

## SolarInnovate Energy Solutions

# Energy storage system container test



## Overview

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Three installation-level lithium-ion battery (LIB) energy storage system (ESS) tests were conducted to the specifications of the UL 9540A standard test method [1]. Each test included a mocked-up initiating ES.

What is a battery energy storage system container?

A Battery Energy Storage System container is more than a metal shell—it is a frontline safety barrier that shields high-value batteries, power-conversion gear and auxiliary electronics from mechanical shock, fire risk and harsh climates.

How many ESS unit racks are in a standard size container?

Each test included a mocked-up initiating ESS unit rack and two target ESS unit racks installed within a standard size 6.06 m (20 ft) International Organization for Standardization (ISO) container. All tests were conducted with an identical LIB configuration.

What are the dimensions of a simulated ESS container?

ISO container The simulated ESS was constructed in a standard 6.06 m (20 ft) International Organization for Standardization (ISO) shipping container. The standard exterior dimensions of such a shipping container are 2.43 m (8 ft) wide, 2.59 m (8.5 ft) high, and 6.06 m (20 ft) long.

What is a lithium-ion battery energy storage system?

1. Objective Lithium-ion battery (LIB) energy storage systems (ESS) are an essential component of a sustainable and resilient modern electrical grid. ESS allow for power stability during increasing strain on the grid and a global push toward an increased reliance on intermittent renewable energy sources.

Which sensors were used to analyze gas composition throughout container?

Various laboratory- and industrial-grade sensors were used to characterize the gas composition throughout container. A National Instruments SCXI-1001 chassis, SCXI-1600 DAQ controller, SCXI-1102 voltage input multiplexer, and a

SCXI-TC2095 thermocouple input module were used to collect the data from the listed sensors.

How big is a test facility?

The test facility has a floor area of 36 m by 36 m (118 ft x 118 ft) with a 14.6 m (48 ft) ceiling. The exhaust system operated with a volumetric flow rate of 420 m<sup>3</sup> /min (14800 cfm).

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