

5,015MWH

Liquid-cooling Battery Energy Storage System



OUTDOOR CONTAINERIZED BATTERY ENERGY STORAGE SYSTEM

The 5.015MWh Liquid-Cooling BESS is a containerized energy storage system designed for power generation-side and grid-side energy storage applications.

The system integrates battery modules, a high-voltage box, Battery Management System (BMS), thermal management system, fire protection system, dehumidification system and, depending on the project's temperature requirements, an air-conditioning system. It also includes a lighting system, combiner and auxiliary distribution system, cables, and all necessary electrical and mechanical components.



**ALL-ARCHITECTURE
SAFETY**



**ALL-SCENARIO GRID
FORMING**



**ALL-LIFECYCLE COST-
EFFECTIVENESS**



**ALL-ROUNDER
DIGITALIZATION**



ΒΑΣΙΚΑ ΠΛΕΟΝΕΚΤΗΜΑΤΑ

➤ 5,015MWh Rated Energy & LFP Battery Technology

Rated energy of 5.015MWh and rated power of 2.5MW. The 12P416S configuration comprises a total of 4,992 Lithium Iron Phosphate (LFP) cells with aluminium casings and rated specifications of 3.2V/314Ah.

➤ Liquid Cooling Technology

The Liquid Cooling system uses an aqueous ethylene glycol solution, liquid-cooled units and a dedicated piping network to provide effective and controlled thermal management of the battery modules.

➤ Three-Level BMS Architecture

The Battery Management System adopts a three-level architecture comprising the ESMU, BCM and BMU, enabling data collection and evaluation, SOC calculation and implementation of the system's control strategy.

➤ Outdoor Containerized Design

Prefabricated industrial-grade container with an IP55 protection rating, designed to withstand dust, water, wind, sand and demanding outdoor environmental conditions.

➤ Multi-Level Fire Protection

Temperature, smoke, CO, VOC and combustible gas detection, perfluorohexanone fire suppression at battery-pack level, a water spray system and continuous cooling capability.

➤ Integrated DC Combiner & Auxiliary Distribution

The DC Combiner Distribution Cabinet collects and protects the energy from the battery clusters, supporting power distribution, status monitoring and data collection from the auxiliary systems.



TECHNOLOGIA

The 5.015MWh Liquid-Cooling BESS is based on an integrated containerized energy storage architecture comprising:

- **LFP Battery Modules**
- **High-Voltage Box**
- **Three-Level Battery Management System**
- **Liquid Cooling & Thermal Management System**
- **DC Combiner & Auxiliary Distribution System**
- **Fire Protection, Dehumidification & Environmental Control Systems**

The equipment layout within the container has been designed in accordance with the system's power and capacity configuration, ensuring efficient use of the available space and facilitating installation, maintenance and repair work.

The three-level BMS ensures continuous monitoring of cell voltages and temperatures. The BMU collects and transmits data, the BCM evaluates battery information and calculates the SOC, while the ESMU manages the overall operation of the BCMs. CAN, LAN, RS485 and USB communication interfaces are supported.

Fire protection is implemented at both container and battery-pack level. The water spray system provides the final level of protection, enhancing continuous cooling capability and helping contain a thermal event.

With a rated voltage of 1,331.2VDC and an operating range of 1,164.8–1,497.6VDC, the system supports a recommended SOC operating range of 10% to 90%. The LFP batteries provide at least 6,000 operating cycles, while charge and discharge efficiency is at least 95%, excluding auxiliary system consumption.



APPLICATIONS



Large-Scale Energy Storage Systems



Power Supply Side Energy Storage



Grid-Side Energy Storage



Utility-Scale Battery Energy Storage Projects



TECHNICAL SPECIFICATIONS

System Parameters	
Model	5,015MWh Liquid-cooling BESS
Cell Type	LFP 3,2V / 314Ah
Rated Energy Capacity	5,015 MWh
Rated Power	2,5MW
Size (Width*Depth*Height)	6058 × 2438 × 2896 mm
Weight	<45 t
Operation Temperature range	-30°C ~ 60°C
Operating Relative Humidity	0~95%, no condensation
Maximum operating altitude	≤ 5000 m
Cooling Method	Liquid cooled (ethylene glycol aqueous solution)
SOC calibration mode	Automatic
Fire Protection System	Combustible gas detection + PACK grade perfluorohexane fire extinguishing + water spray
Communication Interface	Ethernet etc.
Communication Protocol	CAN, RS-485, Modbus TCP/IP, USB
Protection degree	IP55
Noise (rated operating condition)	85 dB(A)
Entry/Exit Lines	Bottom in and bottom out
Protection functions	Anti-corrosion, fireproof, waterproof, dustproof, shock resistant, UV resistant, anti-theft, etc
Standards	IEC 62619, IEC/EN 62477-1, IEC/EN 61000-2/4, IEC/EN 62109-1/2, EN 50549-1/-10, EN 50549-2/-10 etc
Battery Parameters	
Cell material	
Rated battery module capacity	314 Ah
System battery configuration	12P416S
Operating voltage range	1,164,8VDC ~ 1,497,6VDC
Max. Charge/Discharge Rate	0.5P
Rated DC current	180 A



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