



# 2X500kW/2.089MWh BATTERY ENERGY STORAGE SYSTEM



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## Topology

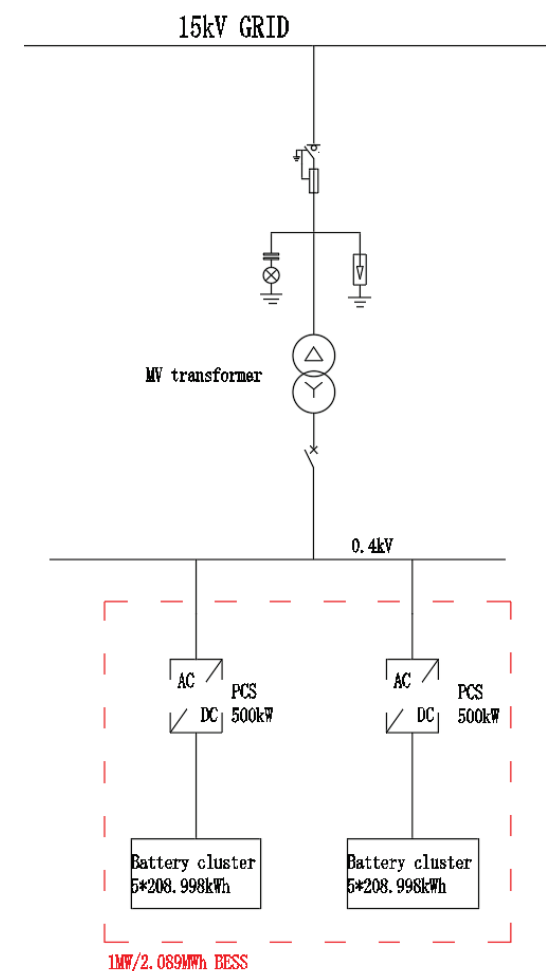
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**Scope of supply:** 1 set of 1MW 2.089MWh battery container (including battery, BMS, fire suppression system, thermal management system, etc.), 2 set of 500kW PCS.

This solution requires only simple infrastructure to complete one-stop installation. Only power cables and secondary communication cables need to be connected on site, which is convenient and fast, reducing engineering difficulty and saving costs.



2X500kW/2.089MW all-in-one BESS in 20HQ standard container



# Configuration table

S/N	Product Name	Specification	Qty	Unit	Remarks
1	Battery Energy Storage System	1MW 2.089MWh battery energy storage system	1	Set	
1.1	20 Feet High Container	L6058*W2438*H2896mm, Includes prefabricated cabin body, nameplate and indication sign, lighting (including exterior) and power distribution, control cabinet, etc.	1	Set	
1.2	Battery Cluster	665.6V, 208.99kWh, Includes battery racks, 4 battery modules, power and communication harness; control box,	10	Set	2 Cluster use 1 control box
1.3	BMS (Battery Management System)	Three-tier architecture, Includes BMU and acquisition harness in modules, BCU and inter-box communication power harness, BAU and communication power harness to the high-voltage box, display screen in control cabinet	1	Set	
1.4	Temperature And Humidity Control System	Liquid cooling thermal management	1	Set	
1.5	Fire Fighting System	Includes aerosol fire extinguishing device, controller, fire detection (smoke, temperature) alarm, including flammable gas detection	1	Set	
1.6	Auxiliary System	Includes auxiliary materials for container interior installation	1	Set	
2	PCS	500kW, 0.4kV 50Hz 3P3W	2	Set	





## 2.089MWh Battery Container

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System Parameters	
Rated power and capacity	1MW 2.089MWh
Cell	3.2V/314Ah, LFP
System battery configuration	1P52S-4S-10P, 2.08MWh
Battery voltage range	582.4 ~ 738.4 (Cell 2.8 ~ 3.55V)
Container Parameters	
Dimension	L6058*W2438*H2896mm
Protection level	IP54
Operating environment temperature range	-30℃ ~ 50℃
Working altitude	≤2000m (>2000m will be customized separately)
Battery thermal management system	Liquid cooling thermal management
Fire Fighting System	Fire extinguishing system (aerosol), explosion-proof exhaust system and emergency water sprinkler
External system communication interface	Support RS485, Ethernet, CAN
External system communication protocol	Support Modbus RTU, Modbus TCP, IEC104, IEC61850







