



GUIDE BATTERY STORAGE · 8 MIN.

Regulation in flux: what NFPA 855, UL 9540A and the EU Battery Regulation mean for storage projects

NFPA 855 in its 2026 edition, the sixth edition of UL 9540A and the EU Battery Regulation are shifting the burden of proof from the cell to the installation. This analysis places the deadlines in context and sets out what follows from this for thermal barriers.

Starting point: three sets of rules, three logics

Anyone planning a utility-scale battery storage facility in the DACH region today works with a web of rules drawn from three legal spheres. The EU Battery Regulation (EU) 2023/1542 is directly applicable European law and addresses the product. NFPA 855 and UL 9540A are US standards with no legal force in Europe, yet in practice they set the standard of proof. And the building regulations of the DACH states govern the installation site without explicitly addressing utility-scale battery storage.

This constellation creates a gap that you have to fill in practice. Germany has no nationwide fire protection regulation that names utility-scale battery storage. The VDE application rule VDE-AR-E 2510-50 of 2017 does set out safety requirements for stationary lithium storage systems, but its scope is limited to residential and small commercial applications and does not extend to the megawatt-hour scale.

Note: Why US standards appear in DACH projects — UL 9540A is not a European regulation and creates no permitting obligation. In practice, however, fire protection consultants and insurers require robust evidence of propagation behaviour. As long as a harmonised European standard is missing, the UL 9540A report remains the most widely used common denominator.

NFPA 855 in its 2026 edition: the large-scale test becomes the rule

The 2026 edition of NFPA 855 marks a substantive shift. Until now, evidence at cell, module and unit level was the focus. The 2026 edition explicitly requires the large-scale fire test in addition to testing to UL 9540A. The new Annex G.11 describes what is expected of this test and puts the scenario that is decisive for structural planning at the centre: fire spreading from one storage unit to the neighbouring one.

There is also a tightening in respect of vent gas. If flammable gases are released during cell-level testing to UL 9540A, the 2026 edition of NFPA 855 requires an additional unit-level test with deliberate ignition of those gases. It has to be demonstrated that a fire in one unit does not spread to the adjacent unit. Deflagration is therefore no longer a theoretical special case, but part of the standard evidence.

- Large-scale fire test (LSFT) required in addition to testing to UL 9540A
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New Annex G.11: focus on propagation between units

- Additional test with deliberate ignition of the vent gases where flammable gases are present
- Chapter 9 extended to cover further cell chemistries
- Section 9.7.6.6 addresses TRPP systems

UL 9540A in its sixth edition: the test method catches up

The sixth edition of UL 9540A was published on 13 March 2026. The key change is the revision of Section 10, which has been supplemented with a clearly described large-scale fire test method. This method is deliberately aligned with Annex G.11 of NFPA 855 in its 2026 edition. Test method and installation standard therefore mesh for the first time, which makes the evaluation of reports appreciably easier.

For you as a planner this has a practical consequence: reports to the fifth and to the sixth edition are not readily comparable. First check, therefore, which edition was applied, which configuration was tested and what separation distance was used in the test. A report documents the behaviour of the arrangement tested, not that of your installation. Where the layout in the project differs from the test set-up, transferability has to be justified separately.

Note: Three details to look for first in a report — First, the edition of the test standard and the test date. Second, the level of the test, that is cell, module, unit or installation, and the distance between the test object and the target object. Third, the temperatures at the target surface and whether propagation occurred.

The EU Battery Regulation: product law with safety testing

Regulation (EU) 2023/1542 has applied since 18 February 2024 and takes effect in stages. Since 18 August 2024, requirements such as CE marking have been binding; for stationary battery energy storage systems, technical documentation together with information on state of health and expected service life in accordance with Annex VII has to be held in the battery management system.

In safety terms, Article 12 in conjunction with Annex V is the decisive lever. Under it, stationary battery energy storage systems must be safe during normal operation and must have successfully passed the safety parameters set out in Annex V. These expressly include fire testing, thermal propagation testing and gas analysis. Conformity can be demonstrated via a harmonised standard or via technical specifications issued by the Commission; a corresponding standardisation request has been addressed to CEN and CENELEC.

- Since 18 February 2024: Regulation (EU) 2023/1542 in force
- Since 18 August 2024: CE marking binding, information under Annex VII held in the BMS
- From 18 August 2026: requirements on the declaration of capacity
- From 18 February 2027: QR code and digital battery passport for industrial batteries above 2 kWh
- From 18 August 2027: CO₂ performance classes for industrial batteries above 2 kWh

A note on the standards situation: the IEC 62933 series is not being transposed into European law in full. Several parts, among them IEC 62933-5-2, were withdrawn from the parallel vote at CENELEC. They serve as orientation, not as evidence of conformity.

What follows from this for thermal barriers

The three sets of rules are moving independently of one another, but they converge on the same point: the burden of proof is shifting from the cell to the installation. NFPA 855 requires the large-scale fire test with the scenario of propagation between units, UL 9540A supplies the method for it, and the EU Battery Regulation calls for thermal propagation testing in Annex V. In all three cases the question is the same: does the incident remain locally contained?

That question is a structural one. Whether an incident stays local is decided at the interface between the

affected unit and its surroundings: at the barrier between cell blocks, at the container lining and at the separation between installation areas. Safety technology within the system, such as a TRPP system to Section 9.7.6.6, supplements this barrier but does not replace it. It is active, it can fail, and it no longer works once the power supply has collapsed. The passive thermal barrier keeps working at precisely that moment.

A second consequence follows from the tightening in respect of vent gas. Where a test with deliberate ignition is required, the pressure effect of a deflagration becomes part of the design assumption. A thermal barrier must then withstand not only temperature but also a short-term mechanical load without losing its separating function. Fixings and joint detailing matter as much here as the material.

Third, you should keep the timing in view. The deadlines running to 2027 and the new test requirements affect systems that are being procured today and will remain in operation for twenty years. On every project, check which edition of the rules underlies the evidence provided, and document that allocation. For existing installations with evidence to older editions, retrofitting the passive thermal barrier is often the most economical route to the current level of protection.

Note: A rule of thumb for project practice — No set of rules in the DACH region prescribes a particular thermal barrier. All three sets of rules considered here, however, ask for the same outcome: no propagation to the neighbouring unit. Anyone who cannot achieve that outcome by separation distance has to achieve it by construction and provide the evidence for it.

Frequently asked questions

Does NFPA 855 apply in Germany, Austria or Switzerland?

No. NFPA 855 and UL 9540A are US standards with no legal force in the DACH region. In practice, fire protection consultants, insurers and permitting authorities nevertheless fall back on them, because a harmonised European standard for stationary storage systems is still missing and the standardisation request to CEN and CENELEC is still running.

What changed in the sixth edition of UL 9540A?

The sixth edition was published on 13 March 2026. The key change is the revision of Section 10, which incorporates a clearly described large-scale fire test method. It is aligned with Annex G.11 of NFPA 855 in its 2026 edition. Reports to older editions are not directly comparable with reports to the sixth edition.

What safety requirements does the EU Battery Regulation place on stationary storage?

Article 12 in conjunction with Annex V of Regulation (EU) 2023/1542 requires stationary battery energy storage systems to be safe during normal operation and to have been successfully tested against the safety parameters set out there. These include fire testing, thermal propagation testing and gas analysis. CE marking has also been binding since 18 August 2024.

Let us talk about your project

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