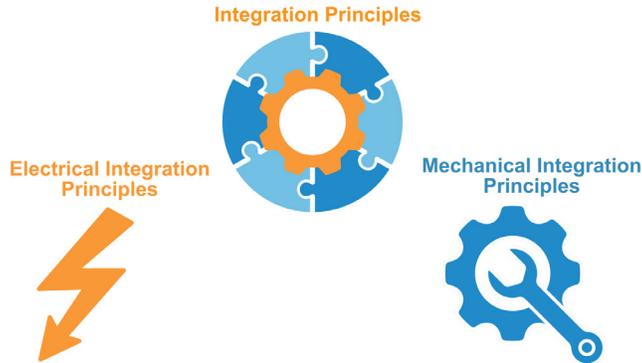


# Wiring Harness Integration

eLearning courses designed to increase productivity and profits



**Learning Made Simple, Visual, and Interactive**

Credit Hours **2.5**

The THORS *Wiring Harness Integration* course serves as a foundational guide to understanding the process of integrating a wiring harness into equipment. This course provides a visually engaging learning experience, enabling learners to explore the electrical integration principles and mechanical integration principles, along with the standards and compliance requirements needed to integrate wiring harnesses into equipment.

## Learning Objectives

- Explain the electrical integration principles of wiring harness integration.
- Understand power distribution, signal distribution, Electromagnetic Compatibility (EMC), and electrical load management.
- Explain the mechanical integration principles of wiring harness integration.
- Describe how mechanical fitment, vibration damping, strain management, and Thermal Management (TM) affect wiring harness integration.
- Develop an understanding of the standards and compliance requirements for wiring harness integration, such as electrical standards and Ingress Protection (IP) standards.

## Table of Contents

### I. Electrical Integration Principles

- **Power Distribution**
  - Voltage Classes
  - Power Distribution Strategies
- **Signal Distribution**
  - Communication Protocols
  - Network Topologies
- **Electromagnetic Compatibility (EMC)**
  - Shielding
  - Grounding
  - Maintaining Signal Integrity (SI)
  - Managing the Current Return Path
- **Electrical Load Management**
  - Voltage Drop

### I. Electrical Integration Principles (continued)

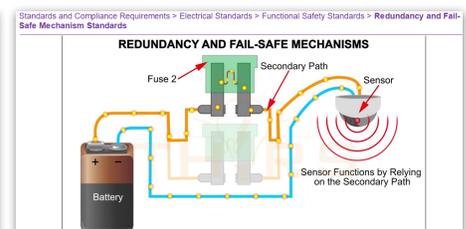
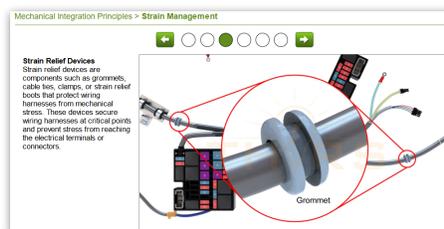
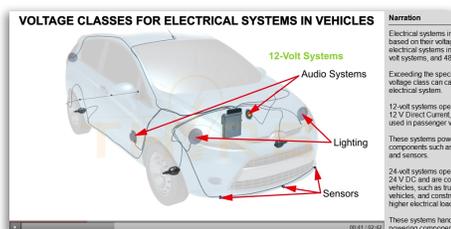
- Current Load Balancing
- **Overcurrent Protection**

### II. Mechanical Integration Principles

- **Mechanical Fitment**
  - Mounting and Routing Constraints
  - Space Optimization
- **Vibration Damping**
- **Strain Management**
- **Thermal Management (TM)**
  - Thermal Barriers
  - Heat Dissipation Strategies

### III. Standards and Compliance Requirements

- **Electrical Standards**
  - Functional Safety Standards
  - Electromagnetic Compatibility (EMC) Compliance Standards
  - Signal Integrity (SI) and Current Handling Standards
- **Ingress Protection (IP) Standards**
  - Ingress Protection (IP) Techniques
  - Environmental Tests



THORS is bringing together the best minds across many industries to create an ever-expanding library of courses that will rapidly increase the Manufacturing IQ® of your team.

© 2025 THORS LLC

sales@thors.com  
1 (330) 576 4448

5054 Paramount Blvd  
Medina, OH 44256