

All Senarios ESS Solution

Consistent Energy Storage Concept

2024.Oct.



Outline



01. Products and Certification

02. Warranty Solution

03. After-sales Service

04. Project Cases

1.1 Overview of products series

C&I cabinet

Utility container

EMS Cloudplatform



European version with power output of 105KW



North America version with power output of 125KW



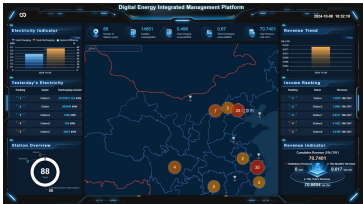
3.42MWh-20ft liquid cooling container



5MWh-20ft liquid cooling container



EMS



Cloud platform

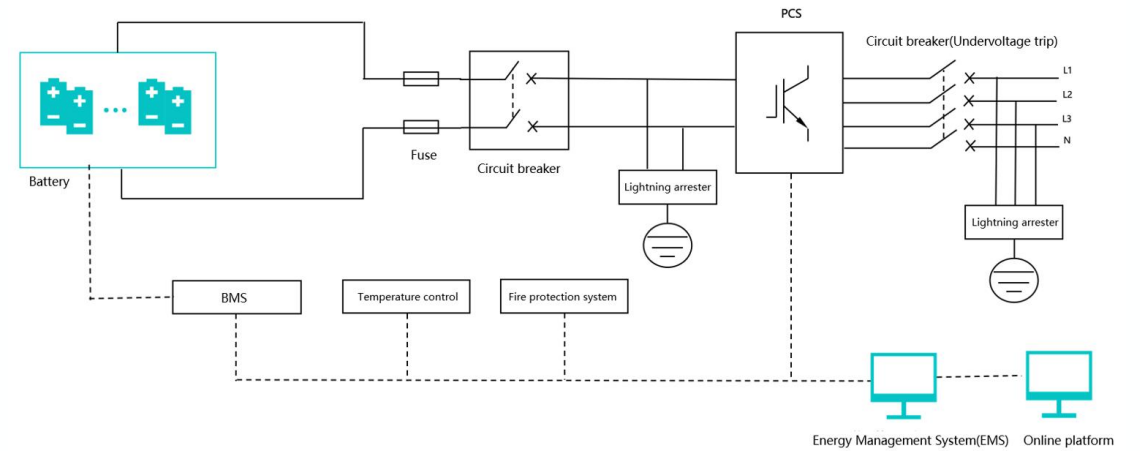
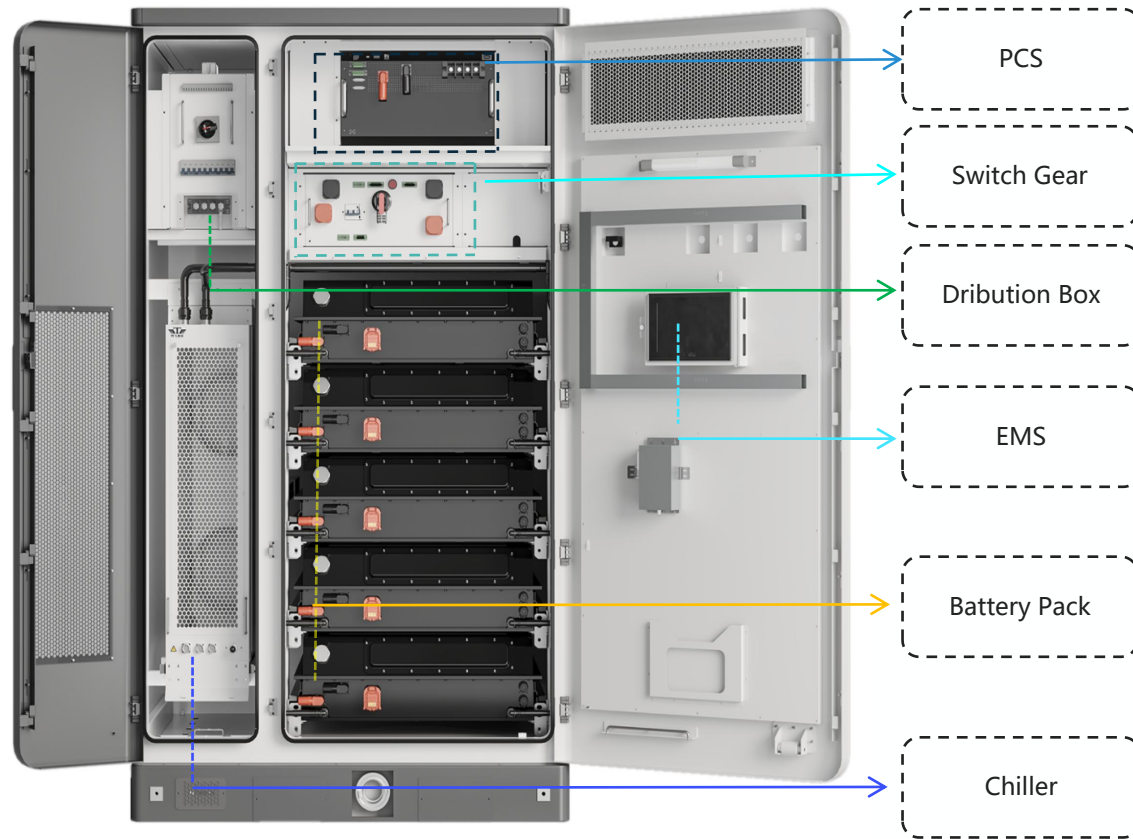
1.2 233 KWh of battery cabinet-key parameters



- Safe and efficient
- Smart and friendly
- Economical and reliable
- Flexible layout

	Europe	North America	
Items	specification		
PCS(AC side)			
Rated AC power	105KW	125KW	
rated current	152A	150A	
output	3P4W+PE 400VAC	3P4W+PE 480VAC	
overload capability	110% of rated power	110% of rated power	
battery(DC side)			
chemistry	LiFePO4		
nominal capacity	280Ah		
power rate	0.5P		
battery pack configuration	1P52S		
battery rack configuration	1P260S		
system rated voltage	832V		
operating voltage range	728-936V		
system			
rated energy	233KWh		
cycle life	6000cycles @ (0.5C/0.5C, DOD90%, 70%EOL)		
cooling way	liquid cooling		
fire suppression	PACK grade (aerosol) + Cluster grade (aerosol + water spray)		
communication way	CAN/RS485/Ethernet		
IP evel	IP54 for cabinet,IP67 for pack		
weight	≤2800kg		
Dimension(W*D*H)	1400*1380*2385 (mm)		
certification	EC62619 IEC62477 IEC63056 IEC61000	UL1973	UL9540A UL9540

1.2 233 KWh of battery cabinet-inside showcase



Comments:

- 1) 2 layers of BMS architecture(master-slave);
- 2) local controller(EMS) integrated help control and manage the operation of system

1.2 233 KWh of battery cabinet-features

safety performance

UL9540A

Cabinet fire barrier, 1200 °C *
2h



System RTE

System efficiency increased
to 89%



System life

More than 10 years of operation



system energy consumption

30% lower energy consumption than
air cooling.



