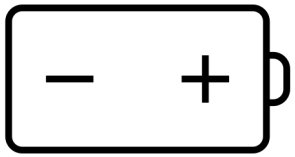
Attachment 5

Introduction



Battery Energy Storage Systems (“BESS”) have emerged as a groundbreaking solution in modern energy management.

- These systems harness cutting-edge battery technologies to store electrical energy efficiently, enabling us to bridge the gap between energy generation and consumption.
- BESS plays a pivotal role in stabilizing power grids, integrating renewable energy sources, and optimizing energy usage, propelling us towards a greener and more sustainable future.

In this short introduction, we will explore the fundamental principles and significance of Battery Energy Storage Systems in revolutionizing the way we approach energy storage and distribution.

Introduction

Stella elevates America's electric infrastructure. Stella is a leading utility-scale clean energy platform that builds the energy storage and solar infrastructure that is modernizing electric power generation.

Company Overview

- **Description:** Stella Energy Solutions ("Stella") is an American veteran-owned developer, builder, and owner of utility scale energy storage and solar projects across the United States.
- **Founded:** Q4 2021, based in The Woodlands, Texas

Track Record

Stella's team is lead by experienced energy storage project experts:

2,694
Energy Storage Designed (MWh)

1,254
Commissioned Experience (MW)

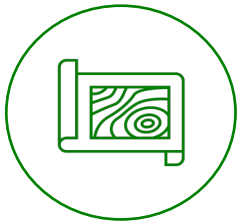
100+
Years of Team Experience

23
U.S. States Experience

Differentiation Built on a History of Energy Storage Leadership

- **Integration Expertise**
- **Commercial Flexibility**
- **Deep Industry Relationships**

Strategies: (1) Develop/Own/Operate, and (2) Build-Transfer

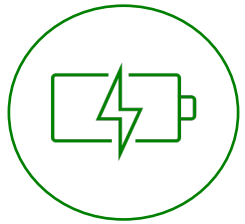


Develop

- Site Control
- Permitting
- Interconnection

Build

- Engineer & Procure Major Equipment
- Construct & install
- Commission site



Operate

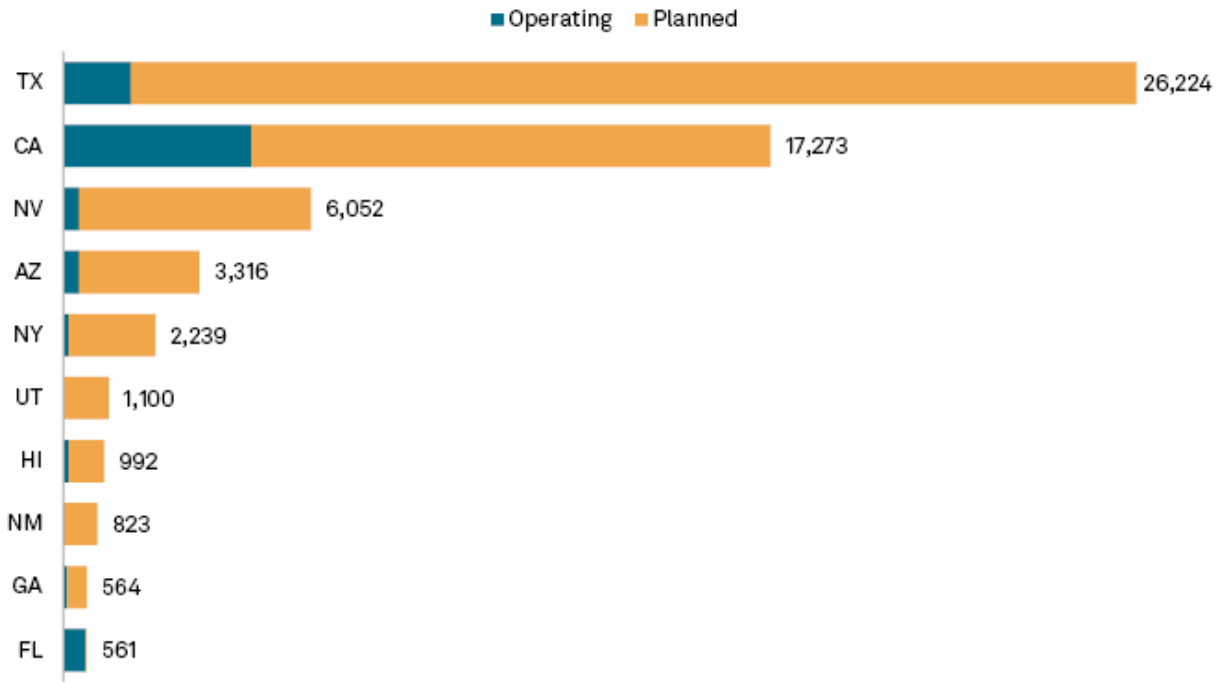
- Asset management
- Maintenance
- Grid Reliability

Stella's executes the following strategies:

- **Build-Transfer** agreements, where Stella builds an energy storage site or solar site on behalf of a utility.
- **Asset Ownership** of Stella fully developing a project through the project lifecycle and generating revenue at the site through a PPA, tolling agreement, or via merchant operation over a 10 to 25-year period.

