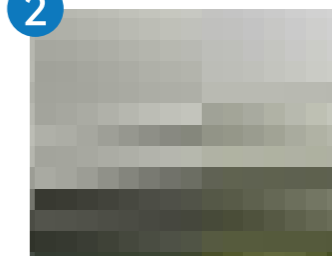
Energy management project of Alibaba data center

370kW/1.11MWh

Shanghai, China

We provided Huaфон Moose Cloud Platform and BESS for this project. We use peak shaving to reduce the peak power consumption and operating costs of the data center, increasing the income of the data center by 4.85%. After years of operation, through our self-developed battery health management platform, we used the "Dynamic Capacity Balancing Solution" to optimize system capacity and performance without replacing the battery pack.

2



3

Energy storage FM project of Zhaoqing thermal power plant

10MW/5.6MWh

Guangdong, China

We provided Huaфон Moose Cloud Platform and BESS for this project. By installing energy storage systems in thermal power generation companies, we can provide power grid companies with frequency regulation resources that can quickly respond to power dispatching instructions, ensure more stable operation of thermal power, and improve the efficiency of primary energy use. The operation of the energy storage system will not generate additional CO₂ emissions, helping power generation companies achieve sustainable development.



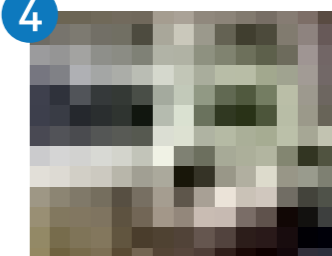
New Energy for State Grid Corporation

Jiangsu, China

PV (333.9kW) + energy storage (145kWh) + DC pile (180kW) + AC charging pile (89kW) + wind turbine (1200kW) + ice storage (2MW)

We built a cloud microgrid energy management system for this project to improve energy utilization efficiency and economic benefits for our client. It has been in operation for one and a half years, and the utilization rate of renewable energy has increased by 15%.

4



5

Photovoltaic Energy System of Shandong Power Grid

1.6MW/3.2MWh

Shandong, China

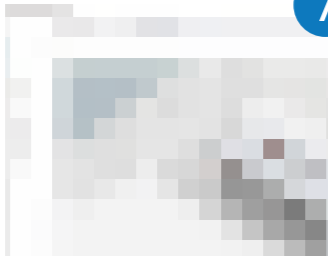
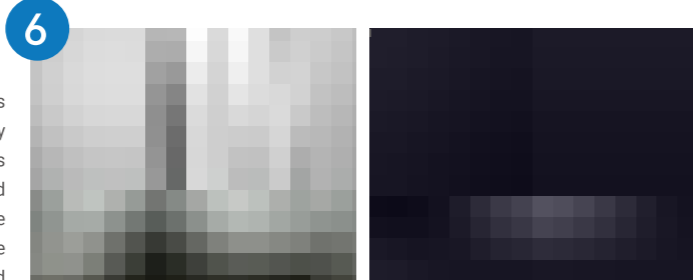
We provided Smart Energy Management System (SEMS) and PCS for this project. The system has stable and efficient operation control and optimal scheduling capabilities and meets various functional requirements such as new energy consumption, curve tracking, peak shaving, emergency power support, primary frequency regulation, AGC, AVAVC, etc. The system provided customers with a comprehensive power station evaluation index system, and accurately analyzed the production and operation of the power station.



Power Supply Project for Sinopec Drilling Platform

1MW/1.2MWh
Jilin, China

The drilling platform replaced the original diesel generator set with a gas generator set. In this project, our BESS provided applications such as frequency regulation, voltage regulation, emergency power support, and black start. In this solution, the energy storage system and the gas-fired generator set are connected to our self-developed operation platform, and are managed and controlled by the platform to optimize the scheduling of the power supply system of the entire drilling platform to ensure the stability of the system voltage and frequency, and effectively guarantee the stable power consumption of the load.



Intelligent Operation Service Platform for Zhejiang Energy

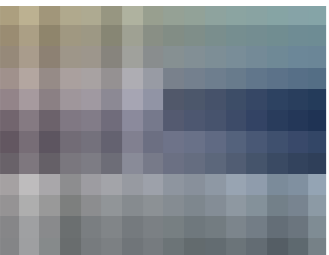
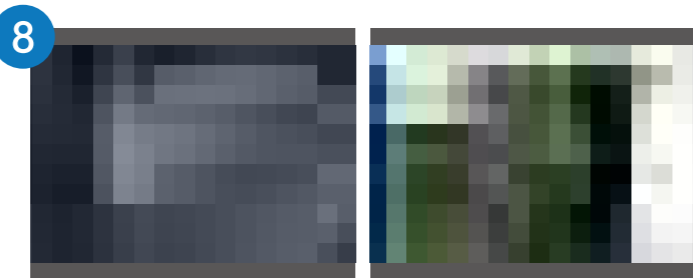
1MWh
Zhejiang, China

The cloud platform we provided for our customer supports real-time data uploaded and monitoring by connection with all devices in the power station to provide a comprehensive operating system. We realized big data collection, analysis and visualization to help customers know what's happening in the power station anytime, anywhere.

