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# C&I Liquid Cooling Energy Storage System

100kW/230kWh; 300Ah; LFP Battery

Introduction

[www.pvb.com](http://www.pvb.com), a company of Beny group



## Easy for Installation All in One controlling

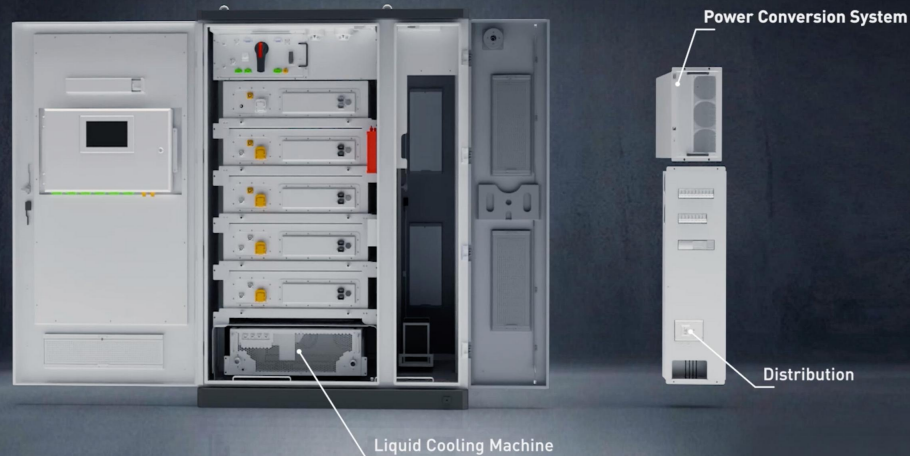
\***15**years  
Design life

\***5**years  
Warranty

>**90**%  
RTE

>**8000**  
Battery  
Cycles

### All-in-One Integrated Design



## Enhancing performance and lifetime

<3°C

Difference

between battery cells



Cell Temperature Difference  $\leq 3^{\circ}\text{C}$

Enhancing performance and lifetime

## Waterproof and customised for different environments

**IP55**

Waterproof

**C3-C5**

Corrosion protection



# Fire Protection Design: 3-layered

## Precautions

Detecting

## Firefighting

Aerosol

## Pressure Release

Suppression





## Fire Protection Design: 3-layered

### Precautions

Highly sensitive detect system of smoke and temperature.

A dual-channel communication transmission function, which can transmit signals to the fire host and EMS at the same time, effectively reducing the occurrence of false alarms and non-alarms.



## Fire Protection Design: 3-layered

### Fire suppression and firefighting

Triple fire protection:

- \*Battery pack level
- \*Battery cluster level
- \*Power distribution level

Ecofriendly aerosol at triple levels aim to quickly and comprehensively protect its safety. In addition.

Water fire protection system is supported by BESS to provide more comprehensive safety protection.