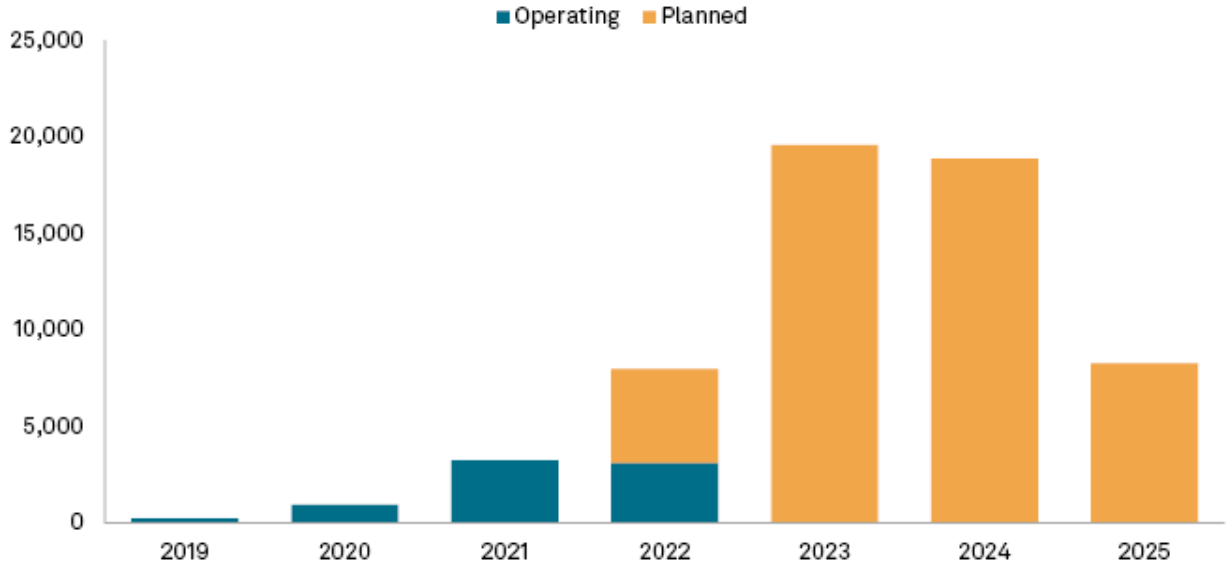
Battery Energy Storage in the United States

States with largest utility-scale energy storage resources (MW)



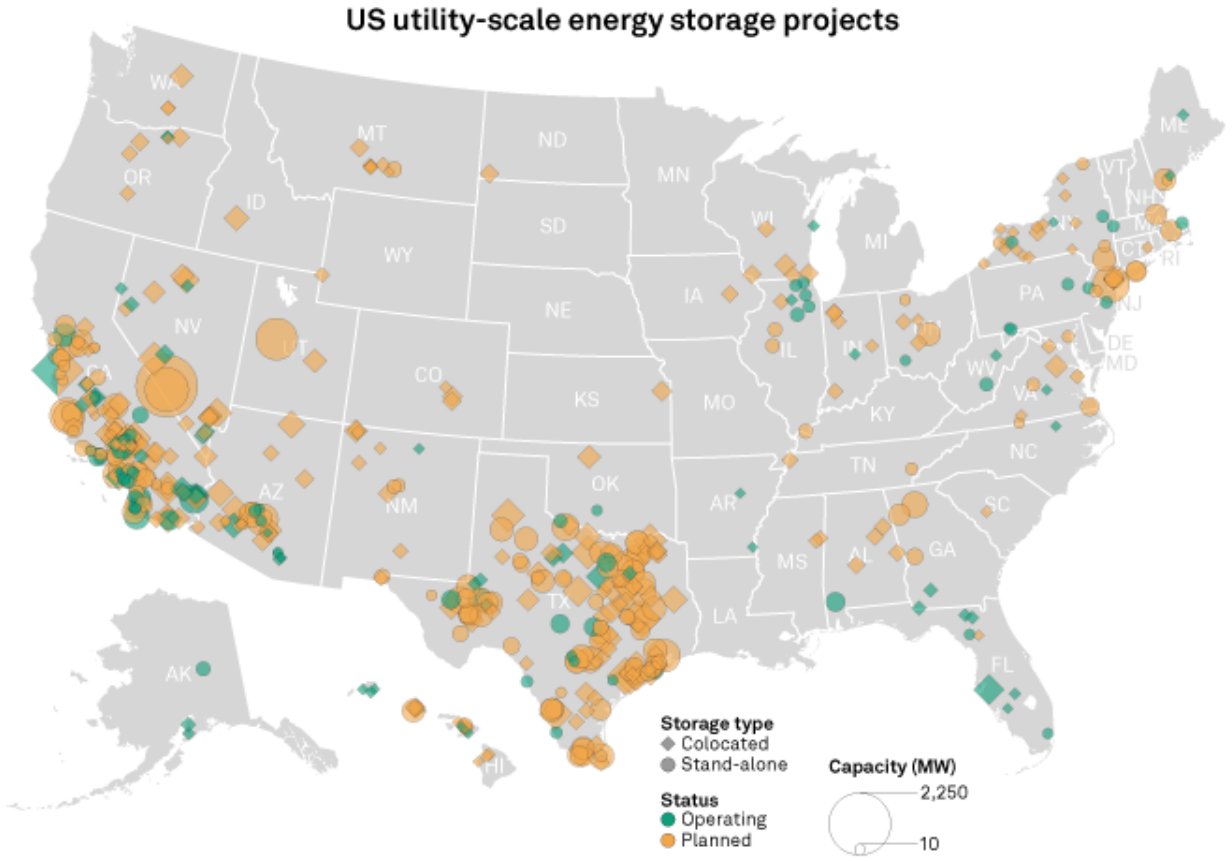
Data compiled Nov. 7, 2022.
Analysis includes stand-alone and colocated storage resources.
Excludes projects classified as pumped storage and those with no available in-service year.
Source: S&P Global Market Intelligence.

