Version V1.0_202605

HYXI C&I ESS O&M Guide

Liquid Cooling ESS

HYX-EL261P2-EU

Contents

1 Purpose

This document provides operation and maintenance recommendations for energy storage cabinets, intended for after-sales inspections and maintenance. To ensure safety, please carefully read this manual before operation to fully understand the safety precautions and the performance and characteristics of the energy storage system.

2 Scope

This document applies only to the overseas liquid cooling series HYX-EL261P2-EU .

3 Reader

This document is primarily intended for the following engineers. Engineers must possess the qualifications required by local laws and regulations.

- Technical Support Engineer

- Maintenance Engineer

4 Recommendations for tools and spare parts

No.	Name	Quantity
1	Multi meter	1 unit
2	Insulation meter	1 unit
3	Vacuum cleaner	1 unit
4	Hot air dryer	1 unit
5	Electrical tools (screwdrivers, pliers, wire cutters, etc.)	1 set
6	Wool brush with insulated handle	1 unit
7	Cleaning supplies (rags, garbage bags, etc.)	Appropriate amount

No.	Name	Quantity
8	Condenser cleaning water gun (for liquid coolers)	1 unit
9	Fin comb (for liquid coolers)	1 unit

5 Core module inspection recommendations

5.1. Routine maintenance

Log in to HYXI Cloud Platform or EMS web page. Check the alarm information in the web interface to confirm there are no major or minor alarms. If there are alarms, please follow the instructions in the installation manual to handle them.

5.2. Quarterly inspection and maintenance

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
1	Whole cabinet	The cabinet door lock is undamaged.	Replace the door lock.	on
2		The cabinet has no obvious paint peeling or rust.	Repair the damaged area with paint. Refer to HYXI's paint repair video tutorial.	on
3		There are no obvious coating peelings or scratches on the exterior of the cabinet.	Please contact HYXI's engineers for evaluation and processing.	on
4		The explosion vent is free of foreign objects/covered with ice and snow.	Clean up accumulated objects promptly.	on
5		Open the front door of the cabinet, remove the relevant fixing sheet metal clips, and replace the dustproof cotton.	Not related. Notice: When the cabinet operates in an outdoor environment with a lot of dust, the frequency of	on

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
			replacing the dustproof cotton should be increased according to the site conditions.	
6	Electric Compartment	The connection of the moving wire terminals is not loose, and there are no signs of overheating, discoloration, or burning.	Please contact HYXI's engineers for evaluation and processing.	off
7		There were no unusual noises or burning smells inside the electrical compartment.	Please contact HYXI's engineers for evaluation and processing.	off
8		The insulation of the power cable is undamaged.	Replace the cable.	off
9		The cabin was clean and free of debris, and there was no water seepage.	Clean up debris and standing water. Repair leaks.	off
10		The points where cables enter and exit the equipment should be properly sealed, and there should be no holes with a diameter greater than 10mm.	Use fire-resistant sealant for sealing.	off
11	Ground Protection	The connection between the battery grounding system and the building structure reinforcement should be reliable.	Re-grounding.	off
12		The battery bracket, container house, cable metal armor and the roof metal grounding grid should be reliable, and the grounding resistance of the primary equipment should be less than 4Ω.	Re-grounding.	off

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
13	PCS Module	The PCS module is in good condition, with no damage or deformation.	Please contact HYXI's engineers for evaluation and processing.	off
14		The PCS module made no abnormal noises, emitted smoke, or had a burning smell.	Please contact HYXI's engineers for evaluation and processing.	off
15		The PCS is operating normally, the power indicator and running indicator are constantly green, and the alarm lights are not displaying anything.	Please contact HYXI's engineers for evaluation and processing.	off
16		The thermal imager checks the operating temperature of the PCS; the normal temperature is <50 °C.	Please contact HYXI's engineers for evaluation and processing.	off
17		There were no foreign objects or dust at the air inlet and outlet of the PCS module. Observe whether the air intake and exhaust are normal.	Clean the air inlet and outlet.	off
18		The power cable connection is secure.	with a torque of 7~10 N*m.	off
19		The insulation layers of the power cables and control cables are undamaged.	Replace the cable.	off
20		Check that the grounding cable is securely and reliably connected.	Ensure reliable grounding.	off
21		Check if the insulation wrapping tape on the cable terminals has come loose.	Replace the cable ties and tighten them again.	off

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
22		Check if the control terminal screws are loose.	Tighten with a screwdriver.	off
23		There were no poor contacts at the main circuit terminals, and no signs of overheating or burning at the terminals. Thermal imaging was used to inspect all terminals, and no abnormal hot spots were found.	Please contact HYXI's engineers for evaluation and processing.	off
24		When the equipment is running, check the parameters such as voltage, frequency, and power to confirm that they are within the normal range. Voltage: 220V ~ 240V, Frequency: 49.5Hz ~ 50.5Hz. Power consumption compared to actual operating conditions.	Please contact HYXI's engineers for evaluation and processing.	off
25	Battery Pack	There is no obvious damage, paint peeling or rust on the exterior.	Please contact HYXI's engineers for evaluation and processing.	off
26		The battery module should have a normal appearance and be free from deformation, damage, or other defects.	Please contact HYXI's engineers for evaluation and processing.	off
27		Check the pack coolant inlet and outlet ports and the metal edge at the bottom of the Pack for any leaks.	1. Leakage at the inlet and outlet: Replace the male connector of the inlet and outlet shut-off valve after draining the liquid. 2. Other situations: Replace the pack.	off

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
28		Check if the cable connections are loose or disconnected.	Secure the cable connections.	off
29		Check that the grounding cable is securely and reliably connected.	Ensure reliable grounding.	off
30	High-Voltage Box	There are no communication alarms from the high-voltage box on the EMS web interface. Parameter data are displayed normally.	Please contact HYXI's engineers for evaluation and processing.	on
31		The high-voltage box should be kept intact and free from rust, dust accumulation, or other defects.	1 Repair the rusted areas with paint. 2 Clean up the accumulated dust.	off
32		View the parameters of the high-pressure box through the EMS web interface. The normal temperature range for the battery cell is 0-50 °C , and the normal voltage range for a single cell is 2.8V-3.6V .	Please contact HYXI's engineers for evaluation and processing.	off
33	UPS	Check the input and output cable terminals once; the terminals should have good contact and no loose connections.	Retighten the terminals	off
34		The fan operates normally without any abnormal noise, and there is no debris at the air outlet.	1 Replace the fan. 2 Clean up the clutter.	off
35		The battery pack voltage is normal. The normal range is 20V ~ 30V.	Please contact HYXI's engineers for evaluation and processing.	off

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
36		The UPS is working normally and there are no alarms.	Please contact HYXI's engineers for evaluation and processing.	off
37	EMS	The EMS platform is running smoothly without any lag, crashes, or other abnormalities, and all functional modules (monitoring, control, alarms, and reports) can be accessed normally.	Please contact HYXI's engineers for evaluation and processing.	on
38		Real-time data integrity is ensured, with accurate acquisition of key parameters such as battery SOC/SOH, charge/discharge power, voltage, current, and temperature, consistent with the display on field equipment.	Please contact HYXI's engineers for evaluation and processing.	on
39		Historical data storage status: the database is intact and without loss or corruption; backup tasks are executed as planned; data can be exported and queried normally.	Please contact HYXI's engineers for evaluation and processing.	on
40		The alarm system is confirmed to be effective, the alarm thresholds are set reasonably, and alarms can be triggered in a timely manner by sound, light, and SMS notifications when anomalies occur. The alarm log is complete.	Please contact HYXI's engineers for evaluation and processing.	
41		The communication between EMS and equipment such as energy storage battery clusters, PCS, fire protection, liquid cooling units,	Please contact HYXI's engineers for evaluation and processing.	on

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
		and electricity meters is normal, and there are no communication alarms.		
42		Network devices (switches, routers, gateways) are operating normally , port connections are secure, indicator lights are in compliance with standards, and there is no abnormal overheating.	Please contact HYXI's engineers for evaluation and processing.	on
43		The wireless/wired communication module (such as 4G/5G, Ethernet) has a stable signal, the SIM card/network cable interface is not loose, and the communication protocol is operating normally.	Please contact HYXI's engineers for evaluation and processing.	on
44		The EMS, monitoring host, and other hardware are undamaged, indicator lights are functioning normally, and there is no abnormal noise or overheating.	Please contact HYXI's engineers for evaluation and processing.	on
45		Verify the execution of control strategies. Preset strategies such as peak shaving and valley filling, backflow prevention, and demand control are operating normally as configured, without deviation.	Please contact HYXI's engineers for evaluation and processing.	on
46		Check the effectiveness of the remote control function. Commands such as charging/discharging start/stop and power adjustment issued by EMS can be executed accurately	Please contact HYXI's engineers for evaluation and processing.	on

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
		and the equipment responds promptly.		
47		Verify that access control is compliant , that the operation permissions of different operation and maintenance roles are clearly defined, that there are no records of unauthorized access, and that operation logs are complete and traceable.	Please contact HYXI's engineers for evaluation and processing.	on
48	Liquid Cooling Unit	The liquid cooling unit has no visible damage or deformation.	Please contact HYXI's engineers for evaluation and processing.	off
49		There was no leakage in the inlet and outlet pipes.	Repair the leak.	off
50		The compressor, fan, and circulating water pump are operating normally with no abnormal noise.	Please contact HYXI's engineers for evaluation and processing.	off
51		A thermal imaging camera was used to check and confirm that there were no hot spots on the unit's outer casing.	Please contact HYXI's engineers for evaluation and processing.	off
52		The air inlet and outlet are unobstructed and free of debris.	Clean up the clutter.	off
53		There was no dust around the liquid cooling unit, and all air inlet filters were functioning normally.	Replace the filter.	off
54		There is no low liquid level alarm on the EMS web page.	Replenish the unit with liquid.	off

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
55		The filter screen is free of dust accumulation, foreign objects, and damage.	After turning off the power for at least 1 minute, remove the filter screen and use a brush to clean away dust and other dirt, or rinse it with clean water and let it air dry in a cool place.	off
56		The fan is free of dust, and there are no foreign objects blocking the air vents.	After disconnecting the power for at least one minute, use a brush to clean the dust off the fan. Remove any foreign objects from the air vents.	off
57		The fan blades are undamaged, and the fan rotates smoothly without any abnormal noise.	After powering off for at least 1 minute, tighten the fan and check for any internal cables or other components that may interfere with the fan's rotation. If the fan malfunctions, please replace it.	off
58		The power plug, electrical cables, and terminals are not loose.	After disconnecting the power for at least one minute, reconnect the loose power plug. Tighten any loose cables with a screwdriver.	off
59		The electrical cables showed no signs of aging, damage, abnormal heating, or other abnormalities.	Replace the power cable after disconnecting the power for at least 1 minute.	off

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
60		There was no dust on the wiring panel.	Clean the dust with a brush after turning off the power for at least 1 minute.	off
61		The condenser is free of dust and foreign objects.	Clean the condenser with compressed air or a vacuum cleaner with a brush head at least one minute after power is off.	off
62		The fins showed no severe bending or deformation.	After power is off for at least 1 minute, use tools such as fin combs to perform calibration.	off
63		A small amount of coolant was released, and the condition was observed to be normal with no crystallization.	Replace the coolant at least 1 minute after power is off.	off
64		The exterior is free from damage, deformation, and corrosion.	After power is off for at least 1 minute, drain the coolant and replace the corresponding piping.	off
65		The pipes are securely fixed and the connections are not loose.	After disconnecting the power for at least 1 minute, tighten the loose parts.	off
66		The valve components showed no signs of failure or damage.	After power is off for at least 1 minute, drain the coolant and replace the corresponding valves.	off

5.3 Semi-annual inspection and maintenance

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
1	Fire Protection System	Check if the smoke detector is working properly.	Replace the detector.	on
2		Check if the temperature sensor is working properly.	Replace the detector.	on
3		Check the appearance of the gas detector for deformation, rust, aging, etc.	Replace the detector.	on
4		Check that the gas detector is securely installed.	Re-tighten.	on
5		Check the appearance of electric louvers and explosion-proof fans for deformation, rust, aging, etc.	Replace the detector.	on
6		Check that the electric louvers and explosion-proof fans are securely installed.	Re-tighten.	on

⚠ DANGER

- Inspecting, testing, maintaining, troubleshooting, or replacing equipment, ensure that the wiring of the aerosol fire extinguishing device is disconnected to prevent accidental aerosol spraying.
- After the operation is completed, the wiring of the aerosol fire extinguishing device should be restored in a timely manner.

5.4 Annual inspection and maintenance

No.	Equipment Type	Maintenance Standards	Exception Handling	Power Status
1	Fire Protection System	Check if the aerosol fire extinguishing device is damaged.	Replace the device.	on
2		Check if the aerosol fire extinguishing device has expired.	Replace the device.	on
3		Check if the mounting brackets of the aerosol fire extinguishing device are loose.	Re-tighten.	on
4		Inspect the structure of the battery compartment protected by the aerosol fire suppression system to eliminate any adverse effects that could cause changes in the fire suppression volume.	Replace the device.	on
5		Use a smoke thermometer to test the functionality of the detection components. If the operating light is constantly red, replace the smoke detector.	Replace the device.	on
6		Use a smoke thermometer to test the functionality of the detection component. If the operating light is constantly red, replace the detector with a new one.	Replace the device.	on
7		The explosion-proof ventilation system is activated in conjunction with the first-level combustible gas alarm.	Replace the device.	on
8		During the linkage test, the audible and visual alarms need to participate in the system linkage to issue audible and visual alarms and check the wiring.	Replace the alarm device.	on
9		During the linkage test or manual start-up, the blower and exhaust fan will open and the louvered fan will rotate.	Replace the smoke exhaust or blower.	on

6 Powering Off the ESS

Step 1: Issue a shutdown command: On the EMS web interface, click "System Management", click "Strategy Management", click "Shutdown Command", and issue a shutdown command to the PCS.

Step 2: Disconnect the miniature circuit breakers LCU, UPS, Light in sequence.

Step 3: Disconnect the molded case circuit breaker QF1.

Step 4: Press the ON/OFF key of the high-voltage box and rotate the circuit breaker of the high voltage box counter clockwise.

Step 5: Disconnect the miniature circuit breakers APS-12V, HVB, APS-24V, SEF in sequence.

Step 6: Press and hold the OFF key on the UPS panel for more than 5 seconds to turn it off.