GX™ ENERGY

INTEGRATED ENERGY STORAGE SYSTEM

PARAMETERS

GRES-75-50
50KW / 75KWH

GRES-150-100
100KW / 150KWH

GRES-225-150
150KW / 225KWH

GRES-300-200
200KW / 300KWH

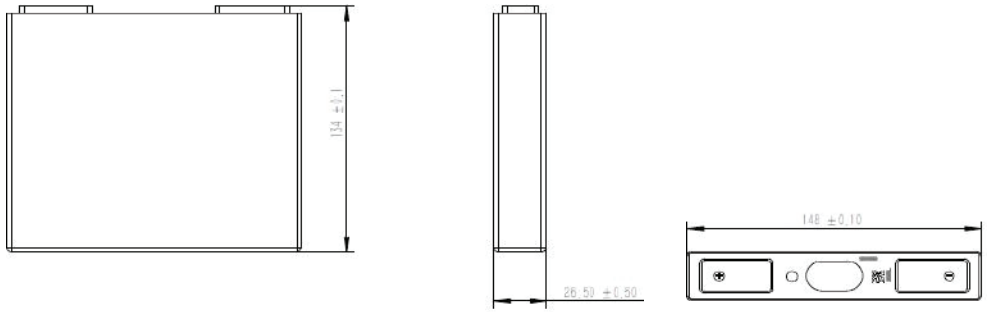
Parameter	GRES-75-50	GRES-150-100	GRES-225-150	GRES-300-200
AC parameters (grid connected)				
Rated output power (kW)	50	100	150	200
Max output power (kW)	55	110	165 2	20
Rated grid voltage (V)	3W+N+PE, 380			
Grid voltage range	±15%			
Rated grid frequency (Hz)	50			
Grid frequency range (Hz)	±2			
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	110% Long term			

Parameter	GRES-75-50	GRES-150-100	GRES-225-150	GRES-300-200
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			
Overload capacity	110% Long term			
Battery				
Battery type	Lithium iron phosphate			
Energy of each module(kWh)	15.36			
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)			
Cyclelife	25℃0.5C/0.5C100%DODEOL80%≥4000s			
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*2300
Weight (kg)	1395	2470	3545	4620
Isolated transformer	NO			
On/off grid switching	STS			
Protection	Outdoor IP54			
Working temperature	-20～55℃(>45℃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			

CELL

The lithium battery system uses 3.2V 50Ah LFP prismatic cell, which reduces the possibility of cell damage caused by mechanical damage on the cell surface and improves the safety performance of the product. The explosion-proof valve on the top ensure that in any extreme case (such as internal short circuit, battery overcharge and overdischarge), a large amount of gas quickly accumulated in the cell can be discharged through the riot valve,which highly improves the safety.

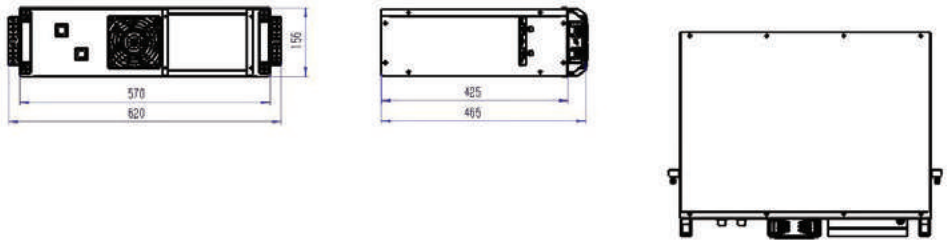
Parameter		
Battery type	LFP	
Rated capacity	50.0Ah	1C@25ºC
Rated voltage	3.20V	
Average working voltage	2.5~3.65V	
AC-impedamce	≤1.0mΩ	
Weight	1110±20g	
Max charge current	1.5C	Continuous
	2C	50%SOC, 30s
Max discharge current	2C	Continuous
	5C	50%SOC, 30s
Max operating temperature range	-20C/ + 60C	
Charge	0ºC~45ºC	
Discharge	-20ºC/+60ºC	
Optimal operating temperature range	15ºC~35ºC	
Storage temperature	-40ºC/+60ºC	<1 month -40ºC~45ºC <6 month -20ºC~35ºC
Cycle life	≥4000 times	25ºC 1C/1C



MODULE

The battery module, consists of cells of 3.2V,50Ah. The module has a built-in BMU system, which can collect the voltage and temperature of each cell, and manage the cell balance, so as to ensure the normal operation of the whole module safely and efficiently.

Parameter	EP50-2P16S
Rated capacity	100Ah
Configuration	2P16S
Rated voltage	51.2V
Rated energy	5.12kWh
Max continuous charge current	100A (1C)
Max continuous discharge current	100A (1C)
Working voltage range	44.8～58.4V
Operating temperature range	-20℃～55℃
Weight	55kg
DImension W*D*H)	570mm*455mm*156mm
Communication	CAN
Cooling	Intelligent fan



APPLICATION SENARIOS

MOBILE
BACKUP
POWER

INTERGRATED
ENERGY STORAGE
SELF USE

PEAK
SAVINGS

LIMIT
GRID PEAK
POWER

POWER
QUALITY
MANAGEMENT

SHORT TERM
EXPANSION OF
POWER CAPACITY

APPLICATION

MOBILE ENERGY STORAGE SYSTEM

The intelligent mobile energy storage system (vehicle) truly realizes the system integration of multiple application integration of "peak filling and valley filling + power protection + emergency + standby + capacity expansion + intelligent charging and selling + mobile rescue". In addition to providing power supply guarantee for emergency repair of emergencies such as earthquakes, ice disasters, mine disasters and major political power protection activities, It can also provide emergency backup power for big data centers, hospitals, airports, communications, etc., temporarily power supply during line maintenance, eliminate melting ice for ice-covered lines, adjust power load peaks and valleys for islands, mountain areas, urban business districts and other places, and charge electric vehicles in cities.

APPLICATION
BACK UP POWER

GRES built-in energy storage battery, energy storage converter, monitoring system and off-grid intelligent switching system, with black start function, the system can be intelligent switching to achieve uninterrupted power supply when the grid is interrupted.

Compared with traditional power supply methods such as diesel Generator, its modular design for easy installation and maintenance, outdoor integrated design that can be mobile at any time, and low noise, green environmental protection and other characteristics, so that it can better meet the customer's backup power supply needs. On this basis, the integration of STS module can realize seamless switching function to ensure uninterrupted power supply of users' critical loads.

APPLICATION

INTEGRATED SOLAR ENERGY STORAGE

The organic combination of photovoltaic power generation system and energy storage system can realize the transformation from passive energy saving to active energy output. Through the control strategy of PMS, the power grid, new energy and energy storage battery can realize mutual integration and energy complementation, and significantly reduce the cost of customer electricity.

GRES can be configured with PV control modules to support direct access to PV systems. Park or enterprise users use the roof of the factory, not only can make full use of solar energy resources, realize the spontaneous use of energy, but also can meet the various application needs of customers for new energy, such as grid-connected power supply, off-grid power supply, grid-connected power supply without online power supply mode.

DC BUS SCHEME,

THE EFFICIENCY IS IMPROVED BY 3%

ELECTRICAL CABINET

ELECTRICAL CABINET

THE ELECTRICAL PART ADOPTS MODULE DESIGN

- Standard configuration of function modules
- Power modules are configured on demand

ELECTRICAL CABINET

STS

Achieve seamless switch within 15ms between on & off grid

ELECTRICAL CABINET

BIDIRECTIONAL
AC/DC MODULE

- Realize AC and DC bidirectional conversion
- 50KW standard module design, on-demand configuration

ELECTRICAL CABINET

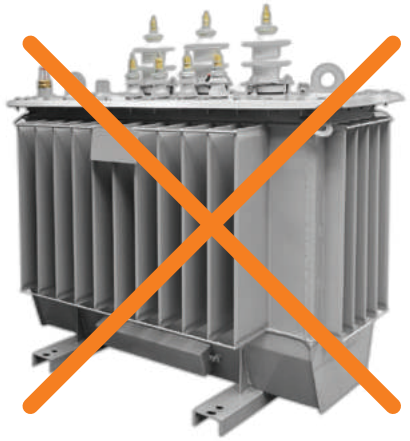
SOLAR CONTROLLER(MPPT)

- Seamless PV access
- 50KW Modular Design

3W+N+PE

3W+PE

- Improve compatibility
- Improve conversion efficiency
- Negative investment



BATTERY CABINET

75KWH
SINGLE BATTERY CABINET

SAFE DISPOSAL
OF BATTERIES

- Battery cell selection
- Battery Pack composition
- Battery group connect way

- BMS Battery Management System
- Monitoring unit system detection and early warning
- Electrical hardware protection

- Built-in fire protection measures and fire pretection linkage measures

BATTERY CELL

1

MATERIAL OF CELL

Although the energy density of lithium iron phosphate cell is slightly lower than that of ternary battery, it has great advantages in high temperature safety, thermal runaway controllability, battery cycle life, raw material cost and other aspects, making it the best choice for energy storage battery.