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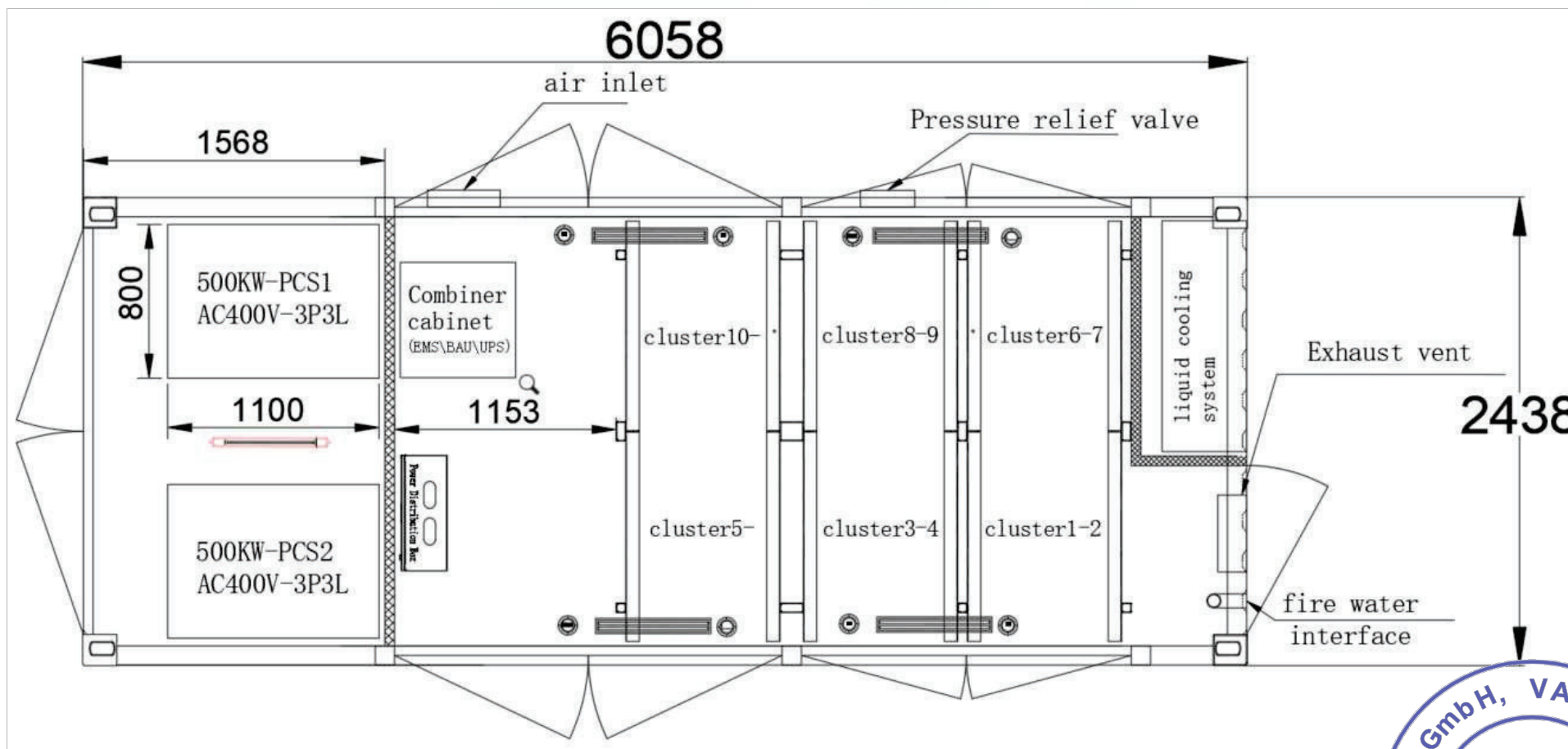
## 2.089MWh Battery Container

### 314Ah Cell - 1000Vdc - Liquid Cooled, LFP BESS solution

description	Unit topology reference	Rated voltage (V)	Rated capacity (Ah)	storage capacity (kWh)	combination method
Cell		3.2	314	1.004	Using a <b>stacking process</b> to produce energy storage-specific long-life LFP cells
Battery Module (include BMU)		166.4	314	52.25	1P52S battery module, 0.5C. IP67, Anti-condensation and anti-salt spray;
Battery Cluster (include BCU)		665.6	314	208.99	Eight battery boxes and one master control box are connected in series to form two battery cluster.
BESS system	 (示意图)	665.6	3140	2089	Ten battery clusters are installed in a 20-feet container, forming a 2089kWh battery subsystem.

