Energy Storage and Battery System Services

NATTBatt 2019 Member Update

Maurice H. Johnson
Business Development Engineer – Energy Storage and E-Mobility
UL LLC
Founded in 1894 by William H. Merrill as Underwriters Electrical Bureau, Monroe Street in Chicago, Ill.

First test was conducted March 24th, 1894 with a fire resistant isolation material.
UL in numbers – Providing services for a Safer World

104+ countries
With UL customers
152 UL laboratories for testing and certification
73 Facilities in the UL family of companies

120+ years
Founded in 1894
Headquartered at Northbrook, IL (USA)
#1 Safety mark in North America
22 Billion UL marks appear on products

We Provide Global Market Acceptance
Our marks are on nearly 22 billion products worldwide, per year, signaling peace of mind to consumers, customers, businesses, and governments.

1,400+ Standards
# Published standards and 20,000 types of products were evaluated by UL
Know UL? Think Again – We Provide Solutions Across The Value Chain

Materials
- Certification
- Performance
- Traceability
- ISO 9000
- Lean Sigma

Component
- Manufacturer
- Distributor
- Assembler

System Component
- Certification
- Performance
- Advisory service
- Traceability
- FUS inspection
- ISO 9000
- Education
- Lean Sigma

Planning & Design
- Manufacturer
- Distributor
- Intermediary

Construction
- Monitoring
- Site inspection
- Field inspection
- Field evaluation
- Performance
- Lean Sigma

O&M and Asset management
- Developer
- Financier
- EPC
- Installer

Owner
- Operator
Providing Leadership in the Code Community to Support Principles for Safe Integration of Batteries and ESSs into the Infrastructure

- Industrial Vehicles & Tools: Train, airplane, fork-lift truck, etc.
- Electric Vehicle: LEV/ EV/ PEV/ E-Bus
- Stationary Batteries:
  - Facilities power backup modular
  - UPS, telecom equipment
- Energy Storage System:
  - Battery + Inverter + Energy sources (PV/Wind/others)
Using Safety Science to Characterize Fire Risks in ESS Through the Development of UL 9540A in Support of the Regulatory Environment

NFPA 1, Fire Code 2018
- Limits size and MAQ based upon technology
- Limits on separation distances
- Provides exceptions based upon large scale fire testing and Listing of BESS - UL9540A

ICC IFC, International Fire Code 2018
- Limits size (per technology and Listing) and separation distances for BESS installations
- Has MAQs per technology
- Provides exception based upon large scale fire testing – UL9504A
- Listing to UL 1973 (battery system) or UL 9540 (BESS)
Advancing Battery Safety and the Circular Economy Through the Publication of UL 1974 to Support Safe Repurposing of EV Batteries

- UL 1974 is a “manufacturing process” standard that looks at the methods used to determine the safety and performance of batteries, modules, and cells from used EV battery systems (i.e. repurposing process)

- Assembled batteries need to meet the end product requirements when re-assembled into a 2nd use battery
  - e.g. UL 1973 is used for stationary batteries
Progressing Solar + Storage and New Technology Platforms to Support Expanded Use of Battery Technologies

Safety Certification of ESS Technologies

- Lithium Ion Capacitors
- Flow Batteries Thermal Battery
- Flywheels Sodium Sulfur

Large Scale Fire Testing

Due Diligence – UL AWS TRUEPOWER
WORKING WITH GLOBAL REGULATORS TO DEFINE APPROPRIATE MEASURES FOR SAFE AND SUSTAINABLE BATTERY DEPLOYMENTS, FROM THE US CPSC, TO ASIA, TO THE EU, TO AFRICA

40+ Office locations

500+ Renewable energy experts