

ContainerPower Energy Solutions

Latest standards for energy storage systems



Overview

The third edition of the UL 9540 Standard for Safety for Energy Storage Systems and Equipment, published in April 2023, introduces replacements, revisions and additions to the requirements for system deployment. Do energy storage systems need to be certified?

U.S. fire and electrical codes require that energy storage systems be listed, meaning the product must be tested by a Nationally Recognized Testing Laboratory (a private-sector organization recognized by the Occupational Safety and Health Administration) and certified to meet consensus-based test standards.

How do I know if my energy storage system is safe?

The ESS must be listed in accordance with UL 9540, the Standard for Safety of Energy Storage Systems and Equipment. This can be indicated by a UL label or a label from another recognized testing authority if it meets the UL standard. IFC 1207.4.12 clarifies that a walk-in BESS enclosure is considered effectively unoccupied.

What is a framework for evaluating energy storage technologies in stationary applications?

A framework for this assessment is provided by IEEE Std 1679, IEEE Recommended Practice for the Characterization and Evaluation of Energy Storage Technologies in Stationary Applications. Additional guidance is provided for certain classes of battery systems in a series of subsidiary documents.

What is an energy storage system (ESS)?

Covers an energy storage system (ESS) that is intended to receive and store energy in some form so that the ESS can provide electrical energy to loads or to the local/area electric power system (EPS) when needed. Electrochemical, chemical, mechanical, and thermal ESS are covered by this Standard.

Are there restrictions on energy storage technologies?

standards, there are significant restrictions on some Energy Storage technologies. Any technology not explicitly listed in the relevant tables (Table 9.4.1 in NFPA 855-2023, and Table 1207.5 in IFC 2021), and even some of those listed but not specified as having an unlimited allowable.

What does UL 9540 mean for energy storage systems & equipment?

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