US utility-scale energy storage projects by status, year in service (MW)

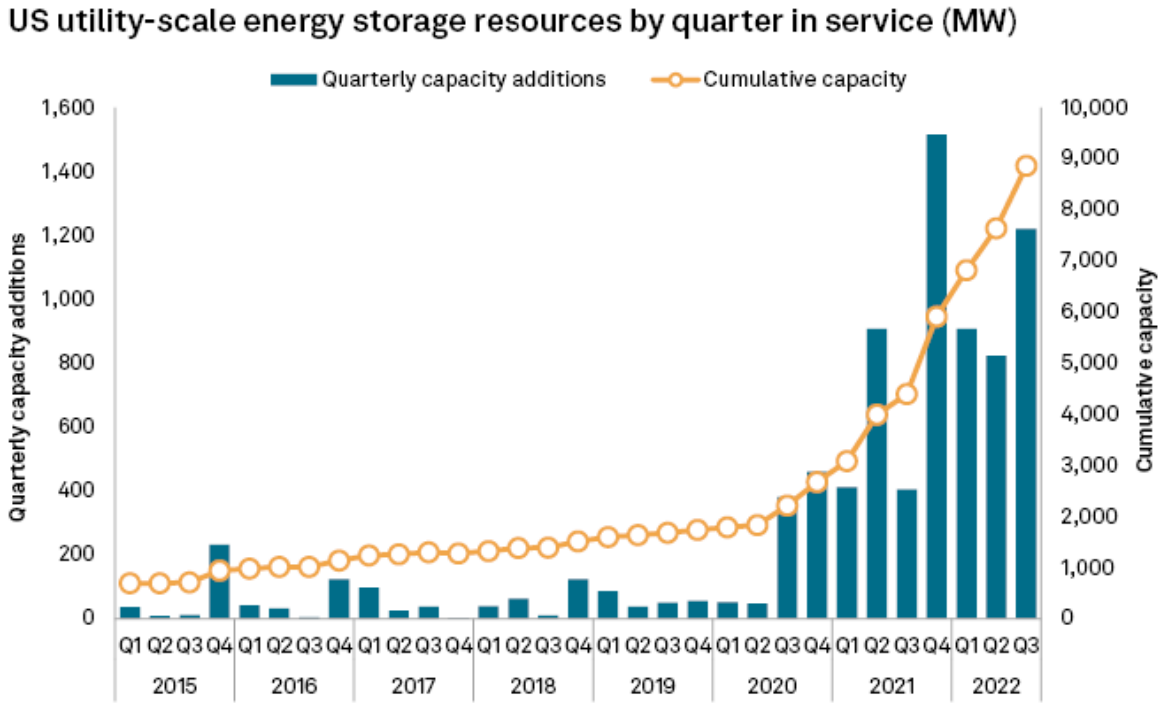


Data compiled Nov. 7, 2022.
Analysis includes stand-alone and colocated storage resources. Projects classified as pumped storage are excluded.
Source: S&P Global Market Intelligence.

Battery Energy Storage in the United States



Data compiled Nov. 7, 2022.
Excludes projects classified as pumped storage, projects with less than 10 MW in capacity, and projects with no available in-service year.
Excludes projects with no available geographic coordinates.
Map credit: Ciaralou Agpalo Palicpic.
Source: S&P Global Market Intelligence.



Data compiled Nov. 7, 2022.
Analysis includes stand-alone and colocated storage resources. Projects classified as pumped storage are excluded.
Source: S&P Global Market Intelligence.

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Site Details

Site is currently vacant – Parcel ID 232050

No direct proximity to business or residential

Short interconnection span to Texas New Mexico Power Hidden Lakes Substation

< 5 acres is more than enough land to accommodate the site layout and any additional landscaping and drainage requirements

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Site Details

- The Project Site was pushed back to accommodate commercial frontage use
- Overhead line route will follow TNMP existing utility easement

