

Powering the future with smarter EV battery testing

Seamless end-to-end EV battery testing and certification

UL Solutions provides full life cycle electric vehicle (EV) battery testing to support manufacturers from early-stage validation to final certification and beyond. Our global network of advanced laboratories delivers specialized testing services that help automotive original equipment manufacturers (OEMs), battery manufacturers and suppliers validate performance, address safety concerns and demonstrate compliance with industry standards.

The value of working with UL Solutions

+35 years of battery testing experience

Advanced battery test equipment

Global testing network

Streamlined project management



Validation

Design validation (DV):

Early-stage risk mitigation to identify failures and help reduce costly design changes before scaling production

Product validation (PV):

Comprehensive testing at the pack, module and cell level to assess safety, performance and reliability before market launch

Key capabilities:

- Abuse and safety testing
- Performance and durability testing, including high-performance testing
- Environmental testing
- Mechanical testing
- Battery management system (BMS) validation
- Thermal management evaluation
- Compliance and certification testing

Final certification

Testing for compliance with regulatory and market entry requirement

Key capabilities:

- Full regulatory testing for UNECE R100, UN 38.3 and other standards
- Testing to UL 2580, Standard for Batteries for Use in Electric Vehicles, for on-road and off-road/industrial applications, including electric vehicles and electrified machines

End-of-life and reuse

Support for second-life applications and battery health assessments for sustainability to maximize battery life cycle value

Key capabilities:

- State-of-health assessments, material degradation analysis and recycling validation

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Global testing footprint and compliance readiness

Your testing partner with global reach, local expertise

Key regulations covered:

UNECE R100 and R136 (Europe)

UN 38.3 (Global lithium-ion battery transport safety)

FMVSS and CMVSS (U.S. and Canadian vehicle safety standards)

GB 38031 (China EV battery safety requirements)

Other key regulatory requirements mapped to testing capabilities

Auburn Hills
Michigan, USA

Aachen
Germany

Changzhou
China

Pyeongtaek
South Korea

Lu Zhu
Taiwan

Linkou
Taiwan

— Battery laboratory locations

North America

- Full-suite testing: electrical, mechanical, environmental, abuse and performance validation

Key testing equipment and capabilities:

- 350 kN and 200 kN shaker tables for vibration testing
- Abuse test cells for thermal runaway propagation evaluation including the option of calorimetry
- Ability to test battery packs up to 1,500 V and 1,000 kW

Europe

- High-voltage and energy storage system testing
- Regulatory testing for UNECE R100, R136 and EU safety requirements

Key testing equipment and capabilities:

- Extensive cell test capacity with 2,500 channels and 250 chambers
- Environmental test chambers for extreme condition simulations
- Abuse testing facilities for crash and penetration evaluations
- High-voltage testing systems for 800 V+ EV battery packs

Asia-Pacific

- Battery safety, performance and regulatory testing for GB 38031 and regional standards

Key testing equipment and capabilities:

- Several performance test stands for battery packs (cyclers + walk-in chambers)
- Thermal runaway and immersion test chambers
- Shock and vibration testing for cell, module and pack
- Dedicated UN 38.3 testing laboratories

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