Flexible layout, quick installation

Multiple seamless side-by-side parallel,
support 2/3/4-hour system applications
Reduce on-site installation and
commissioning time by 50%, and put into
production as soon as 4 hours.



Temperature control performance

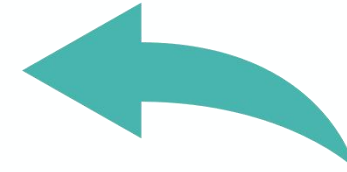
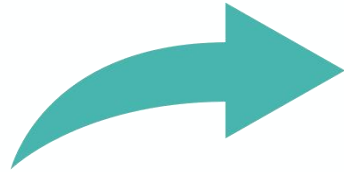
PACK ≤ 3 °C, System ≤ 5 °C



1.2 233 KWh of battery cabinet-PACK safety

Extreme safety technology :

The battery cell is made of car-grade material, which is designed without thermal runaway spread. Built-in 144g aerosol module, thermal runaway can not spread further.



Packing pressure self-balancing patented technology :

Internal pressure change after adaptive thermal runaway



Early warning technology :

Early Warning of Battery System Based on Electro-gas-thermal coupling battery SOX intelligent diagnosis

1.2 233 KWh of battery cabinet-Fire protection architecture

Pack level



Built-in 144g aerosol fire protection module.

Precision jet fire extinguishing

Rack level



Aerosol

Maximum control of battery reignition

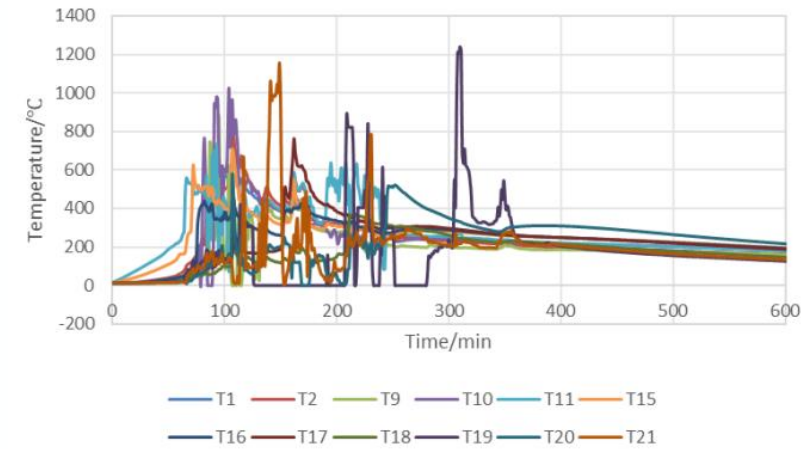
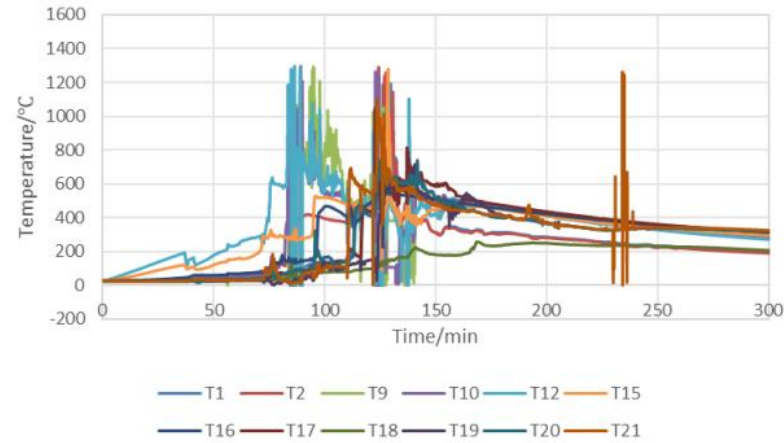
Cabinet level



Water sprinkler protection

Reduce the risk of fire spreading

1.2 233 KWh of battery cabinet-Fire protection architecture



UL9450A thermal runaway spread test, no fire and explosion throughout the process, controllable in the safety accident cabinet.

1.1 Multiple application scenario



Commercial Carport



Factory

1.1 Multiple application scenarios



Office Building / Shopping Mall / Hotel



Large Scale Facility

1.4 liquid cooling container 5MWh-20ft-key parameters



role	Items	Parameters	Remark
Cell	Chemistry	LFP	
	Nominal capacity (Ah)	300	0.5P, 25°C
Module	Configuration	1P44S	
	Nominal energy (kWh)	42.24	0.5P, 25°C
ESS Container	cell Configuration	9P396S	
	Nominal energy (kWh)	3421	0.5P, 25°C
	Nominal voltage (V)	1267.2	
	Operation voltage (V)	990~1425.6	T > 0°C
		1108.8~1425.6	T ≤ 0°C
	Nominal charge/discharge power rate	0.5P	
	Energy efficiency	≥ 93%	0.5P,25°C
	Communication interface	CAN/RS485/Ethernet	
	Cooling way	Liquid cooling	
	cycle life	7000cycles (0.5C/0.5C, DOD100%, 70%EOL)	
	IP level	Container: IP54	
		Module: IP67	
	temperature range(°C)	-30~60	
	fire suppression	PF6+sprinkler	
	Dimension (mm)	20ft standard container	Sea shipping
		896X1065X2385	
	Total weight (kg)	< 37000	
	certifications	IEC62619、IEC62477、IEC63056、IEC61000、UL1973、UL9540A、NFPA855、UN38.3	