Xinmei Low-carbon Factory Management Platform Project

Energy storage (360kWh/902kWh)
PV (1.48MW/1.75MW)
Zhejiang, China

We provided the client with our Huafo Moose Cloud Platform and operation services. Through our platform control strategy, we have optimized the operating efficiency and economy of the microgrid for customers and improved the customer's digital intelligent low-carbon management capabilities. We have helped customers promote the zero-carbonization of factory energy emissions and transition to low-carbon manufacturing.



Residential ESS Project for Hubei Ranger Station

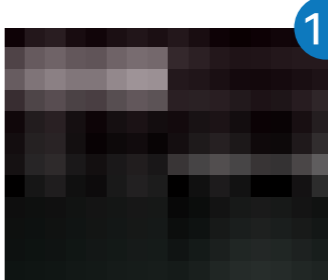
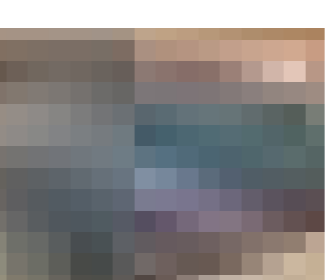
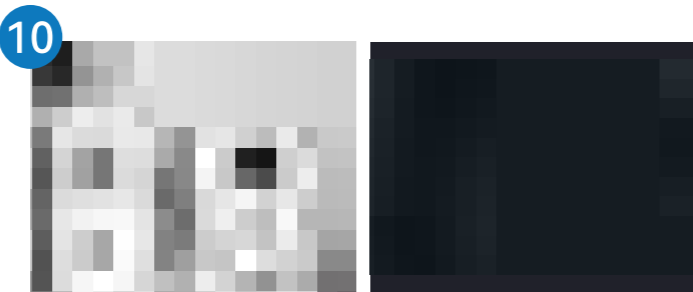
Energy storage 2x (6kW / 9.21kWh)
PV (12.96kWp)
Hubei, China

We provided a residential ESS for customers to ensure its power supply. Meanwhile, advanced AI tech was applied to optimize the control strategy and increase energy utilization significantly. It presents our great ability to make energy cleaner and make the world greener. This is also a big step for us on the governmental project path.

Residential ESS Project for Hubei Ranger Station

Energy storage2x (5kW/9.21kWh)
PV (12.96kWp)
Hubei, China

We provided a residential ESS for customers to ensure its power supply. Meanwhile, advanced AI tech was applied to optimize the control strategy and increase energy utilization significantly. It presents our great ability to make energy cleaner and make the world greener. This is also a big step for us on the governmental project path.



Photovoltaic Power Station Operation Project in Australia

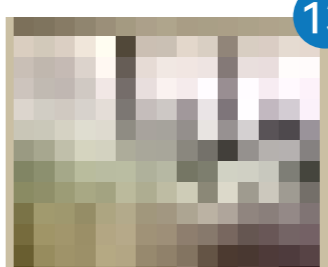
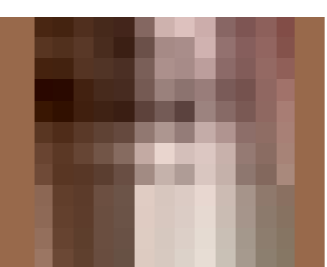
2.6 MW
Australia

Based on our professional experience in PV power generation, BESS, and power markets, we help customers conveniently check the income of photovoltaic power generation every day through the integration of the Internet of Things, big data, artificial intelligence, and other technologies. We provide efficient online 7x24 hours monitoring and remote diagnosis, which greatly reduces the customer's operation and maintenance costs.

Residential ESS Separate Machine in Northern Europe 1

5kW / 4.6kWh
North Europe

We provided residential ESS separate machines connected with our self-developed integrated-energy operation platform for our customers. Through intelligent management systems, we made energy costs visual and highly controllable, which just meets customers' needs for cost down to increase benefits.



Residential ESS Separate Machine in Northern Europe 2

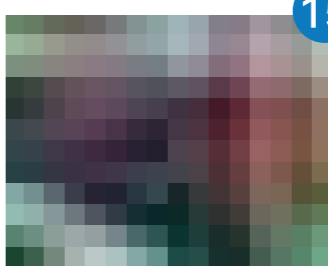
5kW/9.21kWh, 5kW/13.82kWh
North Europe

We provided residential ESS separate machines connected with our self-developed integrated-energy operation platform for our customers. Through intelligent management systems, we made energy costs visual and highly controllable, which just meets customers' needs for cost down to increase benefits.

All-in-one Residential Photovoltaic ESS in Nigeria

Nigeria

The residential photovoltaic ESS in Nigeria helped our users realize great electric cost control. And with its backup power storage ability, it provides highly-efficient and reliable power when electricity is unstable, ensuring basic and essential needs for users' daily life.



Competitive Portable Power Station

300W/500W
Japan, Europe, and USA

Our portable power station products are mainly sold and distributed in Japan, Europe, and USA through online channels. Our next-generation product launch will kick off soon in early 2023.