

Grid Renewable Energy Storage Power Supply(GRES system)

GRES is an intelligent and modular power supply equipment integrating lithium battery and MPCS. According to different application scenarios, lithium battery, bidirectional DC / AC converter, bidirectional DC / DC converter, Static switch and Power management system can be flexibly combined to realize grid connected power supply, off grid power supply and off grid uninterrupted power supply, static reactive power compensation, harmonic suppression and other function etc.. It can access to new energy, power grid, diesel generator to realize multi-energy reasonable configuration, scientific utilization, to provide users with green, environmental protection, noise free, high reliability and high security power services.

With selected LFP batteries for mobile use, it is a robust energy storage solution which could realize ultra mobile, zero-emission, adaptable to different terrains.



Configuration



PCS

Bidirectional AC / DC converter can realize the bidirectional conversion from DC to AC and AC to DC. It can not only convert AC to DC to charge battery, but also convert DC to AC to supply power to load or feed back to power grid.



Battery System

The system mainly consists of safe, efficient and long-life lithium iron phosphate cells, which are connected in series to form battery modules, and multiple modules are connected in series to form battery clusters.



Battery management system

The core components of the system can effectively protect the battery from overcharge, overdischarge and over-current. At the same time, the balanced management of the cells can ensure the safe, reliable and efficient operation of the whole system.



Power Management System

System operation data monitoring, operation strategy management, historical data record, system status record, etc.



Enclosure

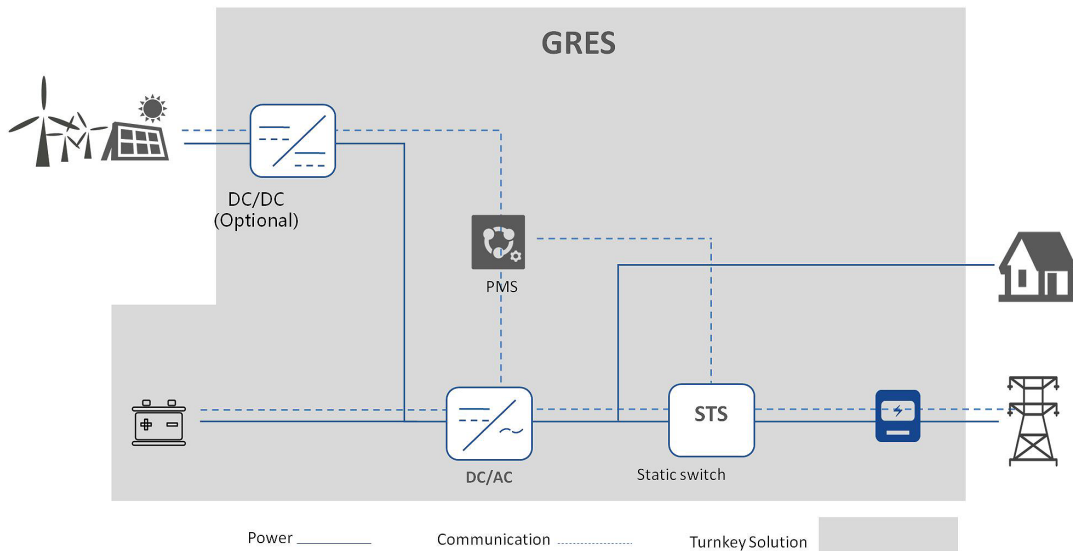
Protection degree IP54.



Air Conditioning

Air Conditioning (HVAC) system is configured to maintained an optimal temperature to maximize energy system operational life and efficiency.