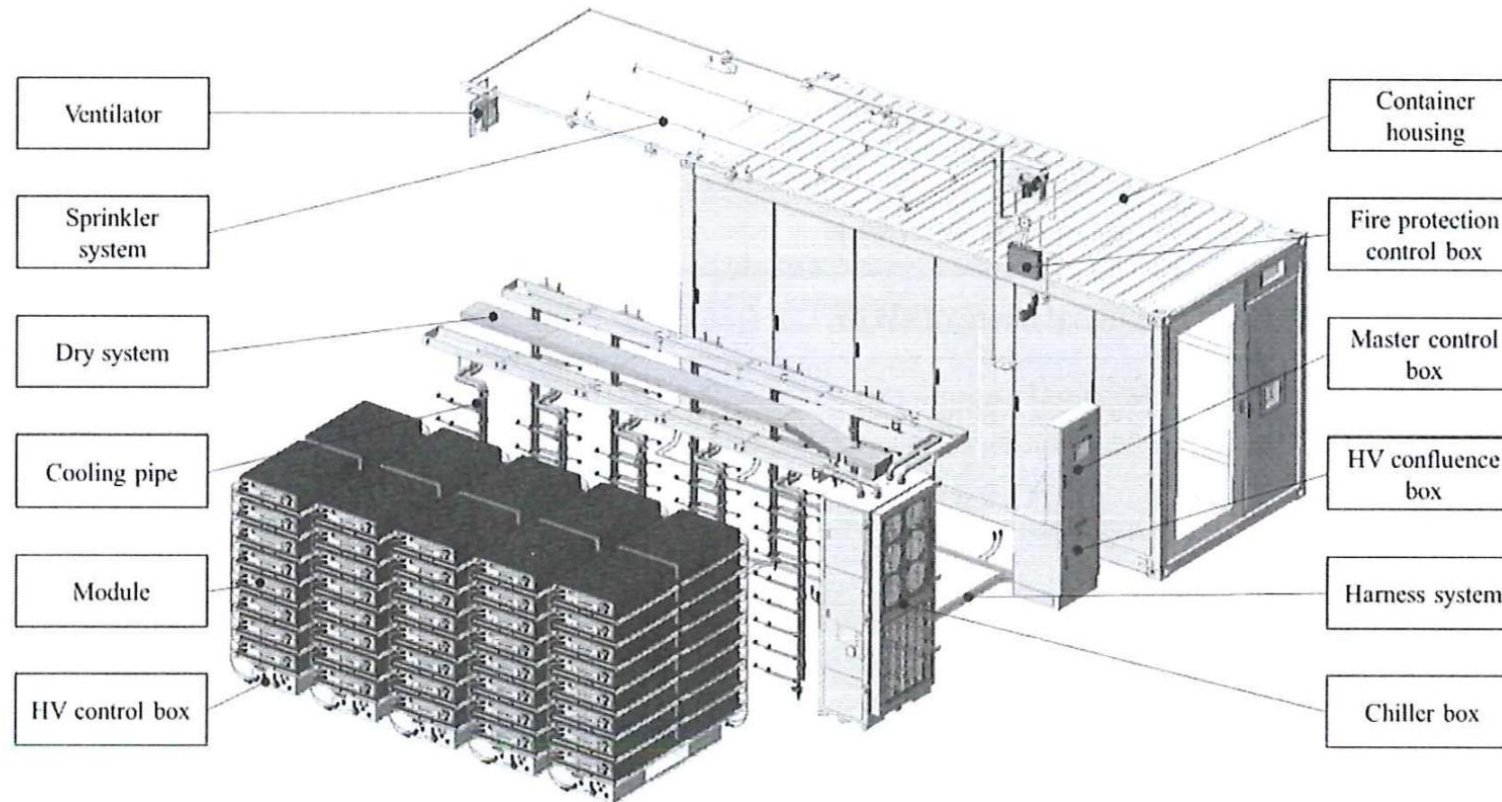
1.4 liquid cooling container 5MWh-20ft-key parameters



role	Items	Parameters	Remark
Cell	Chemistry	LFP	
	Nominal capacity (Ah)	314	0.5P, 25℃
Module	Configuration	1P104S	
	Nominal energy (kWh)	104.4	0.5P, 25℃
ESS Container	cell Configuration	12P4146S	
	Nominal energy (kWh)	5015	0.5P, 25℃
	Nominal voltage (V)	1331,2	
	Operation voltage (V)	1040~1497.6	T > 0℃
		1164.8~1497.6	T ≤ 0℃
	Nominal charge/discharge power rate	0.5P	
	Energy efficiency	≥ 93%	0.5P,25℃
	Communication interface	CAN/RS485/Ethernet	
	Cooling way	Liquid cooling	
	cycle life	8000cycles (0.5C/0.5C, DOD100%, 70%EOL)	
	IP level	Container: IP55	
		Module: IP67	
	temperature range(℃)	-30~60	
	fire suppression	Aerosol+sprinkler	
	Dimension (mm)	6056 x 2438 x 2896	Sea shipping
	Total weight (kg)		
	certifications	IEC62619、IEC62477、IEC63056、IEC61000、UL1973、UL9540A、NFPA855、UN38.3	

2.5 key sub-assemblies and their working mechanism for battery container

1.5.1 Exploded View



Description:

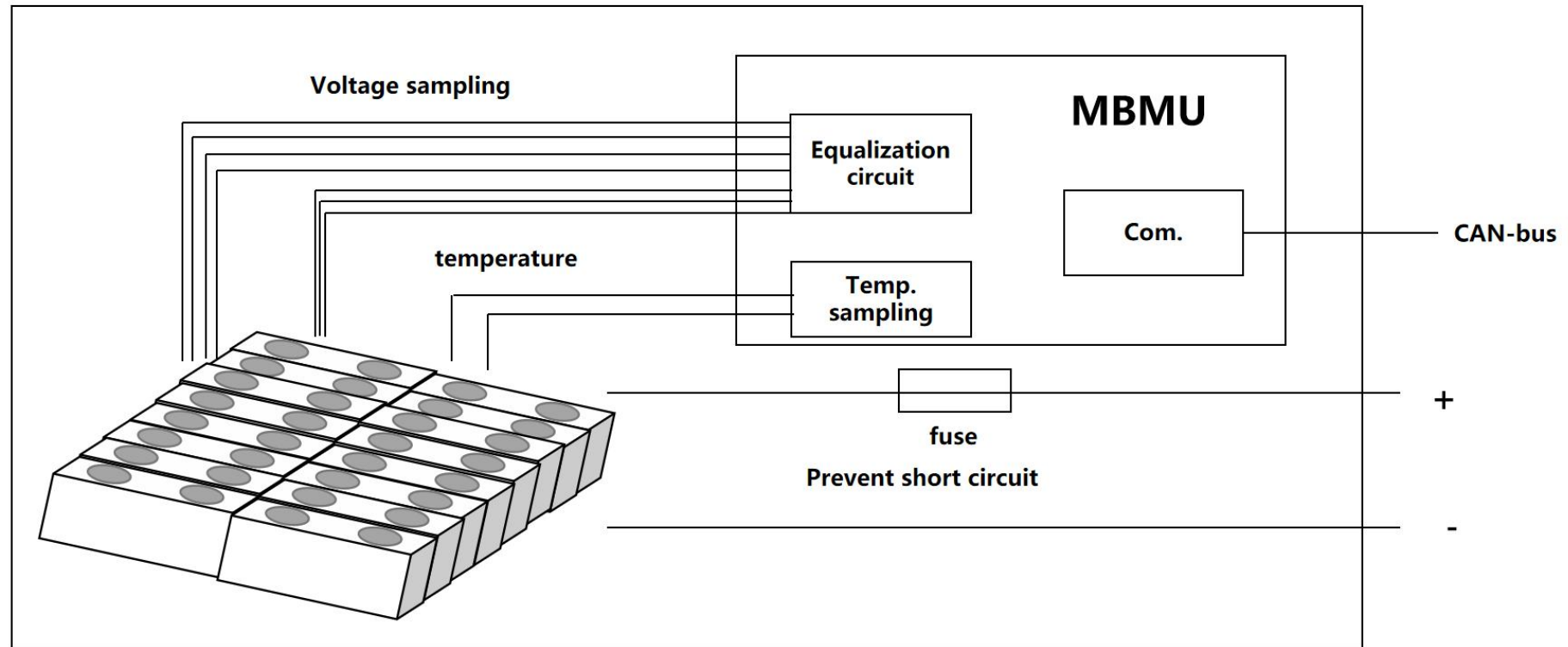
1)20ft container;