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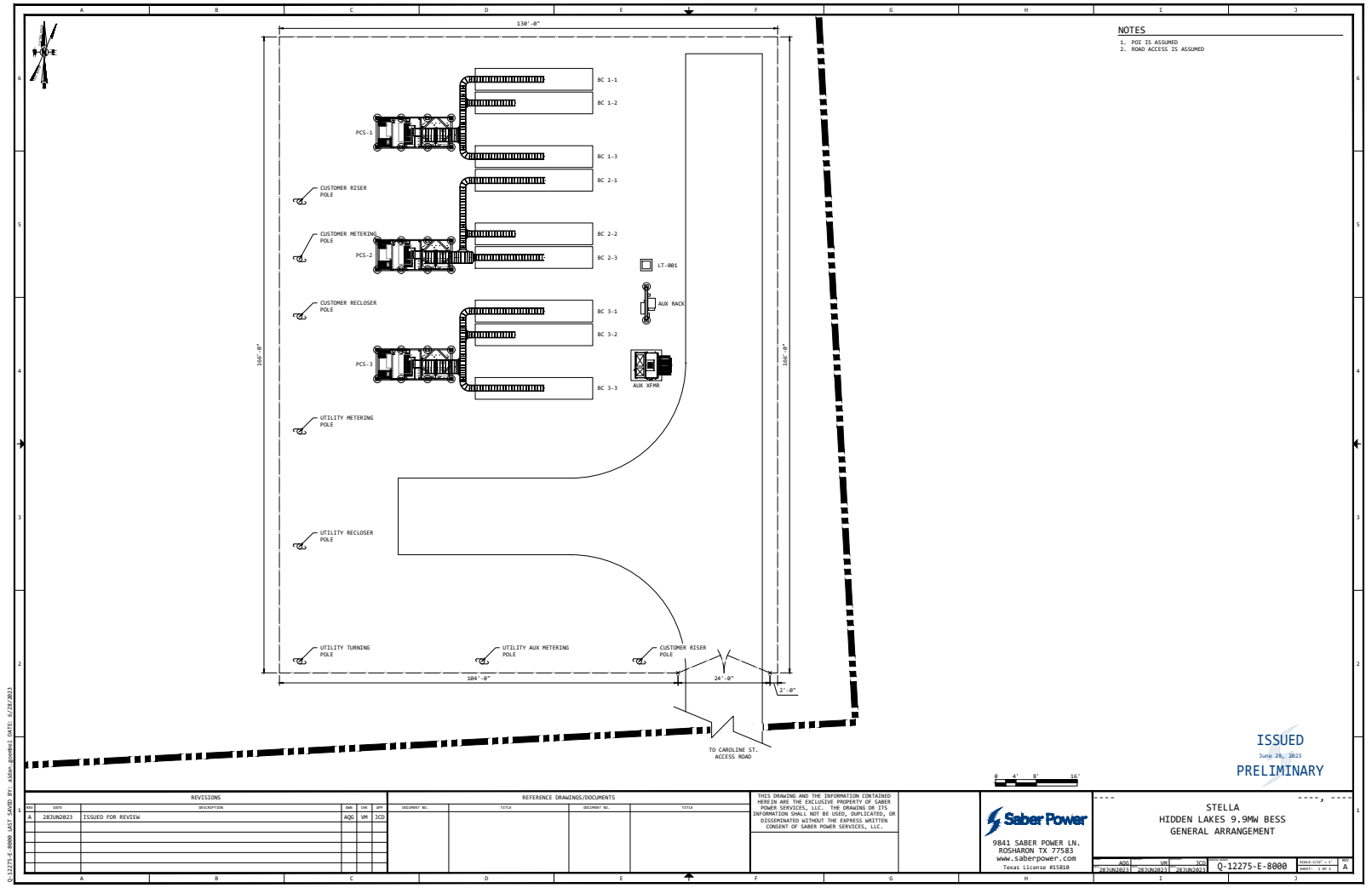
Site Details

- Layout contemplates minimal site disturbance
- Main Components are:
  - Battery Containers
  - Inverters
  - MV Transformers
- Aux Power Transformer
- Communications Equipment



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Existing Site from FM 646

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Existing Site from Caroline St.

Hidden Lakes

Existing Site with Retail / Commercial Development along 646

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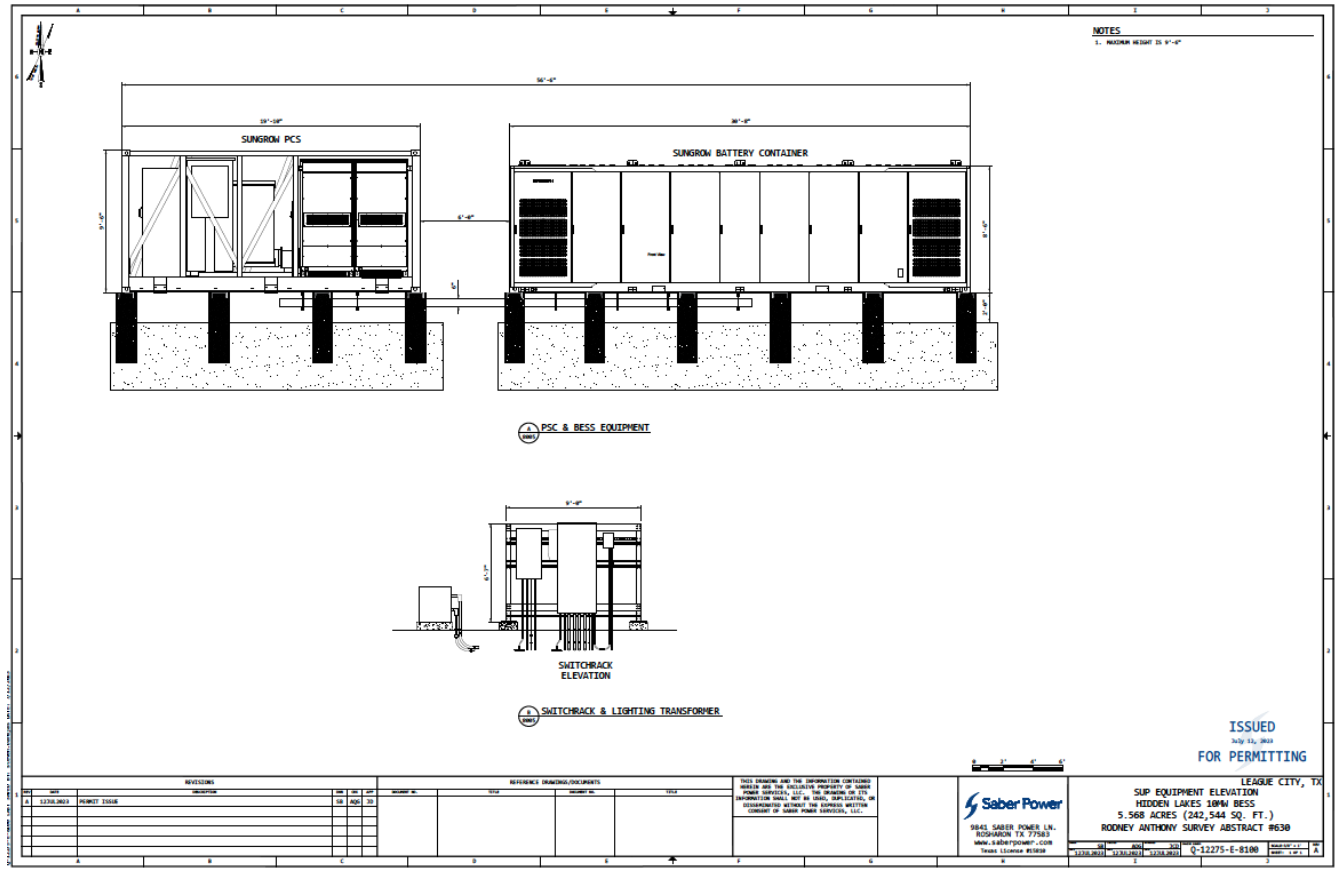
Equipment Design - Inverters