System topology



Key product features and benefits

Safe and reliable

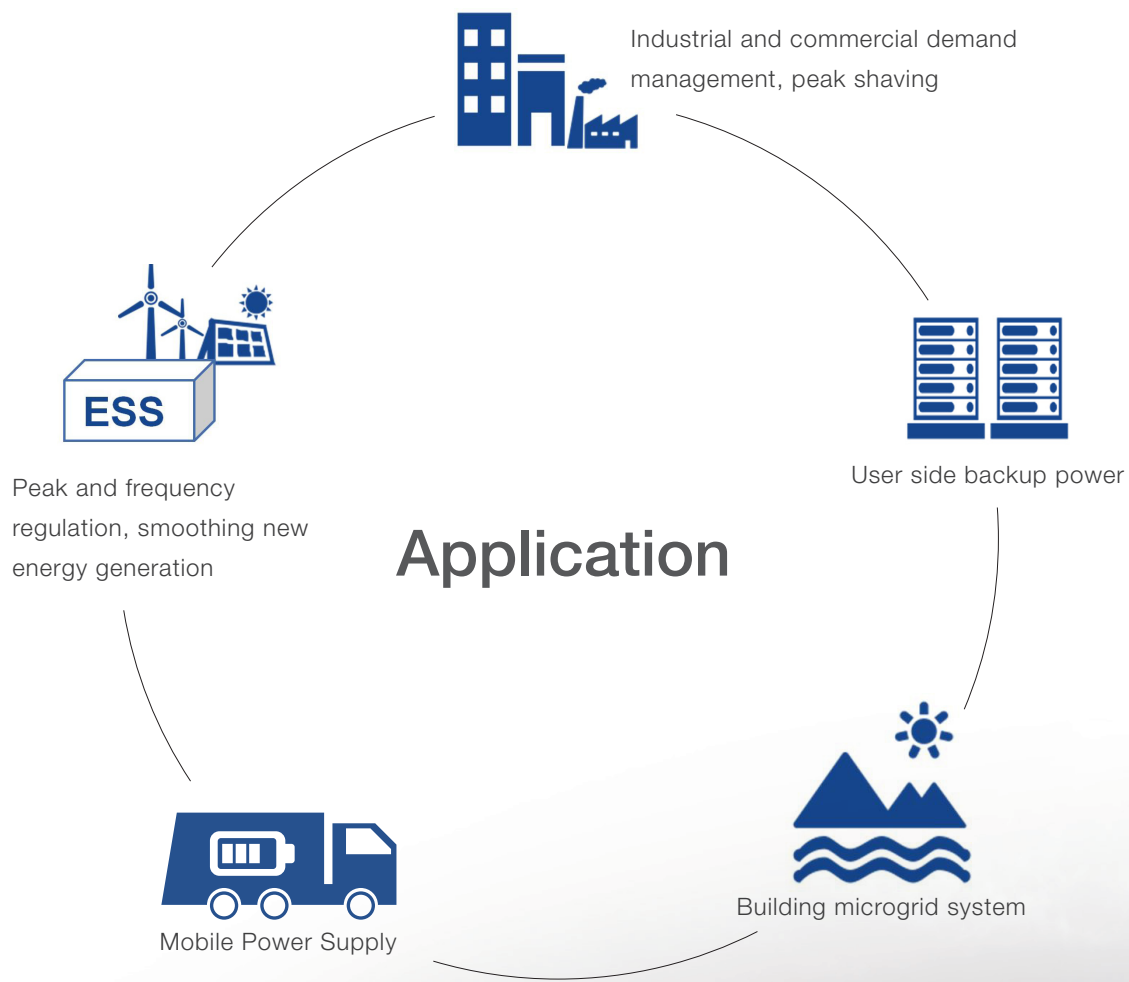
- High quality LFP batteries for mobile use.
- Laser welding is used to wiring electrode, which is of high strength and low impedance.
- Battery module is designed with PC bracket and Reinforce steel structure to guarantee the highest safety of the system, in transportation, installation and operation.
- Damping pad design for Battery installation to Improve the impact resistance of the system.
- IP54, safe and reliable operation in outdoor environment.
- Serially designed PCS and battery pack eliminates circulating current and improve system reliability.
- Integrated BMS,DC, AC multi-layer protection, maximum safety performance design.

Efficient and Convenient

- Integrated system, standard modular power module and battery module, easy for installation, maintenance and capacity expansion.
- Easy access to PV and diesel generator, intelligent multi-energy management.
- Fixed on the ground or mounted on vehicle, can be loaded and unloaded by forklift and hoisted by lifting ring.
- Multi systems could be connected in parallel.