2

TYPE OF CELL

Square aluminum shell battery, Vent explosion-proof valve pressure relief design timely pressure relief; Triple safety protection more than 200 safety design.

3

CAPACITY

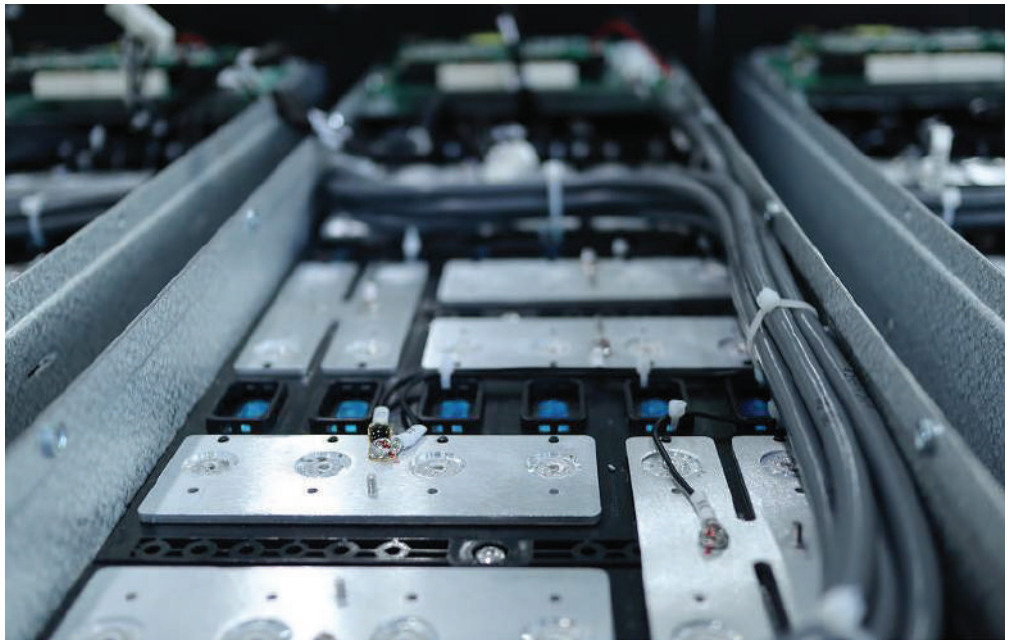
40Ah, 50Ah cell, the energy unit is small, the battery heat dissipation, safety control is relatively easy, the battey system stability, safety is high.

BATTERY PACK

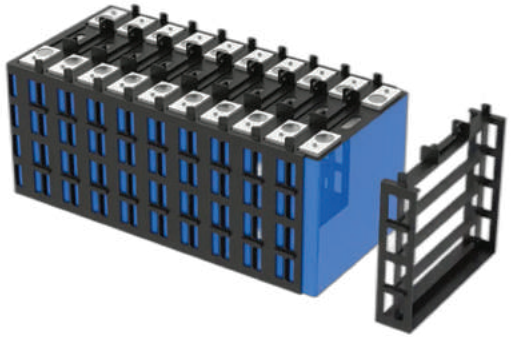
Lithium battery system adopts rack structure, scientific structure and high mechanical strength. Modular design, easy installation, easy maintenance. The whole structure ensures the reliability and security of the system to the greatest extent.

