

TRACTION MOTORS FOR ELECTRIC VEHICLES

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Learning made Simple, Visual, and Interactive

The THORS Traction Motors for Electric Vehicles course explores the individual components that make up a traction motor and the types of traction motors commonly used in the EV world. Examine each type of traction motor's design, how power is generated, and the different vehicle architectures used for different EV. This course provides a visually engaging learning experience that is measurable with pre-assessment and post-assessment quizzes.

Credit Hours **2**

Learning Objectives

- Identify each structural mechanical and electromechanical component used in a traction motor.
- Understand how a traction motor functions.
- Differentiate between each type of traction motor.
- Recognize the different types of vehicle architectures.
- Recall the auxiliary components used in an EV.

Table of Contents

I. Traction Motor Components

- **Electromechanical Components**
 - o Rotor
 - o Stator
 - o Encoders and Resolvers
- **Windings**
 - o Wires
 - o Winding Configurations
 - o Winding Connections
- **Insulators**
 - o Primary Insulators
 - o Secondary Insulators

II. Traction Motor Operation

- **Types of Traction Motors**
 - o Induction Motors
 - o Permanent Magnet Motors
 - o Separately Excited Motors
 - o Switched Reluctance Motors
- **Power Generation**
 - o Battery Power
 - o Fuel Cell Electric Vehicles
 - o Regenerative Power
- **Power Generation**
 - o Battery Power
- **Traction Motor Layouts**
 - o P0 Architecture
 - o P1 Architecture
 - o P2 Architecture
 - o P3 Architecture
 - o P4 Architecture
- **Electric Vehicle Auxiliary Components**
 - o Power Electronics
 - o High Voltage Systems
 - o High Power Distribution Module
 - o Single Power Inverter