SC4000UD-MV-US

Power Conversion System
Optimized for ST2236 / 2752UX-US



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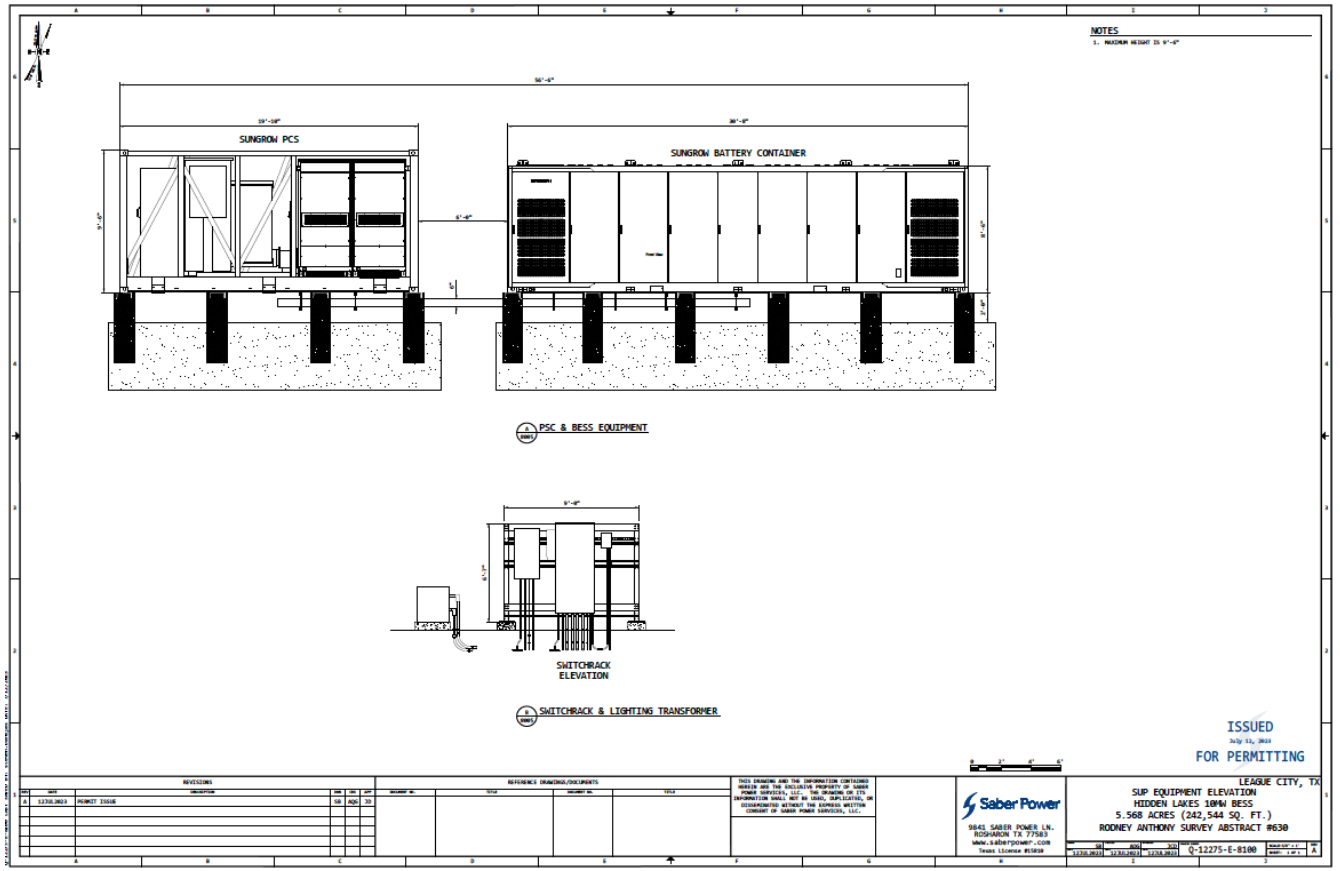
Equipment Design – Battery Containers

ST2752UX-US

Liquid Cooling Energy Storage System

2 - 8 hour application

Preliminary



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Gas Composition During Testing – UL9540A Testing & 3rd Party Verification

UL 9540A Report
Cell Level

Report Issued : 2021.09.14
Report Revised :

CELL TEST REPORT
UL 9540A
Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems (AACD)

Project Number	4789886110
Date of issue	2021.09.14
Total number of pages	35
UL Report Office	UL(Changzhou) Quality Technical Service Co,. LTD
Applicant's name	Batterotech Corporation Limited
Address	9855 Puwei Rd(N), Fengxiang, Shanghai, 201417, CN
Test specification:	4th Edition, Section 7, November 12, 2019
Standard	UL 9540A, Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
Test procedure	7.1 – 7.8
Non-standard test method	N/A

General disclaimer:

The test results presented in this report relate only to the sample tested in the test configuration noted on the list of the attachments.

UL LLC did not select the sample(s), determine whether the sample(s) was representative of production samples, witness the production of the test sample(s), nor were we provided with information relative to the formulation or identification of component materials used in the test sample(s).