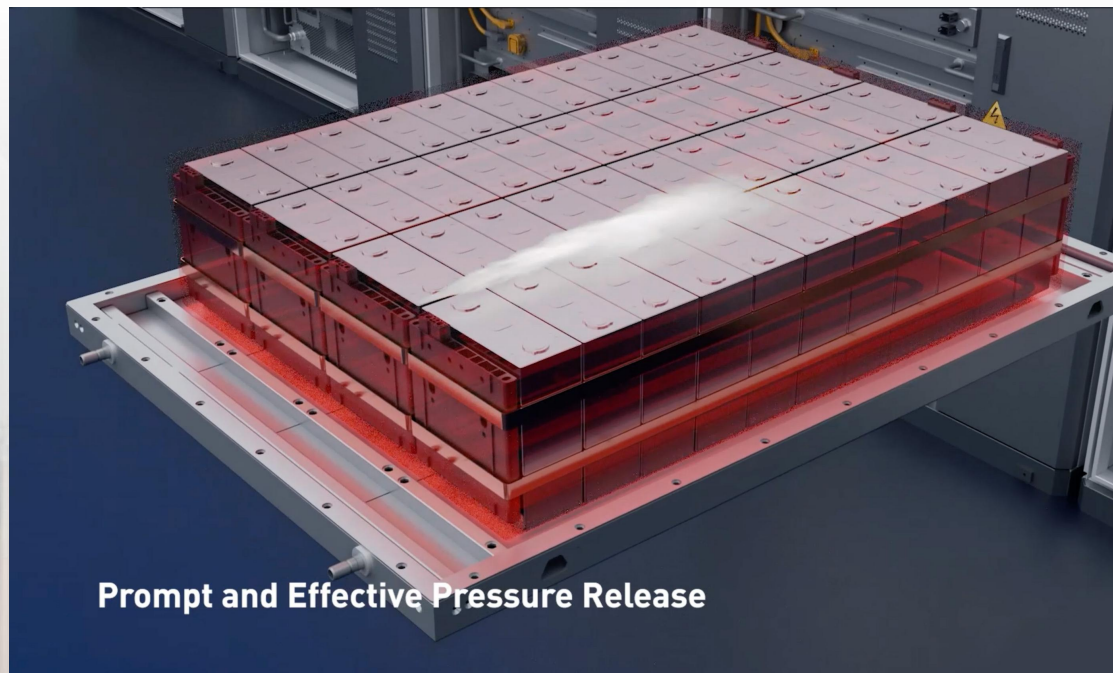
## Fire Protection Design: 3-layered

### Pressure Release

By configuring

\*pack-level and \*cluster-level pressure relief devices.

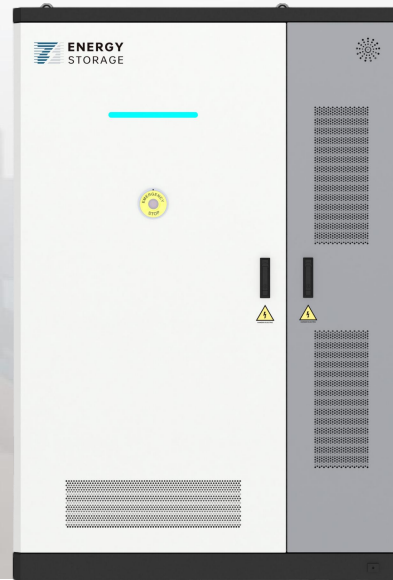
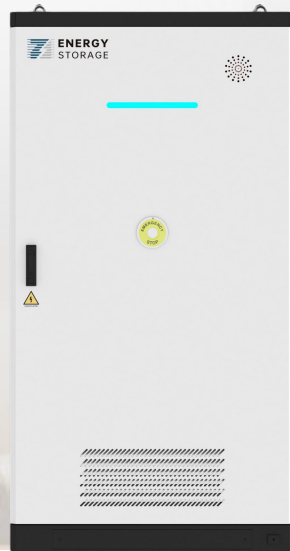
The battery can promptly and effectively release internal pressure when out of control to prevent the spread of faults.





## Battery Cabinets

BYHV-115SAC  
BYHV-230SAC

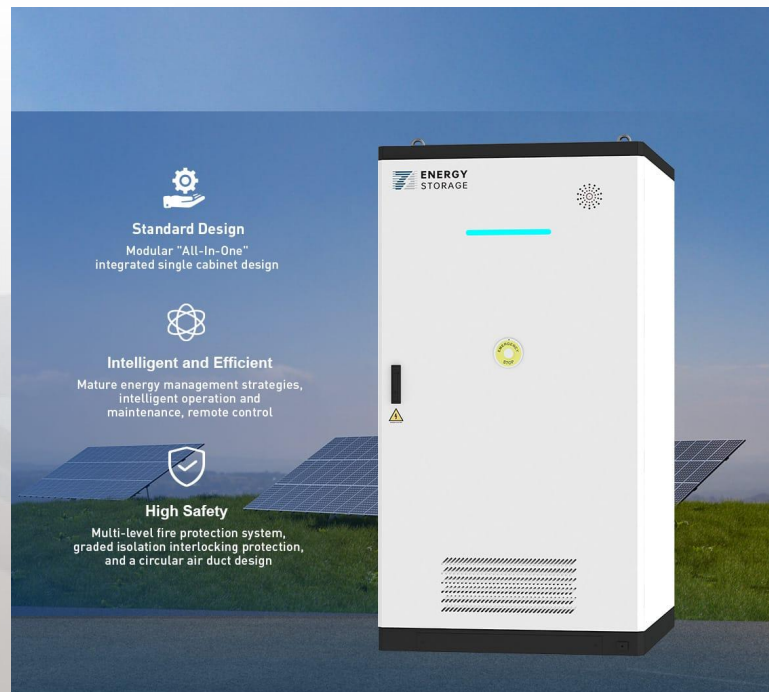


BYHV-230SLC

## Battery Cabinets

### All-in-one BESS is integrated with

- Gotion LFP battery cells
- BMS
- EMS
- PCS
- Thermal management system
- Fire protection system
- Power distribution system
- Environment control system
- CAN, RS485, TCP/IP Communication Protocol