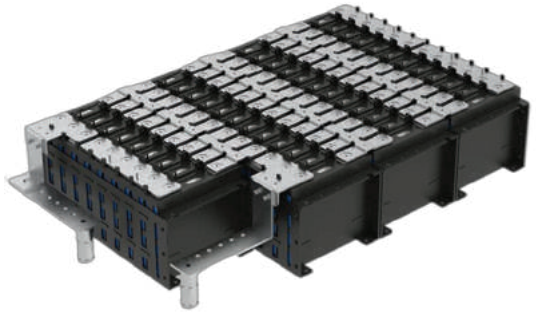
LASER WELDING

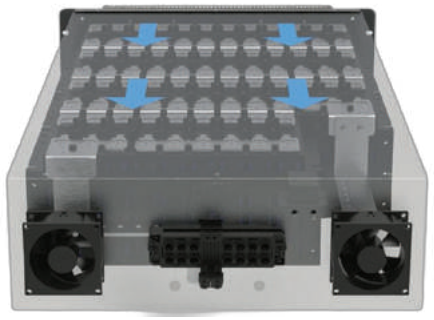
Laser welding connection, high strength, small internal resistance, compared with bolt fixing method more reliable. Bolts have the risk of screw loosening, which will cause damage to the corresponding cell and affect the operation of the entire system.



BATTERY PACK







THERMAL DESIGN

The design of reasonable and reliable heat dissipation channel, the use of intelligent air cooling technology, in the operation of the battery, the heat emitted by the battery can be exported to the module or system in time, improve the stability and reliability of the system.

INSULATION DESIGN

In addition to the PE blue insulating film of the cell itself, the plastic insulating bracket with high melting point and 2000V resistance is used to insulate and fix the cell, preventing touch and short circuit. It can keep the insulation between the cells to the maximum extent even when abnormal conditions occur, and improve the safety of the whole system.

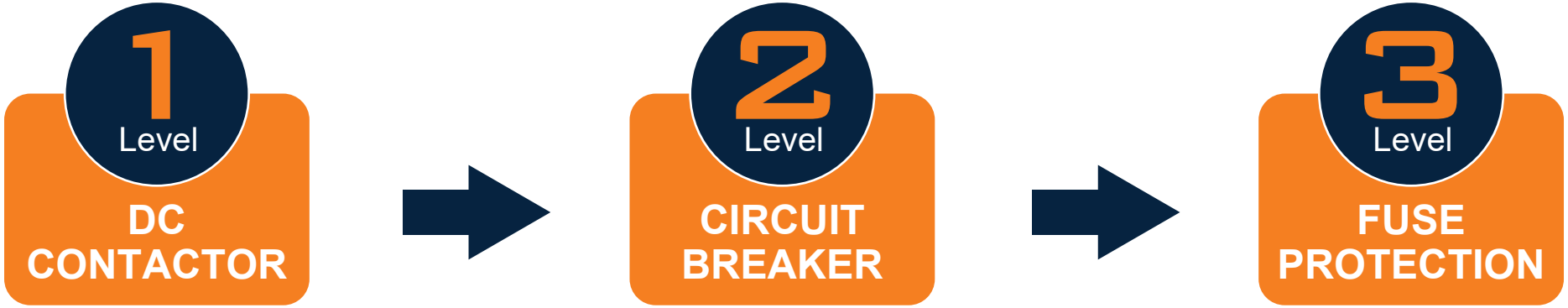
THERMAL ISOLATION DESIGN

The spacing between cells is >7mm to realize thermal isolation, avoid triggering the temperature increase of adjacent cells of thermal runaway cell, and reduce the risk of thermal runaway chain effect caused by heat conduction.

SAFETY DESIGN

The space above the pressure relief valve is reserved to prevent the explosion caused by excessive pressure in case of abnormal.

ELECTRICAL HARDWARE PROTECTION



THE FIRST LEVEL

It is realized by the DC contacter. When the battery management system recognizes the overcurrent phenomenon, the DC contacter is tripped to ensure that the system is not harmed by current.

THE SECOND LEVEL

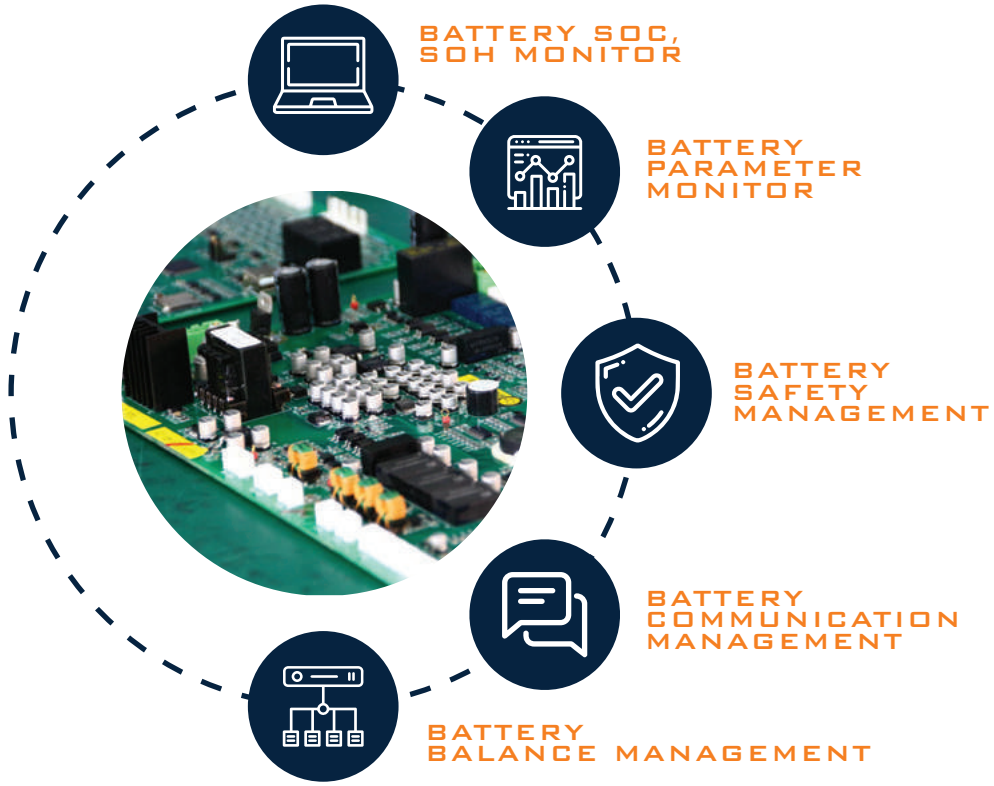
By the circuit breaker, when the DC contactor can not be broken due to DC overcurrent pulling arc, it can achieve further overcurrent protection and short circuit protection.

THE THIRD LEVEL

It is realized by the fuse protection. When the circuit breaker also fails to disconnect the loop, the third level of protection is realized by the fuse to ensure the safety of the battery system.

BMS PROTECTION

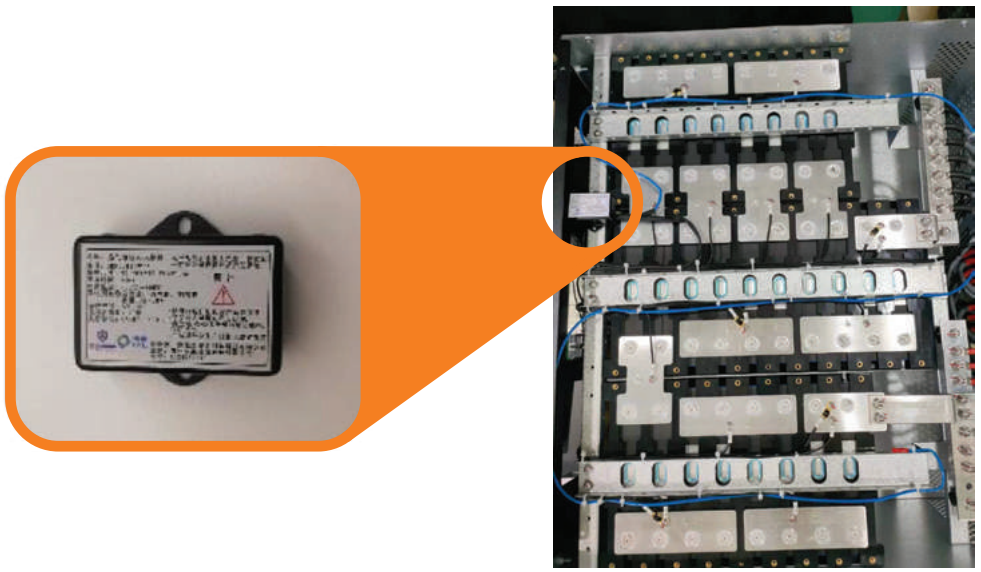
Battery management system is one of the core components of energy storage system, excellent BMS can ensure that the single cell group after the safety, life, discharge ability and other aspects have excellent performance, effectively protect the battery overcharge, overdischarge, overcurrent, etc., while avoiding the battery in a long time, high rate of charge and discharge caused by the single cell unbalanced, uneven temperature distribution and other issues. Ensure the safety, reliability and efficient operation of the whole system.

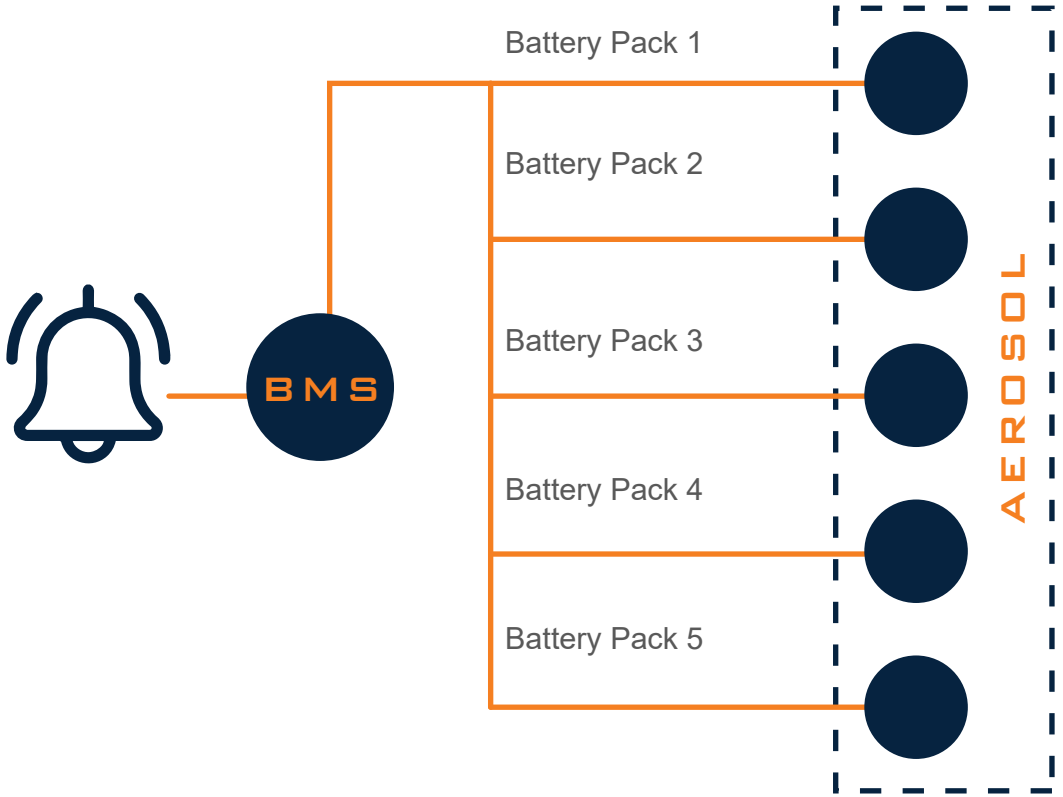


Active equalization with energy transfer; The equalization accuracy is less than 2%, and the equalization capability can reach 5A at most;