## 2.089MWh Battery Container

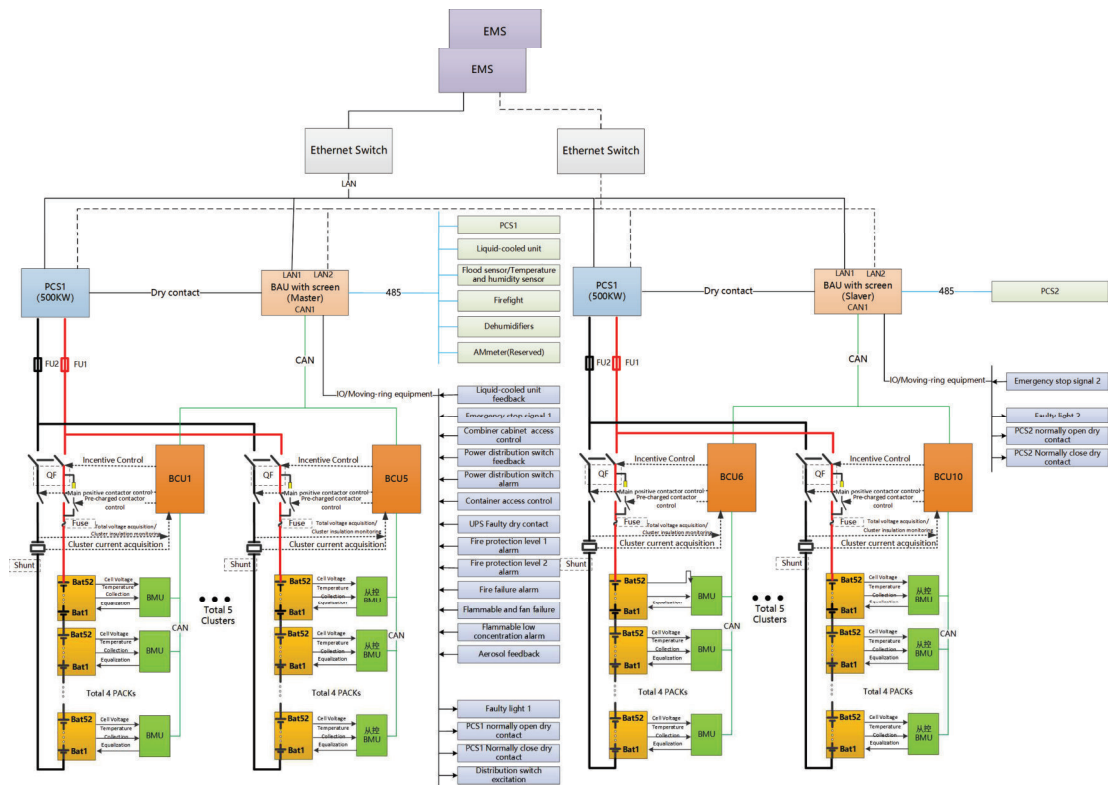
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# Battery Management System ( BMS )

**Function:** BMS consists of the battery module management unit (BMU), battery string management system (BCU), battery stack management system (BAU), and high voltage control box. The BMS system has the functions of analogue signal high-precision detection and reporting, fault alarm, upload and storage, battery protection, parameter setting, passive/active balancing, battery SOC calibration and information interaction with other devices.

- Analog Measurement
- Passive Equalization
- Battery System Running Alarm
- Battery System Protection
- Self-diagnosis Function
- Operation Parameter Setting
- Local Running Status Display
- Event And Historical Data Recording
- Communication Function



# Thermal Management System

Thermal management system can achieve the function of battery cooling & heating and dehumidification for inside environment of container system.

