Liquid cooling twin 20ft containers system

202303

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01

Product Specification

Center-L Liquid Cooling BESS

PAREMETERS

Center20 1500-280-3727L

No.	Type	Description
1	Rated Capacity	7.454 MWh
2	Cell Energy	280 Ah
3	Rated Voltage	1331.2 V
4	Container Size(W*H*D)	12879 mm*2896 mm*2438 mm
5	Weight	72 tons
6	Max. C-rate	0.5C
7	Cooling Method	Liquid cooling
8	DC-RTE	95%
9	IP Level	IP54
10	Calendar Life	15 years

Note:
The data is updating according to the improvement

Center-L Liquid Cooling BESS

Item	Cell-280Ah	Module	Container
Configuration	/	1P52S	20P832S
Size（W*D*H）(mm)	174.6*72.1*207.1	1150*760*237	12116 *2896 *2438
Weight (kG)	5.5	315	72000
Rated voltage (V)	3.2	166.4	1331.2
Voltage Range (V)	2.8~3.6	145.6 ~ 187.2	1164.8~1497.6
Rated Energy (kWh)	0.896	46.592	7454.72

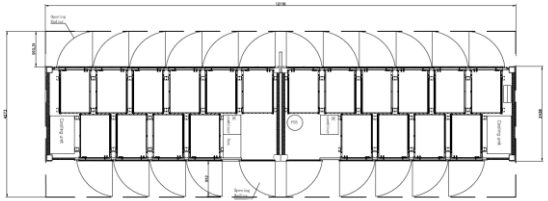
02

System Overview

Center-L Liquid Cooling BESS

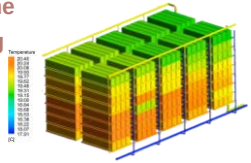
Composition

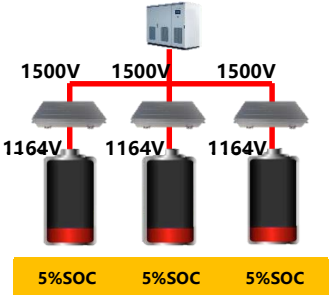
- 20 Racks
- 80 modules
- 1 FFS(Gas+Water Spray)
- 2 DCPs
- 1 AC cabinet
- Covers an area of 35% less



Flexible Deployment

- Factory preassembly, short lead time
- Low installation and commissioning cost
- High efficiency group CTP





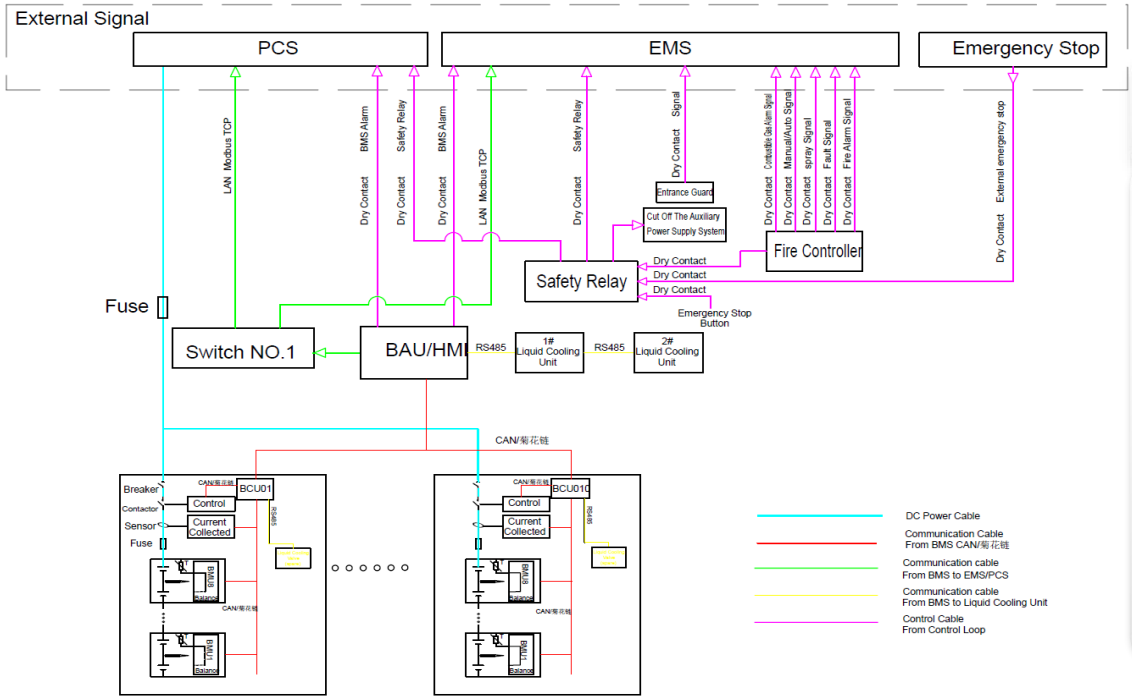
Excellent LCOS

- Dynamic power consumption reduced by 15% compared with Narada air cooling system
- RTE increased by 95

Ultra Long Life

- System cycles more than 10000 times
- Intelligent Liquid cooling units ensure the system temperature varies between 5℃
- BMS active balance;
- Intelligent monitoring and collaboration

Center-L Liquid Cooling BESS-Communication

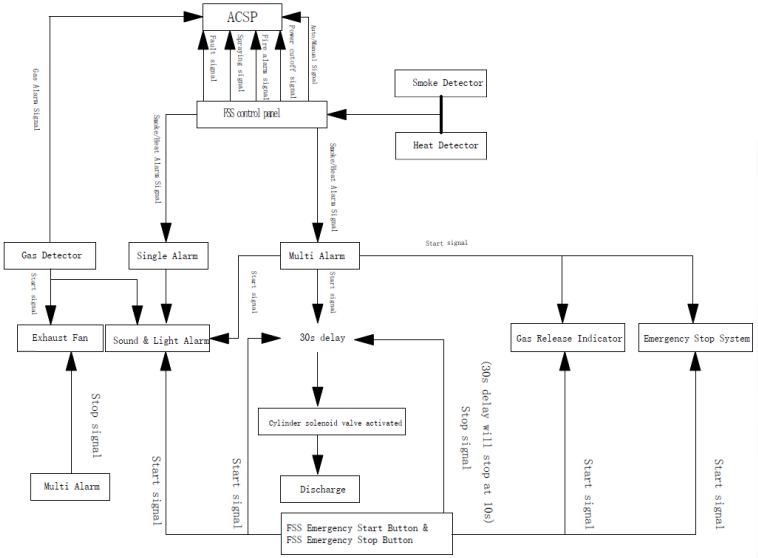


Communication

- CAN / RS485 / Modbus TCP/IP
- BMU-BCU
- BCU-BAU
- HVAC-BAU
- BAU-EMS/PCS
- FSS-EMS
- Safety Relay-EMS
- Safety Relay-PCS

Center-L Liquid Cooling BESS-FSS

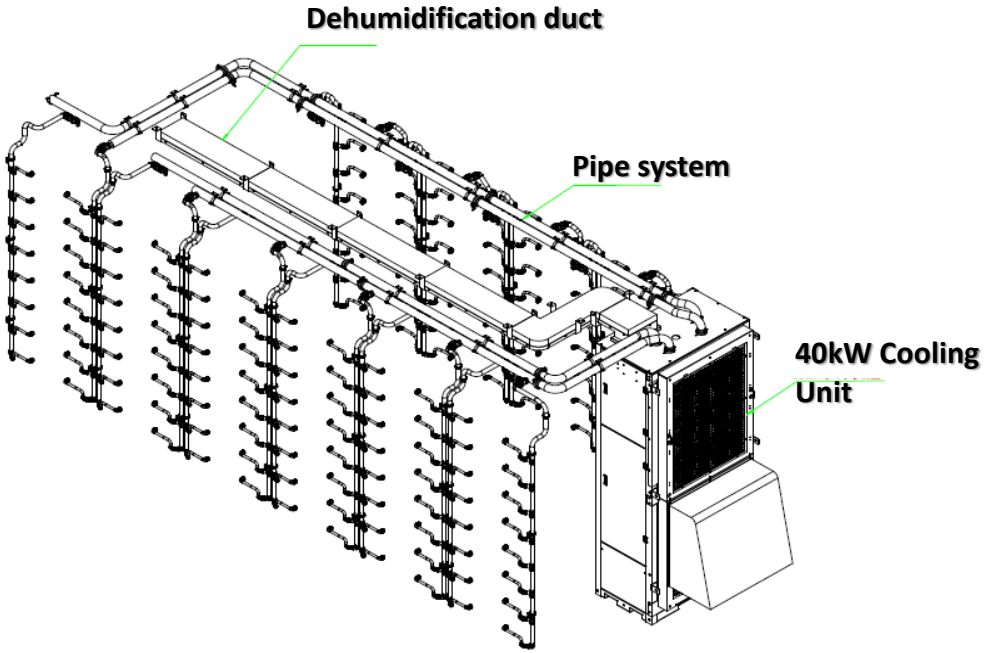
1. Flammable Gas Detection System Work Flow
When the gas detector detects that the combustible gas concentration reaches 25% LFL, a gas alarm signal is issued, and the exhaust fan is opened with linkage, and the audible and visual alarm is started.
2. Automatic Fire Alarm System Work Flow
a. When the temperature detector or smoke detector alarm alone, send out a first-level fire alarm signal, linkage of the audible and visual alarm start;
b. When the temperature detector and smoke detector alarm multiple times, send out the secondary fire alarm signal to start the high-pressure emergency stop system, close the exhaust fan, and start the linkage of the audible and visual alarm and the exhaust indicator light. At the same time, the FSS enters the 30S delay. After the 30s delay, the FSS sprays;
c. When the emergency start button is manually pressed, the action is the same as that in Step b;
d. When the FSS is in the 30S delay and the emergency stop button is manually held down, the FSS will be suspended when the delay time runs to 10s. If the delay is less than 10 seconds, the time is reset to 10 seconds and paused;
Note: The stop button cannot be released, otherwise the countdown will continue and it will take another person to shut down the host to completely stope;
e. Once FSS is discharged, Fan will stop work.
3. Manual Status Work Flow
When maintenance personnel enter the container, they should first switch the alarm system to manual mode automatically. In manual mode, when the detector detects a fire, the controller will only give an audible and visual alarm, but will not start the gas fire extinguishing system. The gas fire extinguishing device needs to be manually started through the emergency start button. When personnel leave the container, they need to switch the system to automatic status.



FSS

- Design FSS according to NFPA855 / NFPA68 / NFPA69
- Twin 20ft containers share one set of FSS
- 3 level alarms
- Total 8 smoke detectors, 8 temperature detectors, 1 FSS control panel and gas cylinder

Center-L Liquid Cooling BESS-Liquid cooling system

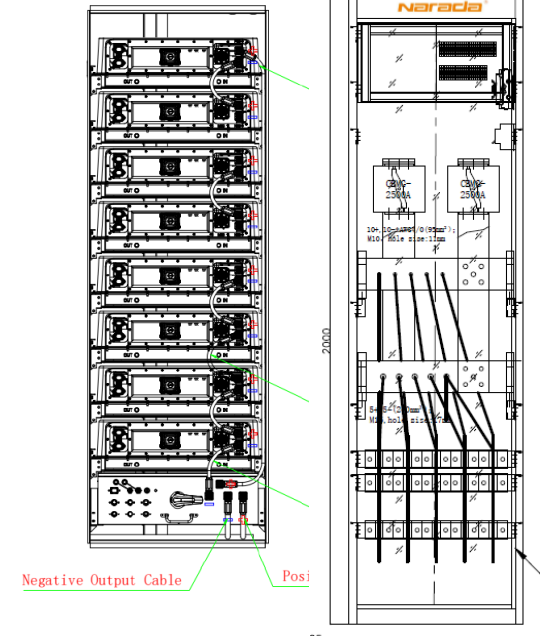


Liquid Cooling system

- Multistage series-parallel pipeline
- Double system cooling pumps, double backup
- Low energy consumption, high heat dissipation cold plate structure
- The temperature differences between cells in racks and system shall not exceed 3℃ and 5℃ respectively