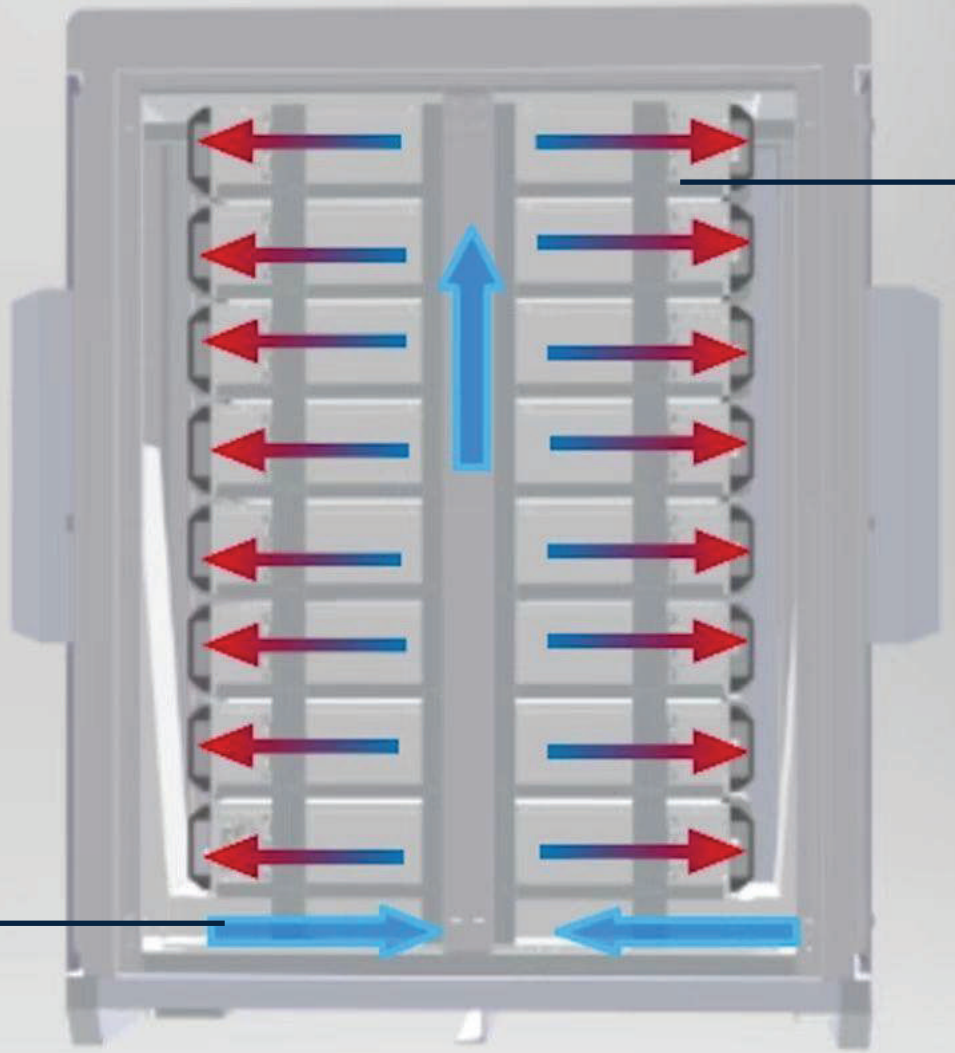
FIRE FIGHTING SYSTEM

Compared with the traditional fire-fighting measures outside the system, the module built-in aerosol can intervene earlier and effectively reduce the spread of thermal runaway. At the same time, when the aerosol action occurs, the BMS system will synchronize the linkage operation, forcibly disconnect the battery charge and discharge loop, trigger the fire alarm and fire response action, which can ensure that the battery end fault is controlled within the minimum range.