2)0.5P;

3)3.44Mwh

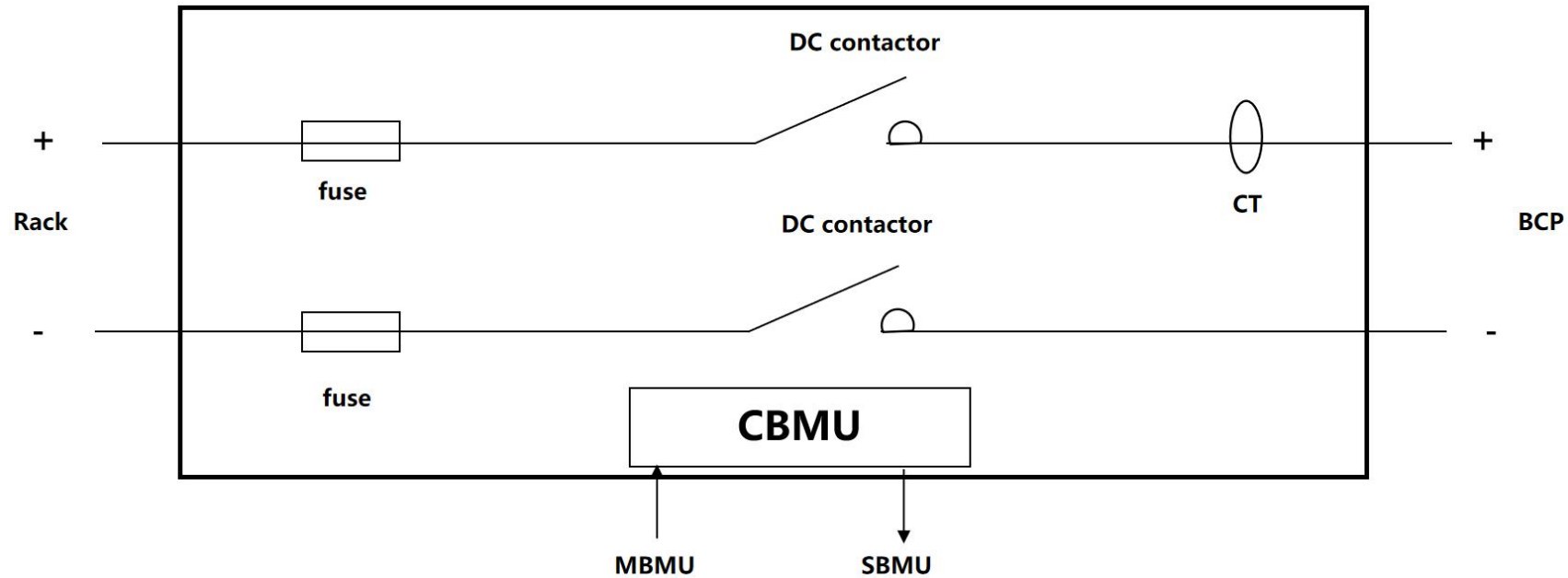
1.5 key sub-assemblies and their working mechanism for battery container