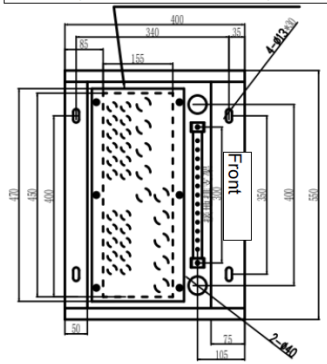
Center-L Liquid Cooling BESS-DCP

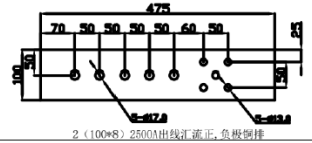
Module connection drawing



DC combiner connection drawing

The cover plate of the DC combiner output





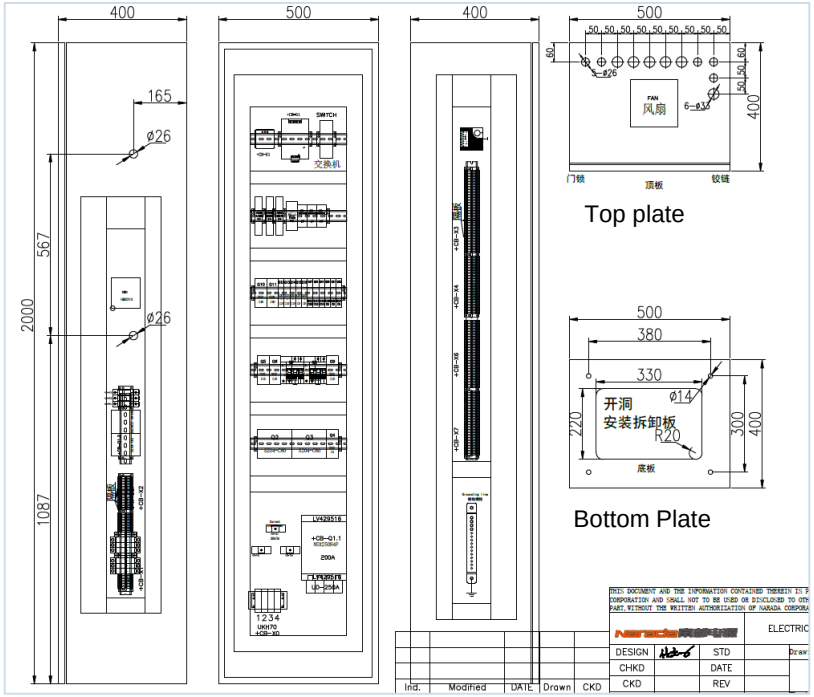
2（100*8）2500A出线汇流正，负极倒排

5 sets M20 holes for output connection

DCP

- 10 racks connect to 1 DCP
- Bottom outlet
- Convenient connection
- 2500A Fuse*2
- SPD
- Ensure system security @DC side

Center-L Liquid Cooling BESS-AC cabinet



AC cabinet

- Bottom outlet
- Two 20ft containers share 1 AC cabinet
- Low aux. consumption
- Convenient connection for customer-380-400V 60Hz 3P+N+PE
- UPS ensures the system safety and record system data when power off

03

Product Features

Center-L Liquid Cooling BESS-Product Advantages

Economical

- 20ft Combination and Pre-installed Shipping
- Low installation, operation and maintenance cost
- DC-RTE up to 95%

Safety

- Fire Suppression System
- Low temperature difference of system
- Intelligent monitoring and calibration

Reliability

- UL/IEC Certificate including UL9540A
- Long life up to 10000 cycles
- Reliable Transportation & Lifting

Product Advantages

Economical | Safety | Reliability

20ft combination

A single 20ft NWI container

20ft NWI Combined BESS

- ✓ 100% Pre-installation Rack → Save installation cost
- ✓ Shared FSS System and DC Cabinet → Reduce material cost
- ✓ Light Weight Transportation → Reduce shipment cost

Product Advantages

Economical | **Safety** | Reliability

Multi-security protection

Battery safety 01

1. Lithium iron phosphate system with UL9540A, inherently safe;
2. Dual path design of heat barrier and heat conduction;
3. Short-circuit self-protection design, always ensure safety.

02 Precision fire protection

1. Accurate warning of thermal runaway;
2. Active and passive dual fire protection;
3. Targeted and precise fire suppression;
4. Repeat spraying to inhibit reignition.

03 BMS protection

1. Active balance;
2. Three level protection system to ensure safety.

Product Advantages-Certification progress

Economical

Safety

Reliability

No.	Range	Certificate	Market	Standards	Expected Finish Date
1	Cell	UL1973	US	Batteries for use in stationary applications	√
2	Cell	IEC62619	Europe	Safety for secondary Lithium Cells and batteries	√
3	Cell	UL1642	US	Standards for lithium batteries	√
4	Cell	UN38.3	US	Transportation safety	√
5	Module	UN38.3	Global	Transportation safety	√
6	Module	UL9540A	US	Test methods for thermal runaway fire propagation-BESS	√
7	Rack	EMC	Europe	Electromagnetic compatibility testing of electrical and electronic equipment	√
8	Rack	IEC62619	Europe	Safety for secondary Lithium Cells and batteries	√
10	Rack	UL1973	US	Batteries for use in stationary applications	√
11	Rack	IEC63056	Europe	Safety for electrical equipment	2023/7
13	Rack	UL9540A	US	Test methods for thermal runaway fire propagation-BESS	√
14	Container	UN3536	Global	Transportation for lithium batteries in cargo	√
15	Container	UL9540	US	Safety for energy storage system and equipment	2023/7
16	Container	UL9540A	US	Test methods for thermal runaway fire propagation-BESS	2023/7

UL9540A

UL 1973

UL9540

IEC 62619


SMART ENERGY
WONDERFUL LIFE