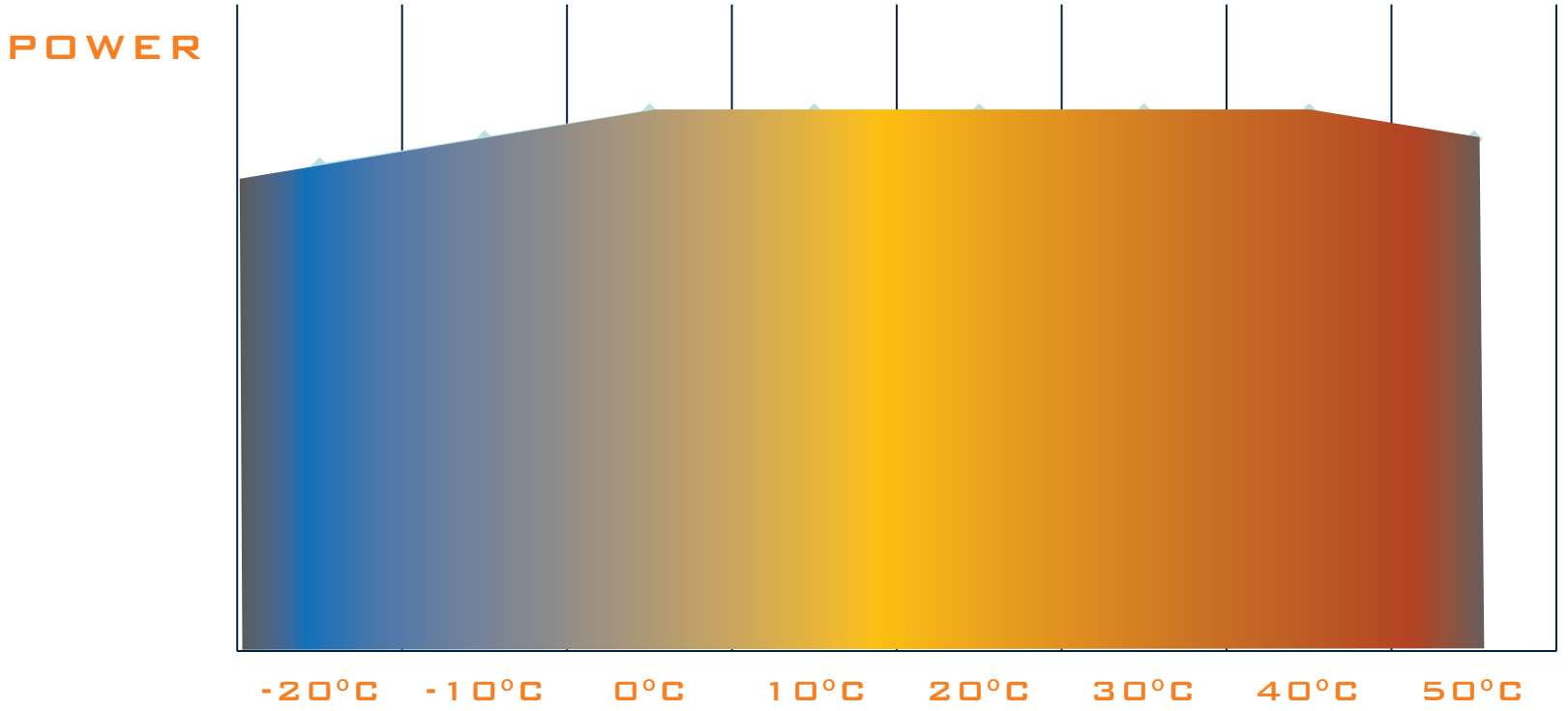
AIR CONDITIONER



HOT WIND

COLD WIND

INDEPENDENT AIR CONDITIONING DESIGN FOR BATTERY CABINET -20°C—55°C SMOOTH RUNNING



GRES REFERENCE

BEIJING AIRPORT STATIC VARIABLE POWER SUPPLY

COUNTRY: CHINA
CONFIGURATION:

Static variable power supply: 90KVA100Hz
Energy storage converter: 100KW
Lithium battery system: 245KWh

SOLUTION:

The mobile energy storage static variable power supply is easy to use, low noise, zero pollution, zero emission, low operating cost, and budget friendly system. It can also replace traditional diesel generators and be used as emergency power supply equipment in airports. The system is integrated with multiple functions.

GRES REFERENCE

MOBILE ENERGY STORAGE SYSTEM AS POWER SOURCE

COUNTRY: THAILAND
CONFIGURATION:

GRES 150-50 150kWh/50kW BESS

SOLUTION:

GRES will be used as power supply for testing equipment, it will be installed on a truck; It will be moved to remote area for testing. It is able to be charged by EV charger.

GRES REFERENCE

MOBILE ENERGY STORAGE SYSTEM AS POWER SOURCE

COUNTRY: GERMANY
CONFIGURATION:

GRES 225-150
GRES 150-100
GRES 75-50

SOLUTION:

Supplement utility power at sites or peak swift to save utility cost.Manufacture facility and EV charging stations are the main sites.

GRES REFERENCE

MOBILE ENERGY STORAGE SYSTEM AS POWER SOURCE

COUNTRY: UAE
CONFIGURATION:
GRES 75-50 75kWH 50kW

SOLUTION:
These GRESs will be used at construction sites, as an emergency power source. At the same time, it is used in combination with photovoltics and generators, and multi-energy mixed work.

GRES REFERENCE

MOBILE ENERGY STORAGE SYSTEM AS POWER SOURCE

COUNTRY: ETHIOPIA
CONFIGURATION:

GRES 150-150 150kW/150kWh +100kW MPPT module connected to solar energy

SOLUTION:

It is used for the Solar storage and charging integrated charging station. GRES BESS combine multi-functional PCS with energy storage batteries, power grid, oil generators, photovoltaics, loads, etc., which can realize new energy power generation, storage of energy and scientific utilization of battery energy and power grid.