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Table Re-normalized Gas Quantification, excluding N_2 and O_2, and unknown compounds.

Item	Measure	Chemical formula	Conc.(%)
1	Carbon Monoxide	CO	12.642
2	Carbon Dioxide	CO_2	26.413
3	Hydrogen	H_2	46.491
4	Methane	CH_4	7.016
5	Ethylene	C_2H_4	3.111
6	Acetylene	C_2H_2	0.158
7	Ethane	C_2H_6	1.174
8	Propane	$CH_3CH_2CH_3$	0.154
9	Propylene	C_3H_6	0.422
10	Propadiene (Allene)	C_3H_4	0.000
11	Isobutane	$CH_3CH(CH_3)CH_3$	0.007
12	Butane	C_4H_{10}	0.082
13	Isobutylene	C_4H_8	0.308
14	1-Butene	C_4H_8	0.099
15	trans-2-Butene	C_4H_8	0.050
16	cis-2-Butene	C_4H_8	0.111
17	Pentane	C_5H_{12}	0.120
18	trans-2-Pentene	C_5H_{10}	0.041
19	cis-2-Pentene	C_5H_{10}	0.027
20	1,4-Pentadiene	C_5H_8	0.012
21	Hexane	C_6H_{14}	0.016
22	1-Hexene	C_6H_{12}	0.066
23	Benzene	C_6H_6	0.058
24	1-Heptene	C_7H_{14}	0.016
25	Toluene	C_7H_8	0.008
26	Styrene	C_8H_8	0.000
27	Dimethyl Carbonate	$C_3H_6O_3$	1.209
28	Ethyl Methyl Carbonate	$C_4H_8O_3$	0.188
29	Diethyl Carbonate	$C_5H_{10}O_3$	0.000
	Total	Measurement result	100.000

BESS Projects **DO NOT** release any gas, fumes, vapors or any chemicals during normal operation

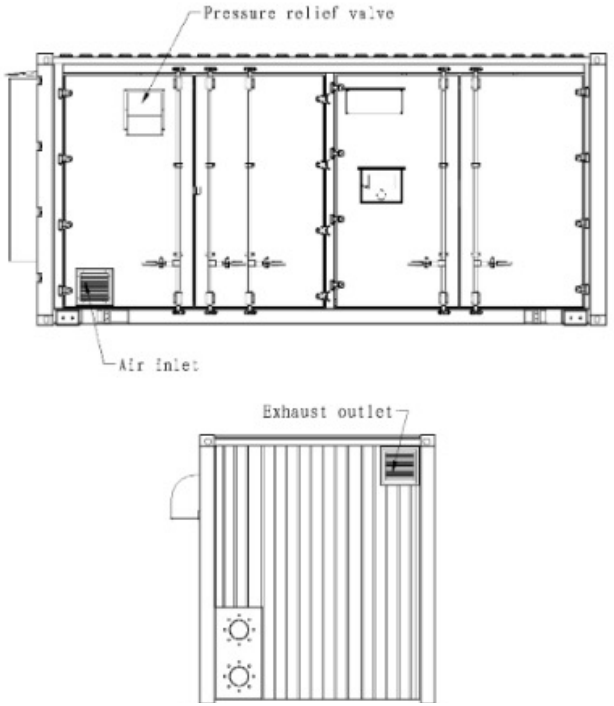
If gas is released during an incident, it is held in the container under 10% LEL.

Venting only occurs to prevent build up on gasses within the container above acceptable levels. **This is avoided by using preventative shut down methods and early detection**

Battery Energy Storage System Safety

- 24/7 energy and thermal monitoring (EMMU)
- Smoke detection for each battery cabinet
- Ability to remotely shut down batteries
- Pressure relief system
- Fire rating for containers
- FM-200 / Stat-X Dry Powder Suppression system
- First Responder Coordination

The following figure shows the installation positions of the pressure relief valve:



8. BESS communication topology

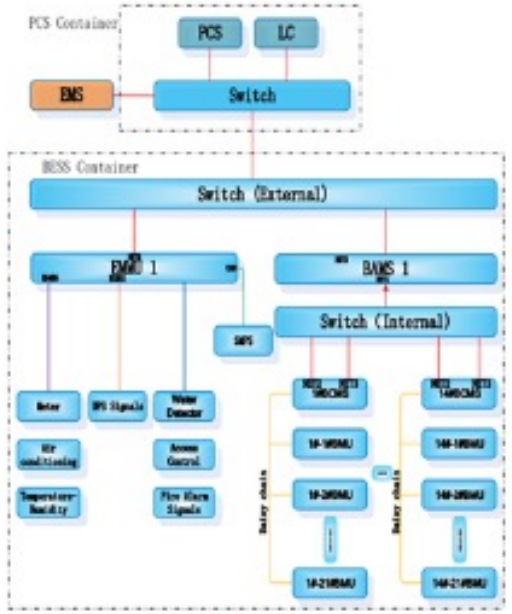


Fig.8.1BESSCommunication Topology

4.4 EMMU

Functions

- Communication ： communicate with BAMS and ESS Controller.
- Data collection ： collect devices states of HVAC, module fans, energy meter, door access, humidity, fire suppression and so on.
- Data sorting ： sort humidity and temperature values in the container
- Fans control ： control BMU to start/stop fans.
- Alarm protection: temperature anomaly alarm,
- HVAC management: manage HVAC to control the container temperature
- Events logging： record faults, alarms, operation events
- Data storage ： store all data from terminal acquisition

The specifications of EMMU are as follows:

Type	Items	Specifications
Operation Environment	Operation Temperature	-20~65℃
	Atmospheric Pressure	70kPa~106kPa
	Relative Humidity	0%~95% RH
	Voltage Range	18~80V

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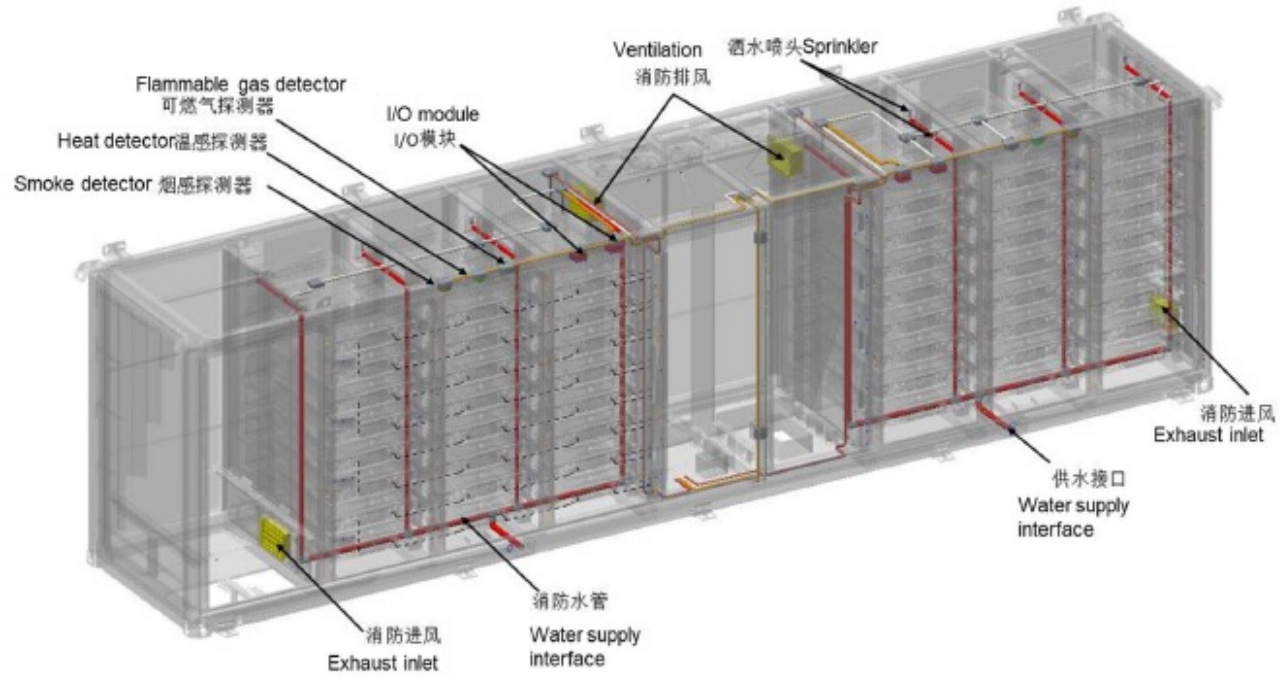
BESS Venting System – 3rd Party Analysis

Fire Protection System Diagram



Venting system is designed to prevent flamable gas from building up inside of the battery container

UL9540A test reports did not indicate that there is module to module propagation, This means that no more than on module will be engaged after thermal runaway.

Individual cells are monitored for temperature increases and can be isolated to avoid increasing the temperature.

Gas / Heat / Smoke Detection is installed in each container.

The ventilation system design is confirmed to comply to Chapter 8 in NFPA69—2019: Deflagration Prevention by Combustible Concentration Reduction

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BESS Emergency Response

IAFC BULLETIN

August 1, 2022

Recommended Fire Department Response to Energy Storage Systems (ESS) Part 1

Events involving ESS Systems with Lithium-ion batteries can be extremely dangerous. All fire crews must follow department policy, and train all staff on response to incidents involving ESS. Compromised lithium-ion batteries can produce significant amounts of flammable gases with potential risk of deflagration and fire.

1. **If a commercial or utility install, follow pre-plan and do not enter structure.**
2. **Residential setting response, control power to the unit, ventilate the area, and protect exposures.**
3. **In all cases contact manufacture technical support as soon as possible.**

This guide serves as a resource for emergency responders with regards to safety surrounding lithium ion Energy Storage Systems (ESS). Each manufacturer has specific response guidelines that should be made available to first responders prior to activation.

ESS systems come in many shapes and sizes. They may be affiliated with renewable systems (wind, photovoltaic systems, etc) or used as standby power. ESS Systems can be installed in single family homes too large commercial and utility applications.

Pre-Incident

Modify or establish your department policy or standard response guideline to ESS incidents. Include guidelines for mitigation of the event which may include a defensive operations such as non-intervention and manage fire propagation or protect exposures.

Review installation procedures for systems with the various code officials including Building, Fire, and Electrical

ESS systems must be installed per the adopted fire and building codes in the region.

For the 2015 editions of the International Fire Code and NFPA 1 Fire Code and earlier editions the necessary safety requirements are not present (Consider language in 2021 Fire Codes or NFPA 855).

Ensure pre-incident plans are covering location, type, disconnect, and other contact information

Pre-incident plans should provide rapid response resources for company officers specific to your area and region including OEM emergency contact information

Train on department policy and perform practical scenarios which support the response plan

INCIDENT ACTIONS

The fire crew should allow the battery to burn itself out, during which it is recommended to apply water spray to neighboring battery enclosures and exposures to further mitigate the spread of the hazards rather than directly onto the burning unit.

Applying water directly to the affected enclosure will not stop the thermal runaway event, as the fire will be located behind several layers of steel material, and direct application of water has shown to only delay the eventual combustion of the entire unit.