## ➤ Dry system:

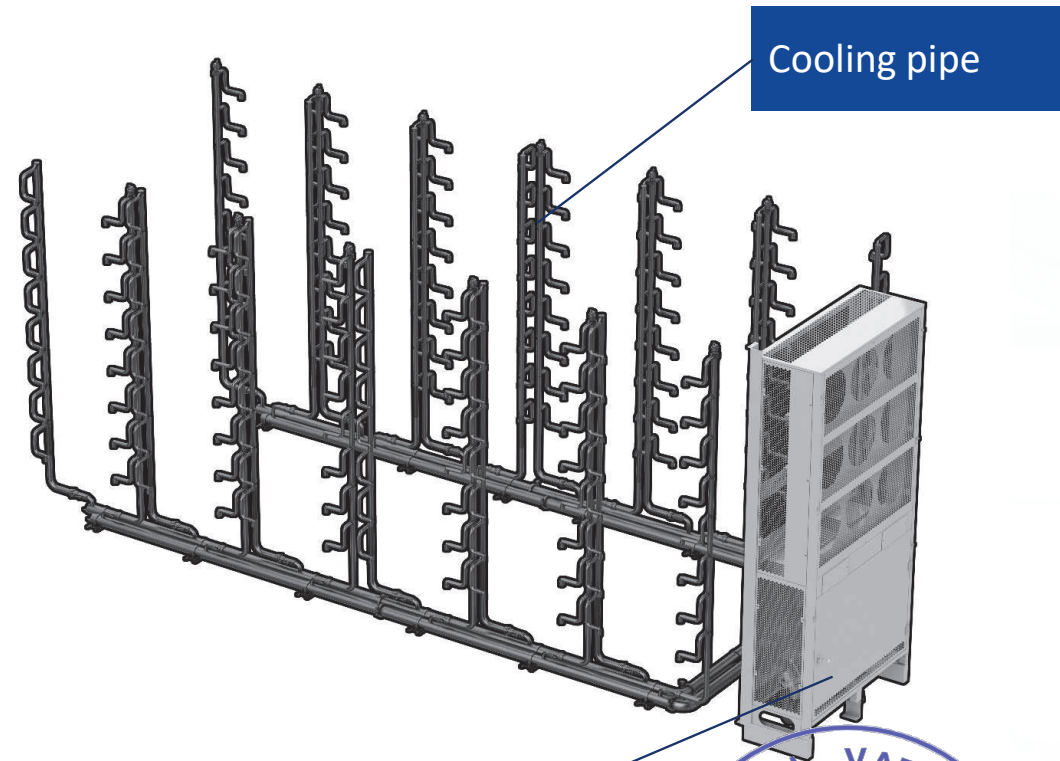
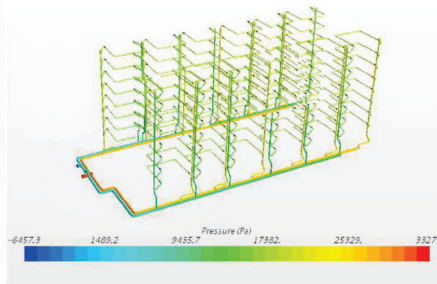
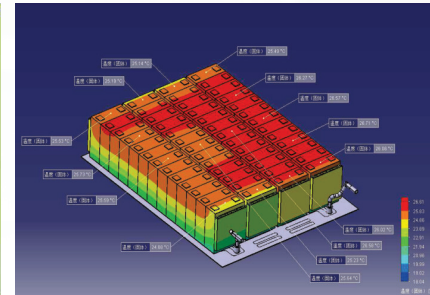
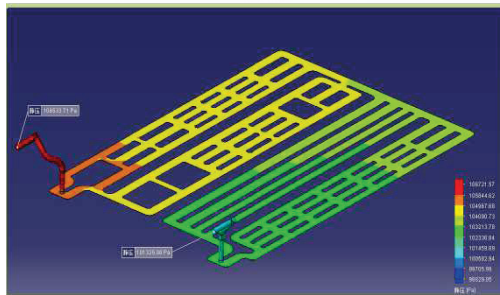
Dehumidify inside environment