Cost optimization

- One investment, multiple benefits:Peak shaving, backup power supply, microgrid building,power quality improving and energy storage,etc.
- Small size, light weight, less space and installation cost.
- Long cycle life, low failure rate, reduce operation and maintenance investment.
- Maximize green energy utilization.





GRES-75-50

Battery capacity: **75kWh**

PCS capacity: **50kW**

Dimension: **1680*1500*1700** (W*D*H)mm

GRES-150-100

Battery capacity: **150kWh**

PCS capacity: **100kW**

Dimension: **1680*2270*1700** (W*D*H)mm



GRES-225-150

Battery capacity: **225kWh**

PCS capacity: **150kW**

Dimension: **1680*3050*1700**(W*D*H)mm

GRES-300-200

Battery capacity: **300kWh**

PCS capacity: **200kW**

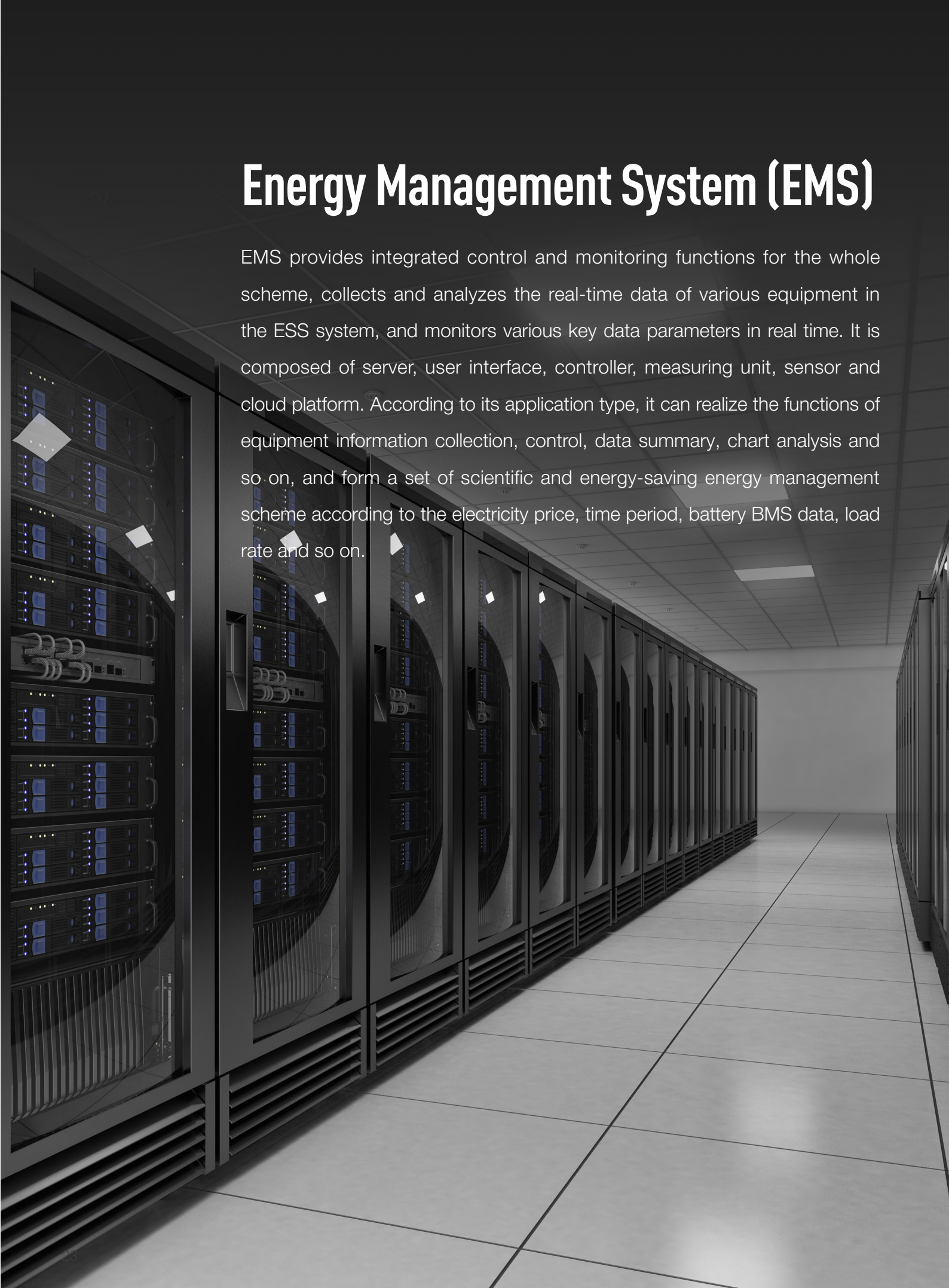
Dimension: **1680*3830*1700**(W*D*H) mm



Model	GRES-75-50	GRES-150-100	GRES-225-150	GRES-300-200
AC parameters (grid connected)				
Rated output power (kW)	50	100	150	200
Max output power (kW)	55	110	165	220
Rated grid voltage (V)	3W+N+PE, 380			
Grid voltage range	±15%			
Rated grid frequency (Hz)	50/60			
Grid frequency range (Hz)	±2			
Current waveform distortion rate	<3%(Rated voltage)			
DC component	<0.5%In			
Power factor	>0.99(Rated voltage)			
Power factor adjustable range	1(lead) ~ 1(lag)			
Overload capacity	105% Long term			
AC parameters (off grid)				
Rated output power (kW)	50	100	150	200
Max output power (kW)	55	110	165	220
Rated grid voltage (V)	3W+N+PE, 380			
Current waveform distortion rate	<3%(Linear Load)			
Rated frequency(Hz)	50/60			
Overload capacity	105% Long term			
Battery				
Battery type	Lithium iron phosphate			
Energy of each module(kWh)	5.12			
Module qty	15	30	45	60
Total power (kWh)	76.8	153.6	230.4	307.2
Running Time (h)	1.5(Optional by Changing module qty)			
Cyclife	25°C 0.5C/0.5C 100%DOD EOL80% ≥4000 cycles			
System efficiency				
Max efficiency	95%			
Protection				
DC switch	YES			
AC switch	YES			
Grid monitoring	YES			
Surge protection	DC /AC 2nd level			
Basic Parameters				
Dimension(W*D*H)(mm)	1680*1500*1700	1680*2270*1700	1680*3050*1700	1680*3830*1700