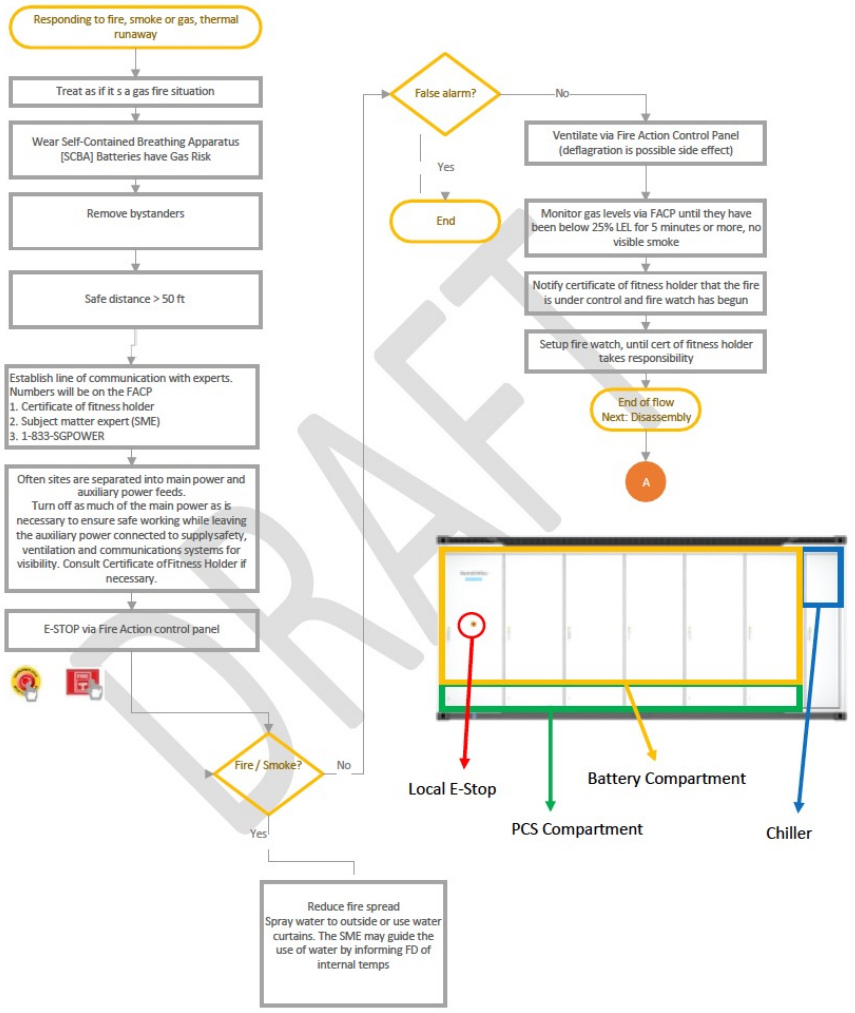
- Firefighters must wear full personal protective equipment, including SCBA with face-piece.
- If identified in pre-incident plan, shut off the unit/system by operating any visible disconnects or E-stops (shutting off the disconnect does not remove the energy from the battery). To isolate any PV system and ESS in an emergency, multiple disconnects may need to be shut off. This could include circuit breakers, knife-blade disconnects, or other switches.
- Lithium ion batteries that are in thermal runaway or off gasing will create hazardous atmospheres. Firefighters must stay out of the vapor cloud and not rely on gas monitors (without consideration of cross contamination of the gas sensors)
- Due to construction of the unit, thermal imaging cameras may not give true thermal conditions.

Events can occur from damage, exterior fire, or a malfunction. Smoke or suspicious odor from an ESS system can be an indication of a hazardous condition. When batteries or cells enter thermal runaway, there is typically a period of smoke (may be under pressure). The smoke is most likely flammable and may ignite at any time.

Responding to a venting ESS product

- Evacuate the area. **Never open any doors or remove panels to ESS units.**
- Contact vendor-specific technical support for assistance including BMS data.
- Residential units that are located inside a dwelling unit or garage, the space should be properly ventilated with charged hand-lines in place.
- Maintain a safe distance from the ESS and monitor. A remote FDC may be present on larger commercial or utility ESS to support a sprinkler system inside the enclosure.
- Each manufacturer will have a recommended time for a battery pack to cool down. This can be near a full work cycle of 12 hours or more.
- Defensive Firefighting. Water spray is the preferred agent for response to lithium-ion battery fires *(Lithium-ion is not water reactive)*.
  - If a fire has not developed and only smoke is visible, take a defensive stance toward the system and be prepared to apply water spray.
  - If a fire develops, take a defensive stance toward the burning unit and apply water spray to neighboring battery enclosures and exposures.
- Maintaining a safe distance from the unit involved (large commercial systems, at least 300').
- Response crews should allow the battery to burn out. Water should be applied to adjacent battery enclosures and exposures (building).

Fire, Gas release & Smoke incident flow chart



In case of any venting, concentrations did not reach hazardous concentrations during testing, due to natural ventilation.

The compositions closely resemble any structural fire. These projects have reduced risk through documented / continual testing, safety protocols, monitoring and coordination with local first responders.

Close coordination with EMS / First Responders has put Texas at the front of safety and reliability related to energy storage. Other states are contacting our Fire Marshals / Fire Chiefs to get their recommendations. League City's team closely reviewed this project prior to submission.

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BESS Container Wind Load Testing

At 49.9m/s (equal to a level 15 hurricane) the maximum stress on the container is 279.35MPa, which is less than the yield strength of SPAH steel, 355Mpa.