## ➤ Chillier system:

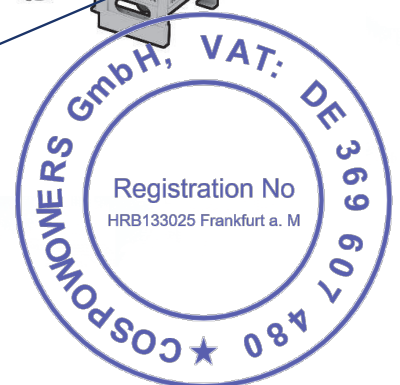
Cool & heat coolant or system

## ➤ Cooling pipe system:

Support coolant circulating



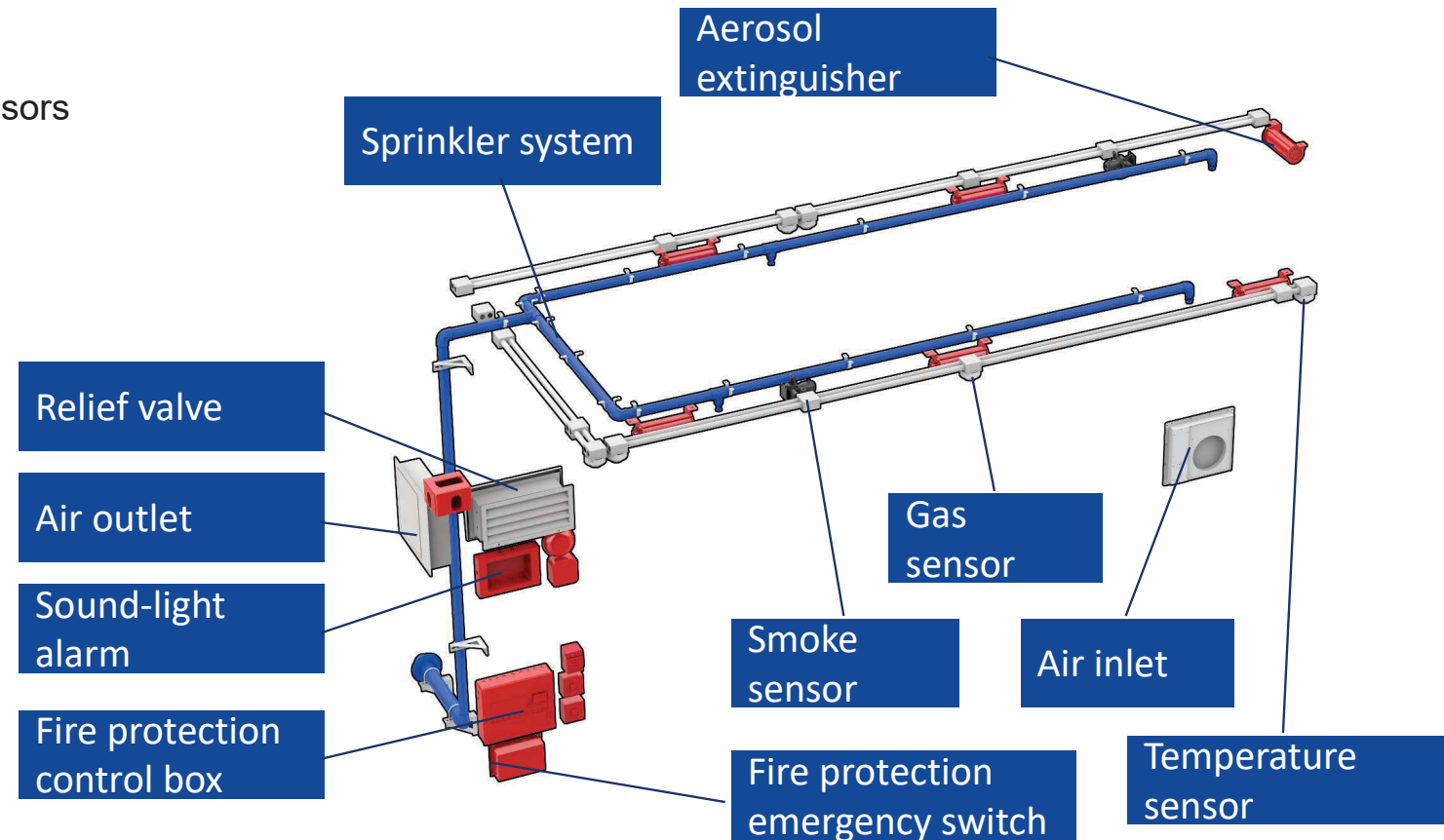
Liquid cooling  
System



# Fire Protection System

Fire protection system can achieve the function of fire detecting, firefighting (includes ventilating, watersprinkling) and warning, to comply with NFPA855 & NFPA69.

- **Fire detecting:**  
Smoke, gas, temperature sensors
- **Fire fighting:**  
Ventilators, sprinkler system, aerosol extinguishers
- **Fire warning:**  
Sound-light alarm





# Container



**Anti-Corrosion:** The protective layer is customized based on your project site's specific temperature, humidity, and salt spray levels. This ensures that the container's appearance, mechanical strength, and resistance to corrosion meet performance standards for 15 years.