Weight (kg)	1395	2470	3545	4620
Isolated transformer	NO			
On/off grid switching	STS			
Protection	Outdoor IP54			
Working temperature	-20 ~ 55°C (>45°C derating)			
Relative humidity	0 ~ 95% (no condensing)			
Cooling	Intelligent air cooling (intelligent heating optional)			
Max working altitude(m)	4000(>2000 derating)			
Display	Touch screen			
Communication	RS485、CAN、LAN			
Communication Protocol	Modbus-RTU, Modbus-TCP, CAN2.0B			
Certification	IEC62477-1/EN61000/IEC62619/IEC62620/UN38.3			

Energy Management System (EMS)

EMS provides integrated control and monitoring functions for the whole scheme, collects and analyzes the real-time data of various equipment in the ESS system, and monitors various key data parameters in real time. It is composed of server, user interface, controller, measuring unit, sensor and cloud platform. According to its application type, it can realize the functions of equipment information collection, control, data summary, chart analysis and so on, and form a set of scientific and energy-saving energy management scheme according to the electricity price, time period, battery BMS data, load rate and so on.





Main Function

■ Power station monitoring:

7 * 24-hour second level real-time monitoring and equipment control; Intelligent alarm, multiple notification methods.

■ Energy storage management:

Demand management, power factor regulation, SOC display, charge discharge cycle display, load monitoring, electricity cost optimization.

■ Energy efficiency management:

Year on year and month on month analysis: Energy consumption tracking; Quickly identify major energy consumers and consumption increasing points.

■ Equipment management:

Equipment life cycle management; Electronic archives.

■ Efficient O&M

Unified online and offline operation and maintenance; Automatic tracking record of the whole process of operation and maintenance.

■ Power quality optimization:

Active power automatic control, reactive power control, three-phase imbalance regulation; Visual monitoring of harmonics; Intelligent alarm.