

# LITHIUM-ION BATTERY TESTING

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## Learning made Simple, Visual, and Interactive

The THORS *Lithium-Ion Battery Testing* course explores the various tests that are associated with testing Electric Vehicle (EV) battery cells, battery modules, and battery packs. This course provides a visually engaging learning experience that details how the different performance and safety related tests are performed.

Credit Hours **2**

## Learning Objectives

- ⚡ Explain the various performance related tests conducted on battery cells.
- ⚡ Describe the various types of battery module performance tests.
- ⚡ Describe how the various battery pack tests are performed.
- ⚡ Identify each safety related characteristic and explain how the test is performed.
- ⚡ Develop an understanding of the common standards and regulations of lithium-ion battery testing.

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### I. Performance Related Characteristics

#### • Battery Cell Testing

- ▣ Crush Test
- ▣ Drop Test
- ▣ Insulation Resistance Test
- ▣ Mechanical Shock Test
- ▣ Thermal Stability Test
- ▣ Penetration Test
- ▣ Solder Mask
- ▣ Vibration Test
- ...

### I. Performance Related Characteristics *(continued)*

#### • Battery Module Testing

- ▣ Thermal Cycling Test
- ▣ Thermal Shock Test
  - Overheat Test
  - Extreme Cold Temperature Test
  - Fire Test
- ▣ Battery Pack Testing
  - Altitude Test
  - Crash Test
  - Humidity Test
  - Immersion Test
  - Rollover Test

### II. Safety Related Characteristics

- Emission Test
- External Short Circuit Test
- Flammability Test
- Forced Discharge Test
- Internal Short Circuit Test
- Projectile Test
- Overcharge Test
- Thermal Runaway
- Thermal Propagation