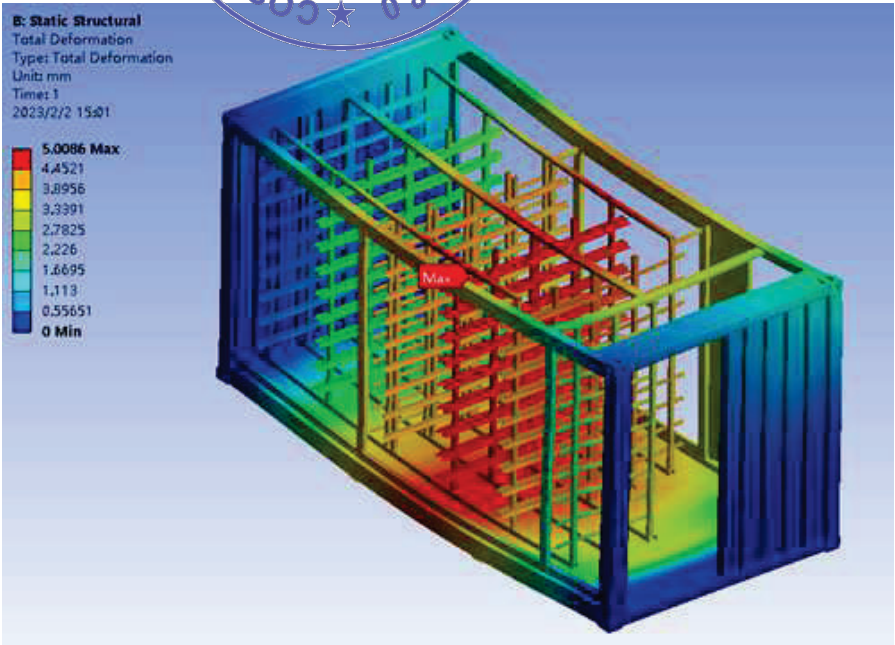
**Fire Extinguishing:** Flame retardant materials, thermal insulation, and interior/exterior finishes are incorporated throughout the container shell.

**Water-Proof:** The design prevents water accumulation on the top, leaks, and seepage. Rain stays out, and no water enters from the bottom.

**Anti-Dust (including wind and sand):** Standard, easily replaceable ventilation filters are installed at air inlets and outlets of both the container and equipment. This effectively prevents dust infiltration, even during strong winds and sandstorms.

**Shock and Vibration:** The container and its internal equipment are engineered to withstand transportation and earthquake stresses without deformation, malfunctions, or post-vibration issues.

**UV Radiation:** Materials inside and outside the container are UV-resistant to prevent property degradation and heat absorption.



Protection Level	IP54	Anti-corrosion Level	C3-C5
Rockwool Thickness	50 mm	Paint Film Thickness	≥180 μm
Rockwool Specification	80 kg/m³	Fire Resistance Time	1.5 h

# Power Conversion System

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Physical	
Cooling	Forced air cooling
Noise	< 75dB
Enclosure	NEMA1 IP20 and optional IP54 with outdoor cabinet
Max elevation	3000m/10000feet (> 3000m/10000feet derating)
Operating ambient temperature	-20°C to 50°C (De-rating over 45°C)
Humidity	0~95% (No condensing)
Size (W×H×D)	1100×2160×800 mm
Weight	Cabinet 280kg + Module 40kg*n (n=1,2,...,8)
Installation	Floor standing

Utility-interactive Mode			
Nominal power	500kVA <sup>1</sup>		
AC max power	550kVA <sup>1</sup>		
AC frequency	50/60(-2.5~2.5) Hz		
AC voltage	400(-15%~15%) Vac		
Battery voltage range	600~900Vdc		
Quantity of battery strings	1	4	8
DC max current in each branch	880A	220A	110A
THDi	≤3%		
AC PF	Listed: 0.8~1 leading or lagging (Controllable)		
	Actual: 0.1~1 leading or lagging (Controllable)		

Stand-alone Mode			
Nominal AC output power	500kVA <sup>1</sup>		
AC max power	550kVA <sup>1</sup>		
AC frequency	50/60(-2.5~2.5) Hz		
AC output voltage	380/400(±10% configurable) Vac		
Battery voltage range	600~900Vdc		
Quantity of battery strings	1	4	8
DC max current in each branch	880A	220A	110A
Output THDu	≤2% (Linear load)		
AC PF	Listed: 0.8~1 leading or lagging (Load-depend)		
	Actual: 0.1~1 leading or lagging (Load-depend)		
Overload Capability	110%~115% 10min		
	115%~125% 1min		
	125%~150% 200ms		

1. Power could be 62.5Kw to 500Kw by equipping different numbers of power modules.



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