1.5.2 battery pack



1.5 key sub-assemblies and their working mechanism for battery container

1.5.3 PDU (switch gear)

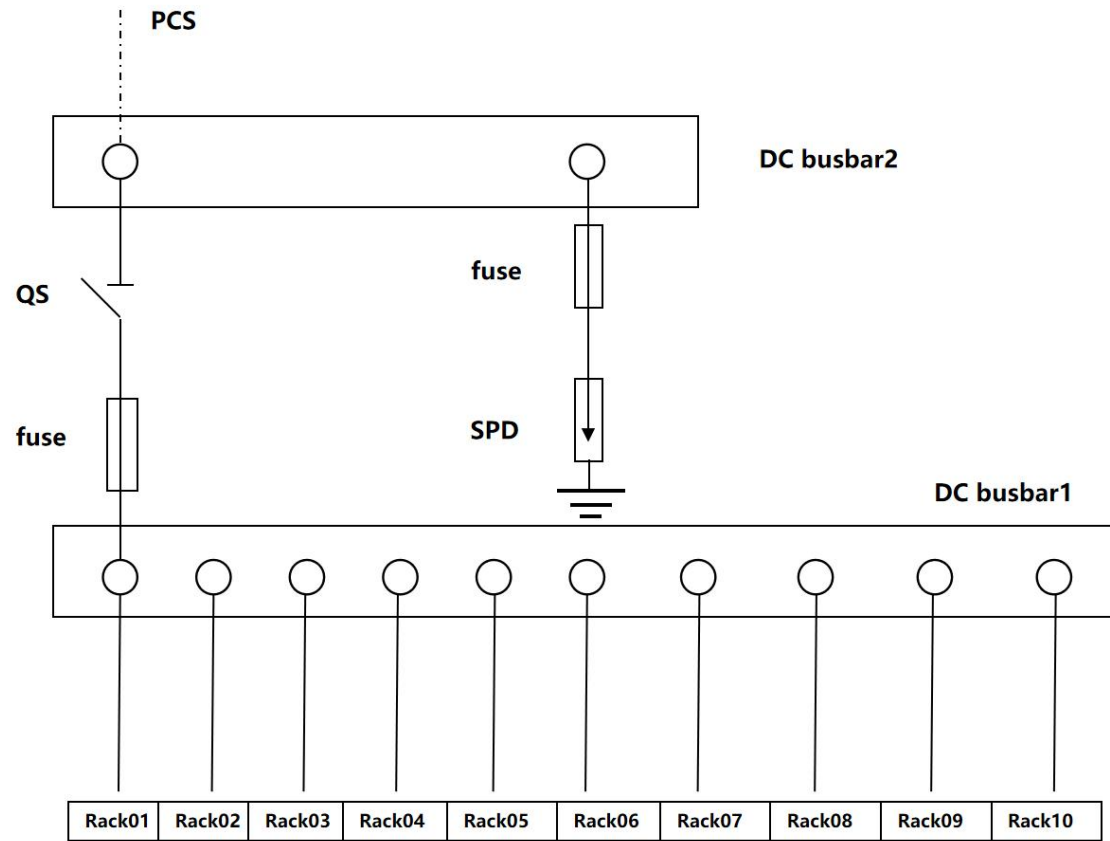


Functions:

- 1) Circuit protection design prevents circulating current between two adjacent racks;
- 2) Current measuring for monitoring and analysis;
- 3) CBMU Communicating with MBMU and SBMU

1.5 key sub-assemblies and their working mechanism for battery container

1.5.4 BCP

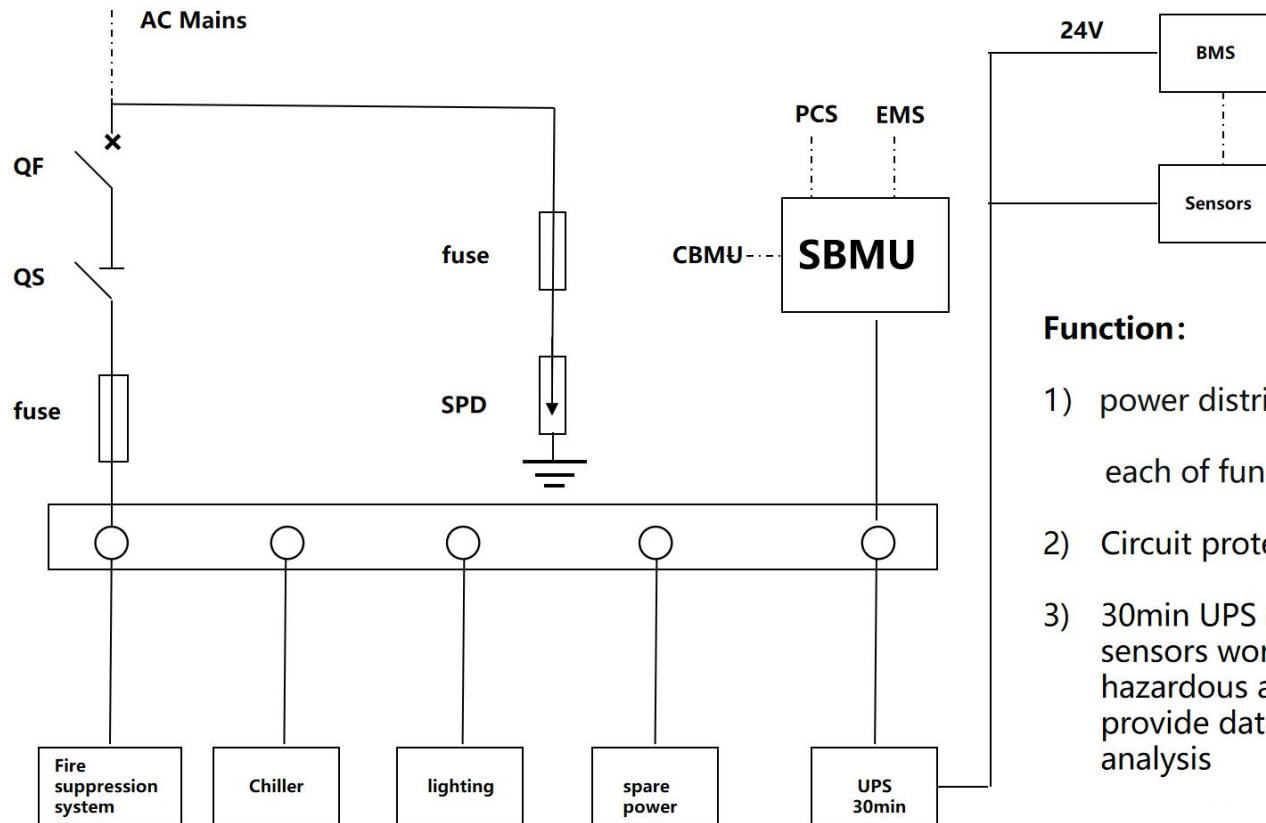


Function:

- 1) Current confluence
- 2) Circuit protection
- 3) Connecting PCS and battery

1.5 key sub-assemblies and their working mechanism for battery container

1.5.5 master cabinet

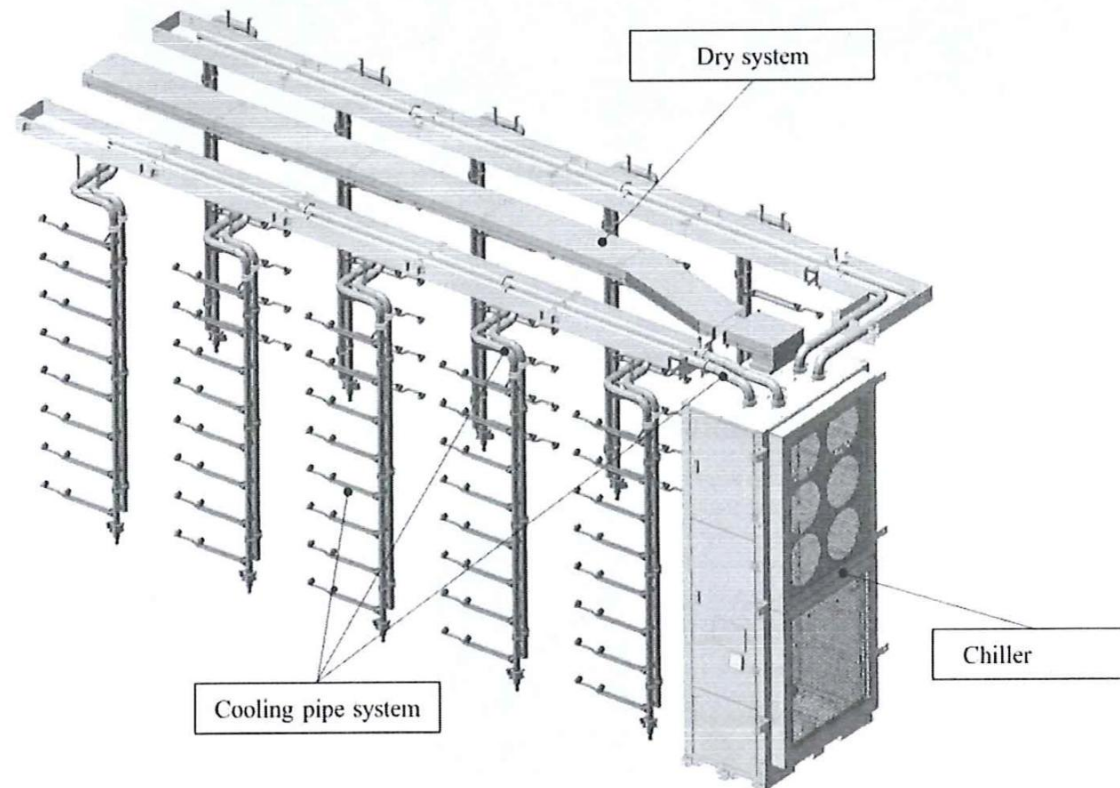


Function:

- 1) power distribution and power supply for each of function module
- 2) Circuit protection
- 3) 30min UPS design enables BMS and sensors work right in the event of hazardous accident or power outage to provide data for the subsequent failure analysis

1.5 key sub-assemblies and their working mechanism for battery container

1.5.6 thermal management system



Function: cooling ,heating dehumidification

Working mechanism:

➤ **Cooling:**

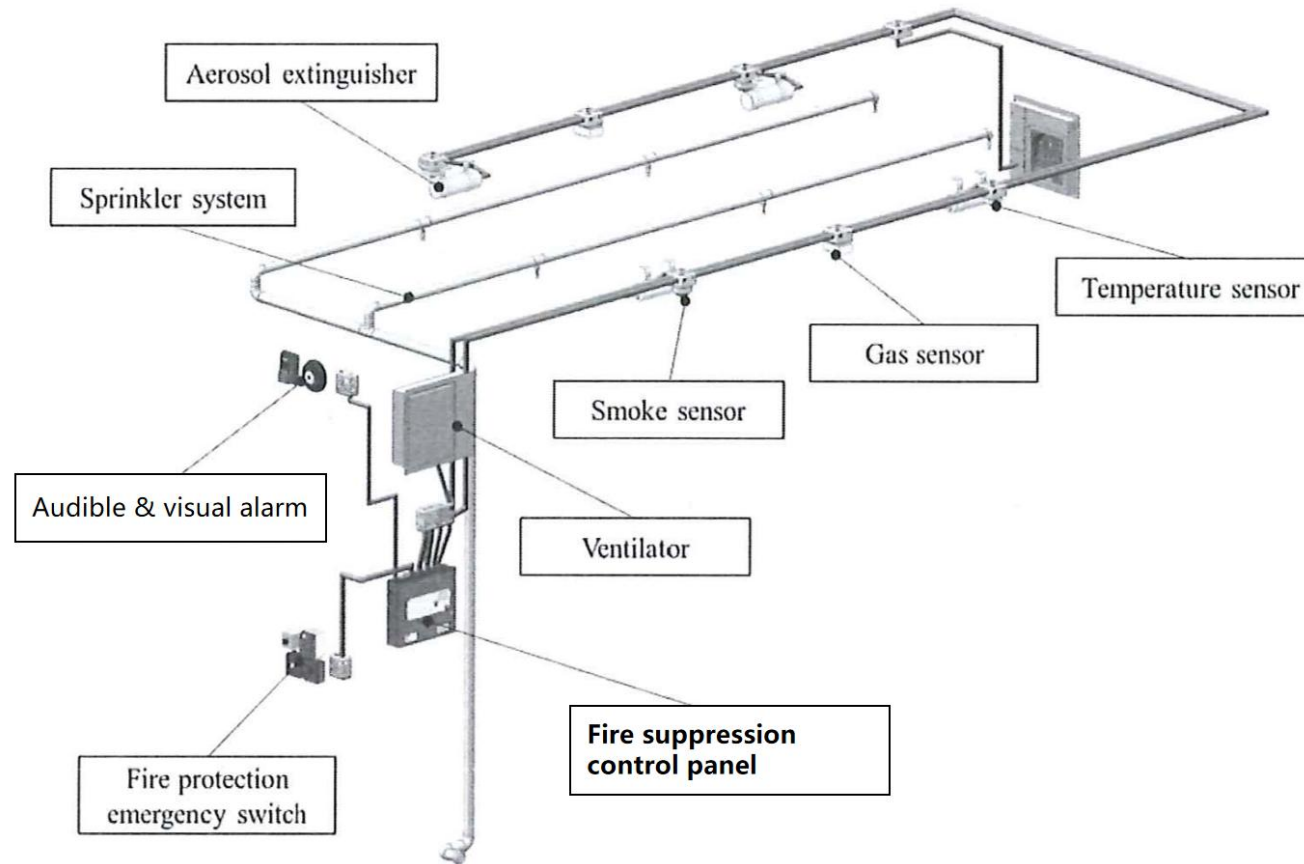
- 1) $25^{\circ}\text{C} < T_{\text{max}} < 28^{\circ}\text{C}$ or $22^{\circ}\text{C} < T_{\text{avg}} < 25^{\circ}\text{C}$, the pump start to work and pump the coolant into circulating waterway;
- 2) $T_{\text{max}} > 28^{\circ}\text{C}$, $T_{\text{avg}} > 25^{\circ}\text{C}$ or coolant $T_{\text{inlet}} > 12^{\circ}\text{C}$, the chiller start to work, $T_{\text{inlet}} < 12^{\circ}\text{C}$ the chiller stop to work,
- 3) $T_{\text{max}} < 25^{\circ}\text{C}$ or $22^{\circ}\text{C} < T_{\text{avg}} < 22^{\circ}\text{C}$, the pump and chiller stop to work

➤ **Heating:**

- 1) $T_{\text{min}} < 12^{\circ}\text{C}$ or $T_{\text{avg}} < 15^{\circ}\text{C}$, the heater starts to work , when coolant T_{inlet} reaches 30°C , the pump start to work;
- 2) When $T_{\text{min}} > 20^{\circ}\text{C}$ or $T_{\text{avg}} > 25^{\circ}\text{C}$, the pump and the h

1.5 key sub-assemblies and their working mechanism for battery container

1.5.7 fire suppression system



Function:

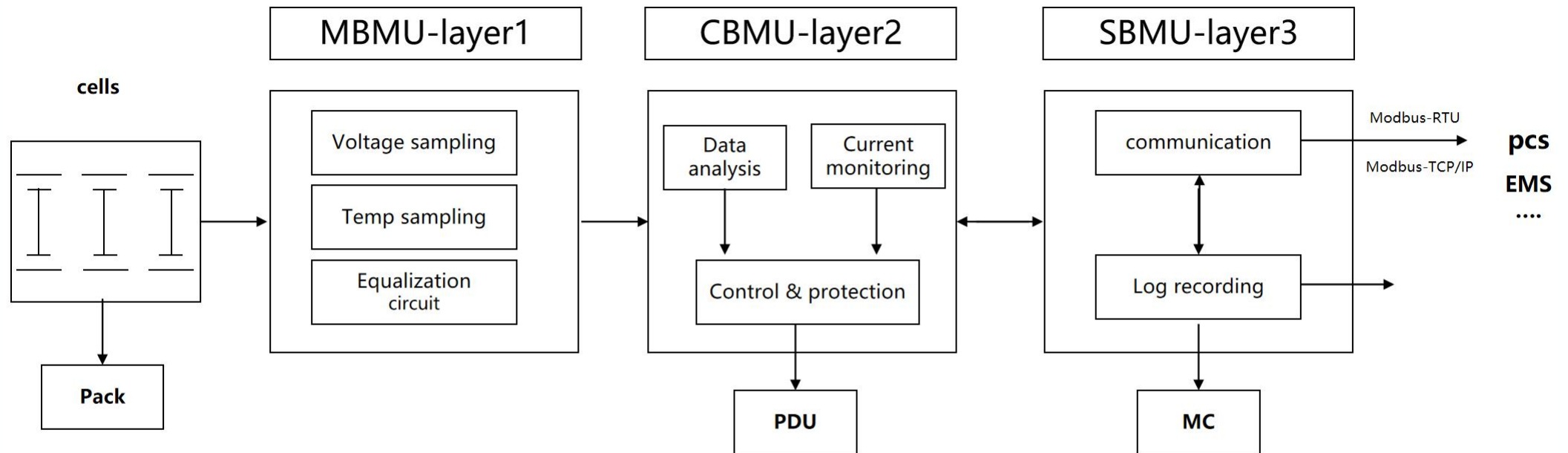
- 1) the fire suppression control panel manages operation of whole system and communicates with the SBMU
- 2) Linkage with the gas purge system
- 3) The design is in accordance with **NFPA855 NFPA 69**

Working logic:

.....

1.5 key sub-assemblies and their working mechanism for battery container

1.5.8 BMS

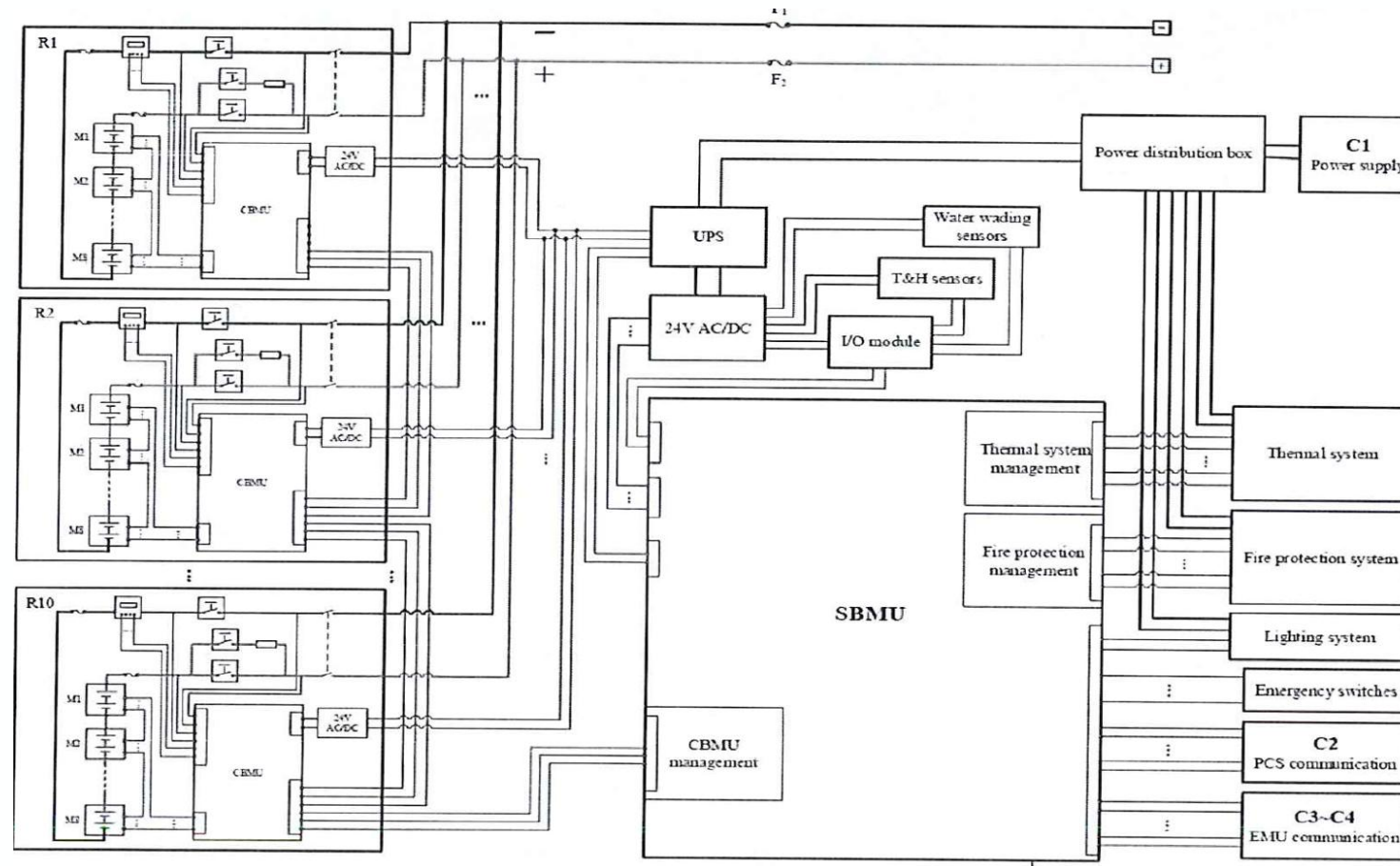


comments:

- 1) Equalization way: passive or active;
- 2) Vendors :Gold electronics, BMS-er, and Other lesser known small suppliers

