



DEPARTMENT OF ADMINISTRATIVE SERVICES

PROPOSED CHANGE OF THE CONNECTICUT STATE
BUILDING CODE AND FIRE SAFETY CODE

DATE SUBMITTED: 5-26-21

CODE INFORMATION

Proposed change to: ☐ Building Code ☒ Fire Safety Code

Code section(s): 1207.6.1.2.4

PROPONENT INFORMATION

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PROPOSAL INFORMATION

Description of change and reason for change (attach additional information as needed):

Add requirements for gas detection. See Attached.

Proposed text change, addition or deletion (attach additional information as needed):

Add items 5 and 6 for gas detection system requirements. See Attached.

Supporting data and documents (attach additional information as needed)

See attached.

☒ **This Proposal is original material.** (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought or research and, to the best of his/her knowledge, is not copied from another source.)

☐ **This Comment is not original material, its source (if known) is as follows:** (such as material / code development proposal from a prior development cycle or proposal submitted to model code committee etc.)

☐ **I would like to make an in-person presentation of my proposal.**

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Proponent's Signature

Scott Lang

Printed Name

PLEASE EMAIL (PREFERRED) TO DAS.CodesStandards@CT.GOV OR MAIL OR FAX (SEE BELOW)

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12/29/16

Description of change and reason for change (attach additional information as needed):

Two types of gas detection systems are useful in protecting lithium-ion battery ESS installations. The first type uses LFL type gas sensors to detect and mitigate explosive levels of gas. The second type uses a much higher sensitivity gas sensor that can detect trace levels of electrolyte solvent vapor that is given off during the off-gas event during cell abuse. If cell abuse is detected based on the off-gas event, several minutes of warning is provided prior to thermal runaway wherein the abuse factor can be removed and/or affected module isolated and shut down.

Proposed text change, addition or deletion (attach additional information as needed):

1207.6.1.2.4 Gas detection system. Where required by Section 1207.6.1.2, rooms, areas, and walk-in units containing ESS shall be protected by an approved continuous gas detection system that complies with Section 916 and with the following:

1. The gas detection system shall be designed to activate the mechanical ventilation system when the level of flammable gas in the room, area, or walk-in unit exceeds 25 percent of the LFL.
2. The mechanical ventilation system shall remain on until the flammable gas detected is less than 25 percent of the LFL.
3. The gas detection system shall be provided with a minimum of 2 hours of standby power in accordance with Section 1203.2.6.
4. Failure of the gas detection system shall annunciate a trouble signal at an approved central station, proprietary or remote station service in accordance with NFPA 72, or shall initiate an audible and visible trouble signal at an approved constantly attended on-site location.
5. The gas detection system shall activate exhaust and initiate the electrical isolation of the components of the ESS upon the initial detection of gas from the venting of a lithium-ion cell.
6. Upon activation of the gas detection system, an alarm signal shall annunciate at an approved onsite location in accordance with Section 916 and at an approved supervising station in accordance with NFPA 72.

Supporting data and documents (attach additional information as needed)

Li-ion cells are designed to vent during an abuse factor such as overcharging, overheating, or internal defect. This off-gas event (venting) occurs because the electrolyte solvent is changing from liquid to vapor. This venting prevents the battery from exploding during this initial phase. If the off-gas event is detected, full blown thermal runaway can be averted. If not, the battery continues to heat up, producing even larger volumes of flammable gas that can be detected by the LFL gas detectors.