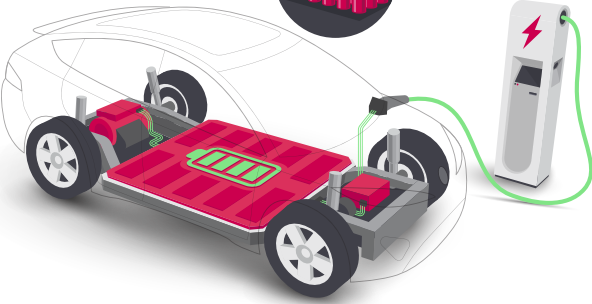


Lithium-Ion Battery Charging

eLearning courses designed to increase productivity and profits



Learning Made Simple, Visual, and Interactive

The THORS *Lithium-ion Battery Charging* course introduces learners to battery chargers, covering their components, classification, as well as charger operation. The course also explores battery operation, including the charging process, charging parameters, charging methods, the Battery Management System (BMS), and the discharging process. To enhance the learning experience, interactive quizzes are included, allowing learners to test their knowledge and retention of the visually engaging content.

Credit Hours **2**

Learning Objectives

- 💡 Describe a battery charger and its operation.
- 💡 Identify the different components of a charger.
- 💡 Classify the different types of chargers used for lithium-ion batteries based on placement, connectivity, and level of charging.
- 💡 Understand battery operation through the charging and discharging process.
- 💡 Recognize the charging parameters designed to optimize the charging process and the various charging methods used in charging a Lithium-Ion Battery (LIB) battery.
- 💡 Explain the architecture of a Battery Management System (BMS) and its functions.

Table of Contents

I. Battery Charger and Operation

- **Charger Components**
- **Charger Classification**
 - ▣ Placement
 - ▣ Connectivity
 - ▣ Level of Charging
- **Charge Operation**
 - ▣ Charger Working Principle
 - ▣ Advanced Features

II. Battery Operation

- **Charging Process**
- **Charging Parameters**
 - ▣ Charging Current
 - ▣ Charging Voltage
 - ▣ Cutoff Voltage
- **Charging Methods**
 - ▣ Constant Current-Constant Voltage (CC-CV) Charging
 - ▣ Boost Charging

III. Battery Operation (continued)

- ▣ Positive Pulse Charging (PPC)
- ▣ Multistage Constant Current (MSCC) Charging
- **Battery Management System (BMS)**
 - ▣ Architectures
 - ▣ Functions
- **Discharging Process**
 - ▣ C-Rate
 - ▣ Self-Discharge Rate