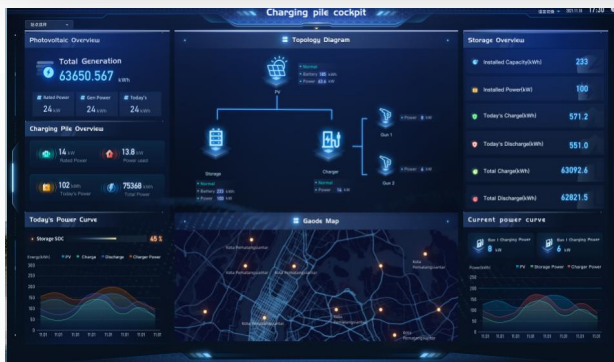
1.5 key sub-assemblies and their working mechanism for battery container

1.5.9 electrical diagram



1.6 EMS& cloud platform

CESC Cloud platform



comments:

- 1)we have an EMS expert team;
- 2)the EMS will be developed upon project request,will vary project by project;



2.1 Warranty offer

	Items	Product Warranty Period	Remark
1	Standard Product Warranty	5 years	Free of charge
2	Extended Product Warranty	Additional 5 - 20 years	2-3% of the contract Value per year warranty terminates at 70%SOH

2.2 Warranty alternatives

Alternative1.

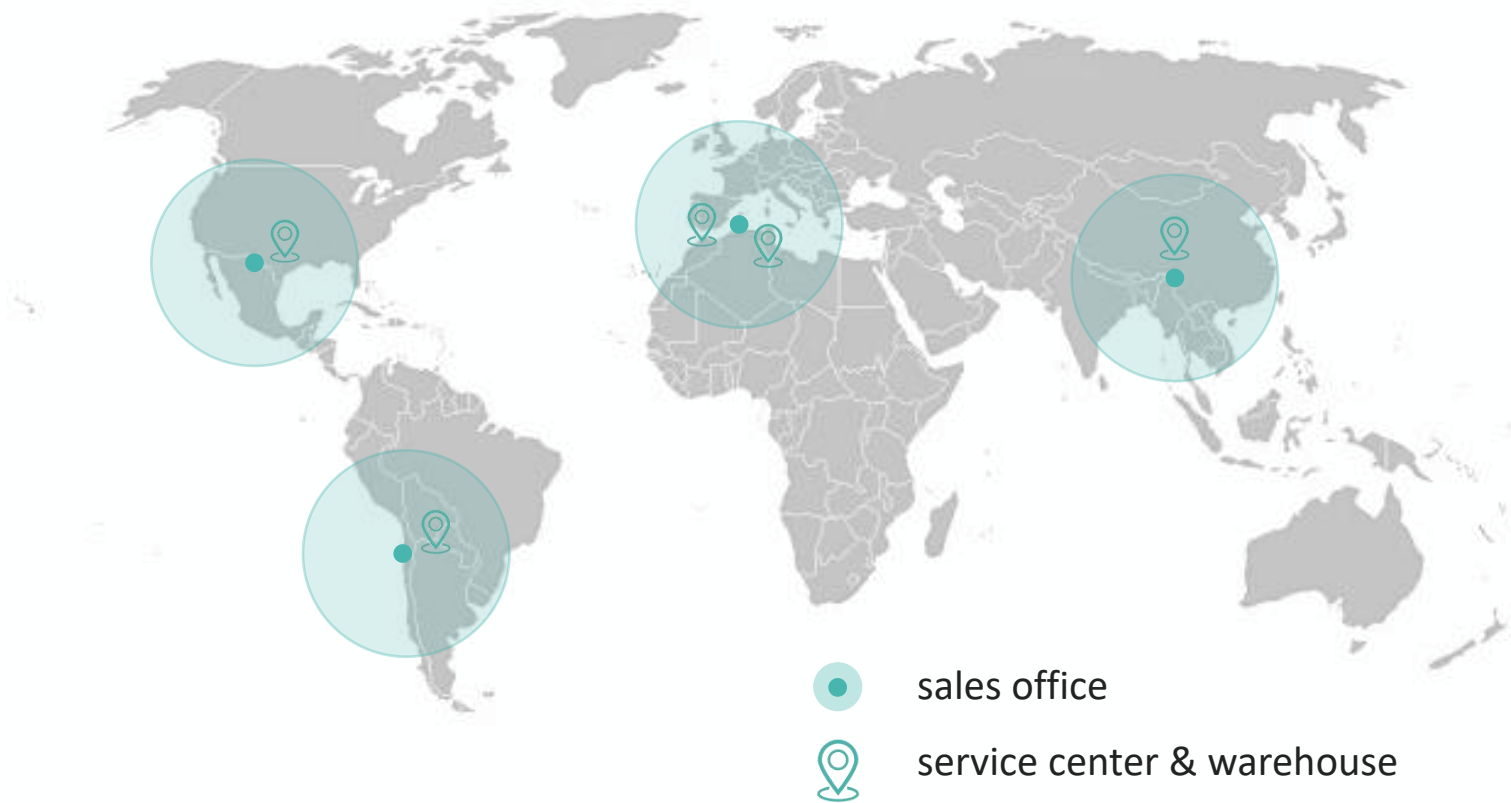
Supplement plan:new battery would be supplemented every 5or 10 years; (70%SOH)

Alternative2.

Redundant configuration to ensure certain years of warranty

After-sales service

After-sales team	>30 members
Overseas service covering countries	>20
Domestic service covering provinces	>23



we are working on 50+ projects, and the actual installed capacity is over 200MWh



Project: textile factory

size :400kW/860kWh location:Shaoxin city zhejiang province



Project: livestock and poultry

size :200kW/430kWh location:Jiaxin city zhejiang province

we are working on 50+ projects, and the actual installed capacity is over 200MWh



Project: Aluminum Material factory
size :300kW/645kWh location:Suqian city Jiangsu province



Project: Plastic Products factory
size :200kW/430kWh location:Jiaxin city zhejiang province

we are working on 50+ projects, and the actual installed capacity is over 1GWh

Republic of Latvia



Project1.Independent energy storage plant
60MW/120MWh



Project2.Power plant of PV+BESS
20MW/50MWh

we are working on 50+ projects, and the actual installed capacity is over 1GWh

Dona Carmen in Chile



Project. power plant of PV+BESS (under construction)
55MW/110MWh

we are working on 50+ projects, and the actual installed capacity is over 1GWh

Dona Carmen in Chile



Project. Copper Mine UPS
32MW/56MWh

Thanks for watching!

Consistent Energy Storage Concept

2024.Oct.



WeChat Public



Social Media

