

Online Courses

AC Motor Basics

General Information

Course Code: SCT-DVOLACMBG1A

Length: 1 Hour

Audience

This course is for Siemens AC motor and drive users who wish to learn basic AC motor concepts in preparation for more advanced training on specific AC drive models or for Siemens AC motor users who wish to learn more about basic AC motor concepts.

Prerequisites

- Basic electrical knowledge.

Profile

This course provides an introduction to AC motors with emphasis on three-phase induction motors.

Objectives

Upon completion of this course, the student shall be able to:

- Define the function of an AC motor.
- Identify typical industries and applications for AC motors.
- Identify the primary components of an AC motor and their functions.
- