

CHECKLIST:

PERSONNEL SAFETY

Battery Energy Storage System (BESS) Checklist for Safe Operation, Emergency Readiness & Protective Measures



Introduction

Personnel safety is a critical priority in BESS design, installation, and operations. This one-pager outlines essential strategies to protect workers and first responders during maintenance, inspection, and emergency events. It aligns with international safety standards and best practices.

1. Preventive Measures

Objective: Prevent injuries and reduce risk exposure through planning, training, and access control.



Emergency Response Plan

For Developers / Emergency Coordinators:

- ☐ Develop comprehensive emergency response plans tailored to site-specific hazards.
- ☐ Integrate strategies for lithium-ion battery fires, gas emissions, and thermal events.
- ☐ Define safe firefighting tactics based on fire test evidence, including controlled burn protocols.
- ☐ Share plans with local fire services and include site schematics, access points, and response zones.



Personnel & Firefighter Training

For Developers / Fire Services / Relevant Authorities:

- ☐ Implement structured training on battery risks, high-voltage systems, and emergency procedures.
- ☐ Deliver scenario-based sessions for internal teams and first responders.
- ☐ Update training regularly to reflect new battery chemistries, system designs, and regulatory requirements.



Public Access Control

For Security / Local Authorities:

- ☐ Restrict access to all BESS containers and sensitive areas to authorised personnel only.
- ☐ Apply clear signage, such as "NO ACCESS" or "AUTHORISED PERSONNEL ONLY".
- ☐ Deploy perimeter fencing, surveillance, and monitoring systems to prevent intrusion.
- ☐ Engage communities through local government risk awareness initiatives.

2. Containment Measures

Objective: Manage and limit exposure during maintenance and operation.

Control & Maintenance Protocols

For Operators / Engineers / Supervisors:

- ☐ Use a formal permit-to-work system for all maintenance activities.
- ☐ Monitor systems remotely using SCADA and CCTV, especially at remote sites.
- ☐ Prohibit lone working for high-voltage tasks and enforce safety procedures.
- ☐ Perform maintenance based on alarms or diagnostics, not fixed schedules.

For Manufacturers / Fire Personnel / Regulators:

For Enclosure Designers / OEMs:

- ☐ Provide appropriate PPE for all operating conditions, including:
 - Arc-rated protective clothing
 - Electrical gloves
 - Flame-resistant boots
 - Helmets
 - Respiratory protection during fire-related incidents
 - Ergonomic aids for handling heavy modules.
- ☐ Define specific PPE requirements for maintenance vs. emergency scenarios.
- ☐ Integrate PPE procedures into the site's emergency plan.

3. Mitigation Measures

Objective: Minimise harm during active emergencies or unplanned failures.

Incident Management & Access Restrictions

For Emergency Planners / First Responders:

- ☐ Do not manually open smoking or burning containers.
- ☐ Use remote or robotic systems for investigation during thermal events.
- ☐ Prioritise responder safety over equipment salvage.

Key Takeaways

Personnel safety at BESS sites requires layered protection: detailed emergency planning, specialised training, controlled site access, and a culture of safe maintenance—all underpinned by regulatory compliance and evolving industry standards.