SolarEdge CSS-OD: Routine Maintenance Guide

This Maintenance Guide pertains to the CSS-OD solution in both grid-tied topology (without Backup) and in Backup-enabled topology (with backup). Below, you can find the relevant devices for your site's topology.

Revision history

Version 1.0, November 2024: Initial release date.

Contents

Handling and safety instructions

Safety symbols information

	**WARNING!** Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in **injury or loss of life**. Do not proceed beyond a warning until the indicated conditions are fully understood and met.
	**CAUTION!** Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in **damage or destruction to the product**. Do not proceed beyond a caution until the indicated conditions are fully understood or met.
	**NOTE** Denotes addition information about the current subject.

Important safety instructions

For safe and effective maintenance of the CSS system, carefully read and adhere to the following safety requirements.

	**CAUTION!** Adhere to relevant safety precautions, use essential tools, and don appropriate personal protective equipment.
	**WARNING!** Unauthorized operation of this equipment is strictly prohibited.
	**CAUTION!** Before beginning maintenance or repairs, make sure that all grounding cables are correctly connected to the PE busbars.
	**WARNING!** While performing maintenance, make sure to display a **warning sign** indicating that the switch must remain in the OFF position, and for the BUI, the use of the mechanical interlock is mandatory for safety reasons.

	**WARNING!** Before connecting or removing cables, make sure to disconnect all lockout–tagout (LOTO) all feeders to the CSS-OD.
	**CAUTION!** During maintenance, insulate any exposed contacts for safety purposes during maintenance.
	**CAUTION!** After maintenance or repair is finished, remove the ground cable between the maintained loop and the main ground loop.
	**NOTE** If you have any questions regarding the operation and maintenance of the equipment, contact SolarEdge Customer Support. Unauthorized operation of the equipment is strictly prohibited.
	**CAUTION!** Clean up tools and materials after maintenance and check if there are any metal objects left inside or on top of the equipment.
	**CAUTION!** Do not open the door to maintain the Battery Cabinet in rainy, humid or windy days. SolarEdge shall not be held liable for any damage caused by violation of the notice.
	**CAUTION!** Do not wear jewelry or metal accessories, such as watches, during maintenance.

Required equipment

- Insulated gloves
- Protective gloves
- Goggles
- Dust mask
- Insulated shoes
- Reflective vest
- Safety helmet
- Multimeter
- Medical kit

Supported components

- CSS-OD: Battery Cabinet 102.4kWh
- CSS-OD Battery Inverter 50kW
- CSS-OD: Commercial Backup Interface (BUI) 100/250kW

Before you begin

- You are only authorized to perform maintenance on the battery cabinet if you have expertise in battery systems and experience in safety training.
- You must be a trained and licensed electrician.

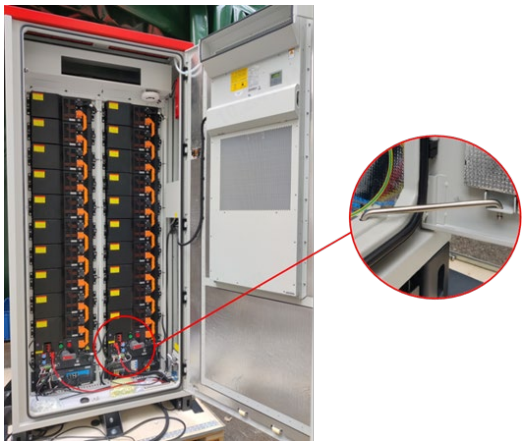
Shutdown system procedure

This section explains the correct procedure to correctly shut down the CSS components for maintenance.

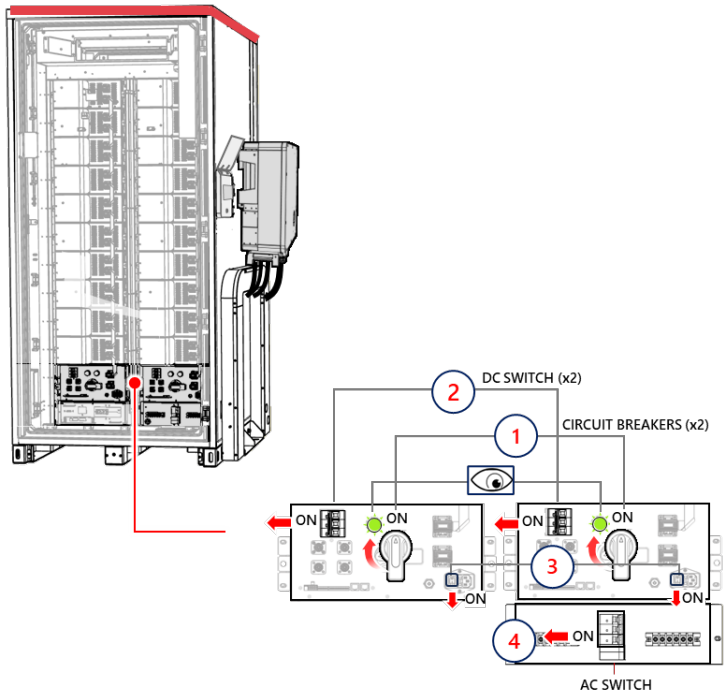
CSS-OD: Battery Cabinet 102.4kW

To shut down the battery cabinet:

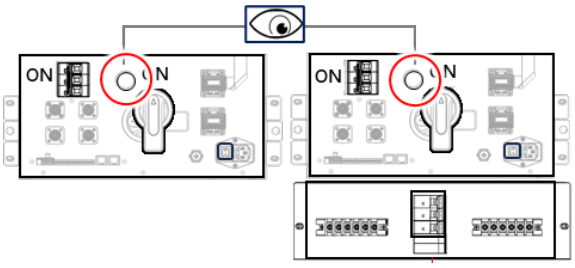
1. Open the main front door of the battery cabinet and secure it with a holding bar.



2. Turn OFF the numbered switches in the following order:
   a. (1) Cluster Management Unit DC Breakers (x2)
   b. (2) DC Switches (x2)
   c. (3) Input AC Aux (x2)
   d. (4) AC Switches (x2)



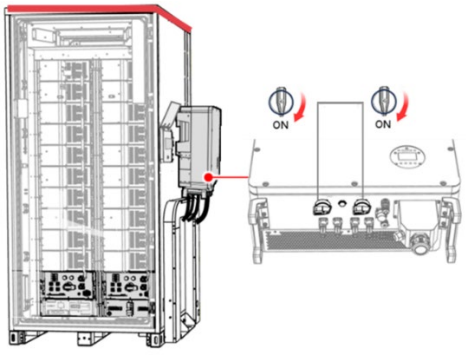
3. Verify that the cluster management LED indicator is turned OFF for all batteries underdoing maintenance.



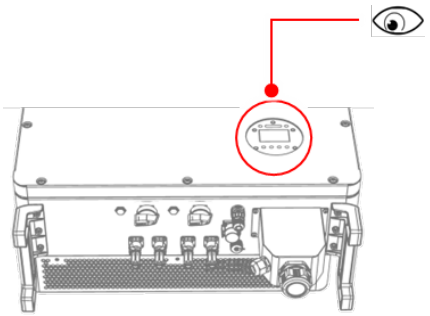
CSS-OD: Battery Inverter 50kW

To shut down the battery inverter:

1. Turn OFF both DC switches on the battery inverter.



2. Verify the operation indicator is OFF on the battery inverter.

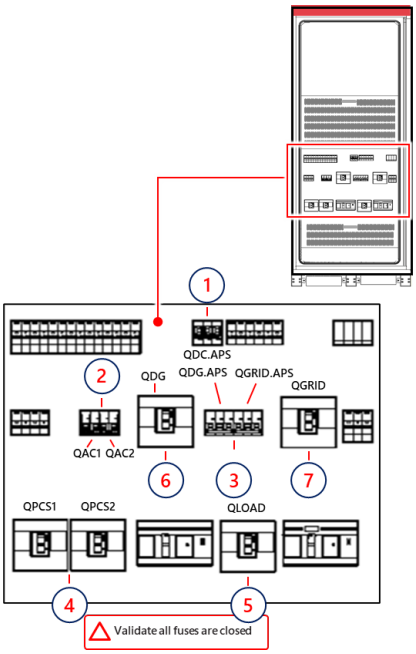


CSS-OD: Commercial Backup Interface 100kW

To shut down the BUI:

1. Open the main front door of the BUI and secure it with a holding bar.

2. Turn OFF the switches in the following order:
   a. (1) QDC.APS
   b. (2) QAC1 and QAC2
   c. (3) QLOAD
   d. (4) QPCS1 and QPCS2
   e. (5) QLOAD
   f. (6) QDG
   g. (7) QGRID



Perform maintenance for the CSS-OD Battery Cabinet 102.4kWh

Battery Cabinet safety instructions

⚠	**WARNING!** To prevent electric shock, refrain from performing any maintenance operations not outlined in this manual. If needed, please contact SolarEdge Support.
⚠	**CAUTION!** The battery cabinet can only be maintained by personnel with training in battery systems and experience in safety training.
⚠	**WARNING!** Do not open the door to maintain the battery cabinet in rainy, humid or windy days. SolarEdge will not be responsible for any damage resulting from failure to comply with this notice.
⚠	**WARNING!** The battery cabinet poses potential hazards. Make sure that proper precautions are taken during its operation and maintenance. Improper operation can lead to severe **personal injury and significant property damage.**
⚠	**CAUTION!** During battery cabinet maintenance, follow necessary safety measures, use appropriate tools, and wear personal protective gear.

Monthly maintenance routine

If CSS-OD is installed in ambient temperature higher than 35°C or lower than 0°C, the following maintenance needs to be performed monthly.

Device	Inspection	Description	Power – Off Required
HVAC [Total est. time: 10 min.]	▰ External and internal visual examination. [Est. time: 5 min.] ▰ Audial check-up of the fans noise. [Est. time: 5 min.]	▰ There are no visible signs of damage to the appearance of the HVAC ▰ There are no obvious indications of paint peeling or rust ▰ The screws are firmly secured ▰ The fans rotate smoothly without abnormal sounds ▰ The filter is clean and free from any blockages	No

Quarterly maintenance routine

Device	Inspection	Description	Power – Off Required
Battery Cabinet [Total est. time: 8 min.]	▰ External and internal visual examination. [Est. time: 2 min.] ▰ Rust checkup. [Est. time: 2 min.] ▰ Visual and physical assessment of door lock. [Est. time: 2 min.] ▰ Door seal inspection. [Est. time: 2 min.]	▰ Cabinet coating is free from peeling, scratching, or rust. ▰ Door locks are undamaged. ▰ Vents are dust-free. ▰ No insects, rodents or other animals present ▰ Inspect the sealing strip for damage and promptly replace if necessary to maintain effectiveness ▰ Make sure no flammable objects near the battery cabinet	No
Cluster management units (x2) [Total est. time: 1 min.]	▰ Check the status indicator of the cluster management unit: [Est. time: 1 min.] ▰ (See Figure 1 and Figure 2) [Est. time: 5 min.]	▰ The indicator light needs to be solid green	No
Power distribution area [Total est. time: 1 min.]	▰ Check for foreign objects in the power distribution area. [Est. time: 1 min.]	▰ The area is clean and free from foreign objects ▰ Check clay for cracks, replace if necessary	No
HVAC Total est. time: 15 min.]	▰ External & Internal visual examination. [Est. time: 5 min.] ▰ Auditory fan noise check. [Est. time: 3 min.] ▰ Review vent condition. [Est. time: 2 min.] ▰ Filter cleaning[1][2]	▰ No visible damage to HVAC appearance ▰ No signs of paint peeling or rust ▰ The screws are tightly fastened ▰ Fans rotate smoothly without abnormal noise. ▰ The filter is clean and unobstructed	Yes[3]

[1] We only recommend externally cleaning the filter with the high-pressure water gun or air gun.

[2] In sandstorm-prone areas, we recommend cleaning the filter after each sandstorm and before each summer.

[3] Carefully follow the procedure for Shut down system.

Semi-annual maintenance routine

Device	Action needed	Pass criteria	Power – Off Required
HVAC [Total est. time: 20 min.]	▰ Visual examine both externally and internally. [Est. time: 5 min.] ▰ Inspect for rust, including the screws that hold the HVAC system. [Est. time: 3 min.] ▰ Check fan for any noise. [Est. time: 5 min.] ▰ Visually inspect the fan and filters. [Est. time: 2 min.] ▰ Remove and clean the external fan air filter. [Est. time: 5 min.]	▰ The exterior shows no obvious damage ▰ There are no apparent signs of paint peeling or rust ▰ The screws are tightly fastened ▰ The fans spin smoothly without any unusual noises ▰ The filter is clean and unobstructed	No
Smoke detector, temperature, and humidity sensor [Total est. time: 5 min.]	Perform random inspections on the smoke detector and temperature and humidity sensor using specialized devices that produce smoke or heat. [Est. time: 5 min.]	The smoke detector displays a constant red light, and the temperature sensor registers the temperature variation on the main screen of the Battery Cabinet HMI.	No
Fire suppression module (See Figure 3) [Total est. time: 5 min]	▰ Inspect the green LED indicator on the JR10 fire suppression control box. [Est. time: 1 min.] ▰ Visually inspect the fire suppression modules. [Est. time 2 min.] ▰ Verify that the wiring from aerosol units is intact, securely connected, and not lose or disconnected. [Est. time: 2 min.]	▰ Pressing the test button illuminates the circuit detection indicator light on the right side of the control panel, confirming proper connection of the fire suppression system. ▰ The module is clear and free of dust. ▰ The cables are securely connected and should only be reconnected when the starter box has no power. ▰ Check the fire suppression module status on the HMI main screen.	Yes[4]

[4] Carefully follow the procedure for Shut down system.

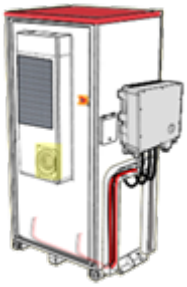
Annual maintenance routine

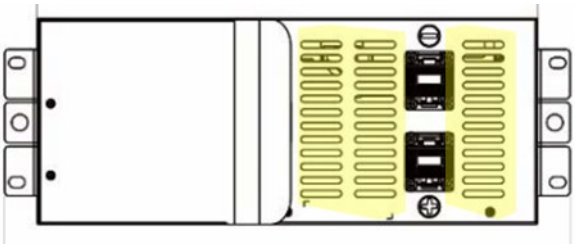
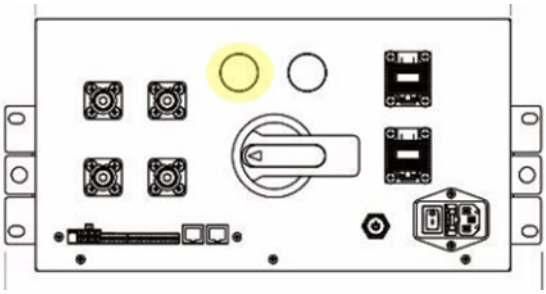
Device	Inspection	Description	Power – Off Required
Energy Module [Total est. time: 7 min.]	Visual inspection of the following: ▰ Rust including exterior screws. [Est. time: 5 min.] ▰ Open the front vent. [Est. time: 2 min.]	▰ No visible damage to the appearance ▰ No signs of paint peeling or rust ▰ Front panel vent is clean and unobstructed (See Figure 4)	Yes[5]
Cluster management units (x2) [Total est. time: 3 min.] For image, see Figure 5.	Check the indicator status of the cluster management unit. [Est. time: 3 min.]	The indicator light needs to be solid green. (See Figure 5)	No

[5] Carefully follow the procedure for Shut down system.

Device glossary for the CSS-OD Battery Cabinet 102.4kWh

The following glossary depicts the necessary equipment to perform routine maintenance on the CSS-OD Battery Cabinet 102.4kWh.

Device	Image
Battery cabinet HVAC vent	Figure 1 
HVAC external fan filter	Figure 2 
JR10 fire suppression control box (located on the bottom left of the battery cabinet)	Figure 3 

Device	Image
Front vent opening of energy module	Figure 4 
Cluster management unit (green indicator)	Figure 5 

CSS-OD Battery Inverter 50kW

Semi-annual maintenance routine

[Total est. time: 15 min.]

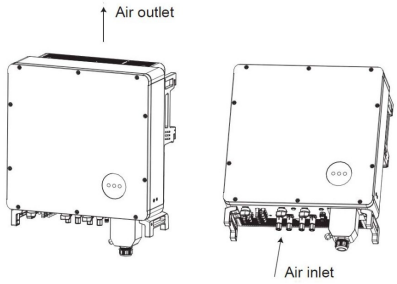
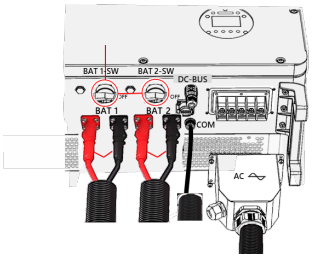
Task	Description
Visual Inspection	Check for damage, deformation, or rust on the Battery Inverter. [Est. time: 2 min.]
Audial Inspection	Listen for abnormal sounds or vibrations during power conversion system operation. [Est. time: 2 min.]
Validate Settings	Check and confirm all settings are correct using BUI100/250 HMI and ONE for C&I cloud platform. [Est. time 2 min.]
Air Duct	Check for dust in the air duct and clean, if necessary. [Est. time 3 min.]
DC Switches	Verify if BAT1 & BAT2 DC switches are in the correct position. [Est. time 1 min.]
Repainting	If the external paint of the battery inverter is damaged, it needs to be repainted. [Est. time 5 min.]

Annual maintenance routine

[Total est. time: 5 min.]

Inspection	Description
Electrical connections	Check for loose or poorly connected electrical connections. [Est. time; 2 min.]
Cable inspection	Inspect all cables and their contact points for damage or scratches. [Est. time 2 min.]
Warning signs and symbols	Inspect the warning signs on the machine body and other equipment symbols. Replace any blurred or damaged symbols. [Est. time 1 min.]

Location and designation of the Battery Inverter component's

Device	Image
CSS-OD: Battery Inverter Air Duct	Figure 6 
BAT1 & BAT2 DC Switches	Figure 7 

CSS-OD: Commercial Backup Interface (BUI) 100/250kW

Important safety instructions

For safe and effective maintenance of the CSS system, carefully read and adhere to the following safety requirements.

	**CAUTION!** Prior to starting the maintenance procedure, disconnect all power sources and initiate the Lockout-Tagout (LOTO) process to ensure they remain disconnected throughout the maintenance. Remove covers and confirm the absence of voltage using a voltage tester or multimeter. Validate the accuracy of your tester by checking it on a known live source before and after testing the circuit.
	**WARNING!** The BUI device contains high voltage, which can cause fatal electric shock if accidentally touched. After shutting down the machine, wait at least 10 minutes before opening the cabinet door. Ensure the unit is completely de-energized before conducting any maintenance.
	**CAUTION!** Only qualified and authorized personnel are allowed to carry out maintenance and other operations on the Commercial Backup Interface cabinets. During maintenance, avoid leaving metal parts such as screws and washers inside the Commercial Backup Interface cabinet, as this can lead to equipment damage.
	**CAUTION!** Wind, sand, and moisture can harm the electrical equipment inside the system cabinet or affect its operational performance. Refrain from opening the Commercial Backup Interface cabinet door during sandy seasons or when the relative humidity exceeds 95%. Only commence maintenance work when there is no sand, and the weather is clear and dry.

Semi-annual maintenance routine

During semi-annual maintenance inspection, check the following:

- BUI interior cabinet inspection [Total est. time: 15 min.]
- BUI exterior cabinet inspection [Total est. time: 7-18 min.]
- Filters [Total est. time: 30 min.]
  - Front door filter [Est. time: 10 min]
  - Rear door filter [Est. time: 10 min]
  - Botton rear door [Est. time: 10 min]
- Fans [Total est. time: 25 min.]
- Door seal [Total est. time: 5 min.]

BUI cabinet inspection

The environmental conditions in which the BUI is located, including temperature, humidity, dust, and equipment vibration, result in dust buildup inside the equipment. This can obstruct air inlets and outlets or penetrate internal components, potentially causing malfunctions and reducing equipment lifespan. Regular inspections and cleaning during equipment operation are essential to maintain a favorable operating environment for internal equipment.

BUI cabinet inspection

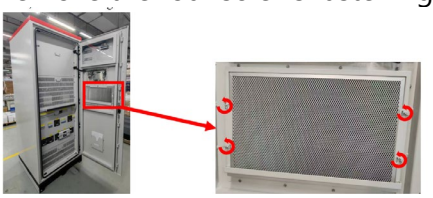
Inspection point	Description
BUI site [Total est. time: 5 min.]	Check the environmental conditions at the BUI site, including temperature, humidity, dust, and equipment vibration, cause dust buildup inside.
Corrosion [Total est. time: 5 min.]	Check all metal components for possible corrosion. [Est. time: 5 min.]
BUI interior cabinet [Total est. time: 15 min.]	▰ Clean using a vacuum cleaner every 6 months. [Est. time: 10 min.] ▰ Check for the following [Est. time: 5 min.]: • Integrity and lubrication for door lock and hinges (lubricate door lock and hinges, if necessary) • Foreign objects, dust, dirt, and condensation • Cable inlet and outlet openings are well sealed • Damage or deformation • Water leakage • Screws that are loose or have fallen out • Abnormal noise during operation • Internal temperature on the screen/C&I ONE platform is less than 65° C • The weld joints between the BUI and the steel plate are in good condition and free from rust
BUI exterior cabinet [Total est. time: 7-18 min.]	Check and perform the following: ▰ Surface dirt from dust and water stains > clean properly. [Est. time: 2-5 min.] ▰ Peeling paint > repaint. [Est. time 2-10 min.] ▰ Air inlet and outlet are not blocked. [Est. time: 2 min.] ▰ No flammable objects close by. [Est. time: 1 min].

Filter maintenance

To clean the front door filter:

3. Open and secure the front door
4. Perform and validate shutdown procedure. For details, see Shut down system.
5. Find the main filter on the front door.

6. Remove the four screws fastening the filter cotton to the ventilation port.

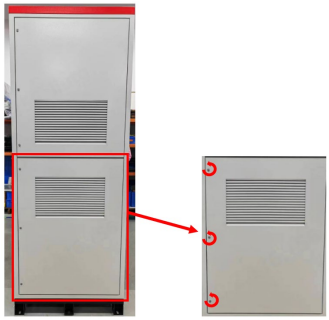


7. Remove and tap the cotton filter to dislodge large foreign objects and dust.
8. Clean the filter cotton using a cleaning brush and clean water.
9. After it is completely dry, reinstall and secure the filter cotton to the ventilation port using the four screws.

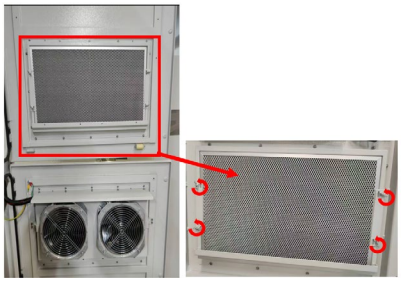
10. Reinstall all components to their original location.

To clean the rear door filter:

1. Open the top rear door using a Phillips screwdriver PH3 to remove three M6 screws counterclockwise.



2. Remove the four M4 screws fastening the filter cotton to the ventilation port.

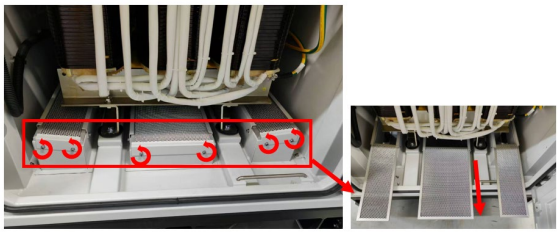


3. Remove and tap the cotton filter to dislodge large foreign objects and dust.
4. Clean the filter cotton using a cleaning brush and clean water.
5. After it is completely dry, reinstall and secure the filter cotton to the ventilation port using the four M4 screws.

To clean the bottom rear door:

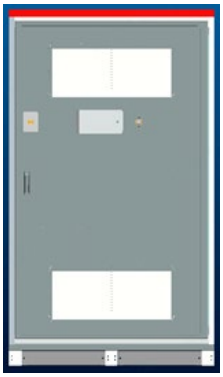
1. Open the bottom rear door using a Phillips screwdriver PH3 to remove three M6 screws from the lower panel.

2. Remove the six crews fastening the filter cotton from the three bottom filters using a Phillips screwdriver.



3. Remove and tap the cotton filter to dislodge large foreign objects and dust.
4. Clean the filter cotton using a cleaning brush and clean water.
5. After it is completely dry, reinstall and secure the filter cotton to the ventilation port using the four M4 screws.
6. Reinstall the bottom filters.
7. Secure the bottom rear door panel of the BUI with three M6 screws using the Phillip screwdriver (PH3).

Device glossary for the BUI 100/250kW

BUI	Front door filter	Rear door filter	Bottom rear filter (x3)
100	Figure 8 	Figure 9 	Figure 10 
250	Figure 11  (x2)	Figure 12 	Figure 13 

Fan inspection and maintenance

Inspect fans according to the table below:

Inspection	Description
Operation [Total est. time: 5 min.]	Check the following: - The operational status of the fan located on the rear side of the BUI. [Est. time 3 min.] - Any abnormal noise during operation. [Est. time: 2 min.]
Exterior review of cabinet and internal fan [Total est. time 20 min.]	- After a sandstorm or strong winds, check the exterior cabinet and fan. [Est. time: 5 min.] - If the fan is obstructed, clean it immediately. [Est. time: 15 min.]

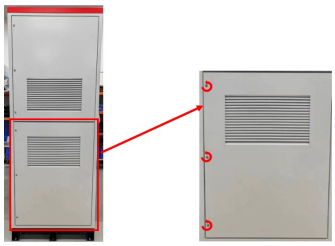
The fans are located at the rear of the cabinet, as shown in the table below.

Fans for BUI 100 and 250

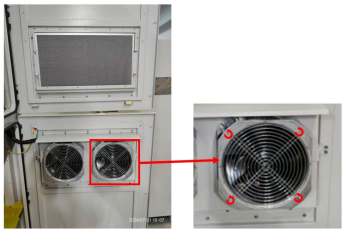
BUI 100	BUI 250
Figure 14 	Figure 15 

To clean fans and fan filters:

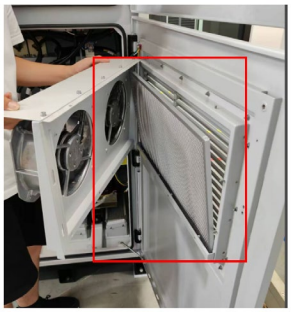
1. Verify the BUI is switched OFF. For shutdown details, see [link].
2. Loosen three M6 screws counterclockwise on the lower rear door panel using a Phillips screwdriver (PH3).



3. Loosen four M4 screws securing the rear fan door using the Phillips screwdriver (PH2).



4. Turn the fan blades to inspect and remove any larger foreign objects.
5. Dampen a cleaning cloth with water and use it to wipe away the dust from the fan blades.
6. Loosen the six M4 screws counterclockwise on the AC fan fixing plate using a Phillips screwdriver (PH2).
7. Remove the fixing plate of the AC fan, then proceed to smoothly extract the fan's filter cotton, as depicted in the image below.



8. Follow the same procedure as in step 7.d to clean the filter.
9. Reassemble all components in their original positions.

Door seal inspection

The sealing strip must be inspected thoroughly and promptly replaced if damaged to prevent water infiltration into the BUI cabinet. [Est time: 5 min.]

Annual maintenance routine

Part	Inspection	Maintenance
Wiring and cable routing [Total est. time: 15 min.]	Check for the following: ▪ Loose power cable connections. [Est. time: 5 min.] ▪ Power and control cables for insulation damage near metal surfaces. [Est. time: 5 min.] ▪ Integrity of the insulation wrapping tape on the power cable terminals. [Est. time: 5 min.]	Retorque them according to specified torque in the installation guide
Grounding and Equipotential Bonding [Total est. time: 10 min.]	Verify the following: ▪ Proper grounding with resistance under 4Ω. [Est. time: 5 min.] ▪ Accurate equipotential connection within the BUI. [Est. time: 5 min.]