Model Number	BYHV-115SAC	BYHV-230SAC	BYHV-230SLC
Rated Power	50kW	100kW	100kW
Cooling Method	Intelligent Air Cooling	Intelligent Air Cooling	Intelligent Liquid Cooling
Rated Voltage	400V AC	400V AC	400V AC
Battery Type	LFP	LFP	LFP
Cell Specification	150Ah	300Ah	300Ah
Battery Grouping Method	1P240S (1P40S*6)	1P240S (1P24S*10)	1P240S (1P24S*10)
Protection Level	IP55	IP55	IP55
Isolation Method	Non-isolated	Non-isolated	Non-isolated
Operating Temp. Range	-30°C~ + 55°C	-30°C~ + 55°C	-30°C~ + 55°C
Altitude	≤2000m (derating above 2000m)	≤2000m (derating above 2000m)	≤2000m (derating above 2000m)
Dimensions (W*D*H)	1000mm*1400mm*1900mm	1100mm*1800mm*2050mm	1400mm*1400mm*2000mm
Thermal Management System	Air Conditioner	Air Conditioner	Liquid Chilling
Environment Control System	Water Leak Sensor & Transducer	Water Leak Sensor & Transducer	Water Leak Sensor & Transducer
Fire Protection	Aerosol, Detector, Alarm, Emergency Stop Button	Aerosol, Detector, Alarm, Emergency Stop Button	Aerosol, Detector, Alarm, Emergency Stop Button
Weight (Approx.)	1400 kg	2600 kg	2800 kg

# Gotion LFP Cell

## Next-Generation of Energy Storage Technology

### High Energy Density

High energy density, mass production cell energy density is over 210Wh/kg, leading the industry;

### Long Life

≥ 8000 cycle life, system life can reach more than 15-20 years;

### Ultra High Security

Lower fire risk, no explosion risk, higher safety;

### Intelligent Temperature Control Technology


Wide temperature operation under -30~60 °C temperature range.High thermal stability;



### BATTERY PACKS


Designs tailored to meet space and energy density constraints.


# Specifications

Battery Chemistry	LiFePO4	
Brand	Gotion	
Life Cycle	≥8000 cycles (at 25° C, 0.5C, 80% Depth of Discharge)	
Nominal Capacity	300Ah	
Nominal Energy	960Wh	
Nominal Voltage	3.2V	
Operation Voltage	2.5 ~ 3.65V (T > 0°C), 2.0 ~ 3.65V (-30 < T ≤ 0°C)	
Standard Charge & Discharge Power	475W	
Max Pulse Discharge C Rate Within 30 s	3C (25°C @ 20%~90% SOC)	
Working Temperature	Charge: 0°C ~ 55°C, Discharge: -30°C ~ 60°C	
Dimensions (L*W*H)	175*81*200mm	
Net Weight	5998 ± 0.3 kg	
Certificate	IEC 62619, UL 1973, UL 9540A, UN 38.3	



# PCS Module

Item	Side	Specification	Reference
Operating voltage range	DC Side	615~950V (3W+PE) / 650~950V (3W+N+PE)	
Full load voltage range		615~950V (3W+PE) / 680~950V (3W+N+PE)	
Number of input channels		1	
Max current		170A	
Rated voltage	AC Side (on-grid)	230V / 400V	
voltage range		-10%~+15%	
AC output type		(3W+PE) 3P3W / (3W+N+PE) 3P4W	
Rated output power		105kW	
Max output power		167kW	
Rated frequency		50/60Hz	
Power Factor		0.99	
Power factor range		1 (lead) ~ 1 (lag)	
THDi		<3% (rated power)	
DC component		0.50%	
Overload capacity		110% long term	
Max discharge efficiency	98.50%		

Item	Side	Specification	Reference
Rated output voltage	AC Side (off-grid)	230V / 400V	
AC voltage harmonics		<3% (linear load)	
Rated frequency		50/60Hz	
Rated output power		105kW	
Max apparent power		116kVA	
Max output current		167kW	
Dimensions (W×D×H)	484×703×256.5mm		
Altitude	5000m (>3000m derated)		
Operating temperature	-30°C~55°C(>45°Cderating)		
Cooling method	Intelligent forced air cooling		
Protection level	IP20		
Communication protocol	CAN / RS485		
Grid support	L/HVRT, active and reactive power control		
Protection	AC overcurrent protection, AC overvoltage protection, AC surge protection, AC short circuit protection, Anti-islanding protection, DC reverse polarity protection, DC surge protection		

# BESS Certificate



EMC	Complies with EN61000-6-4
Safety Standard	Complies with IEC62619
Transport certificate	Complies with UN38.3
Dangerous Packing Certificate	Complies with MSDS
ISO 45001:2018	Occupational health and safety management system certification
ISO 9001:2015	Quality Management System complies with standard requirement
ISO 45001:2018	Occupational health and safety management system certification
ISO 14001:2015	Environmental Management system complies with standard requirement

**Thank you!**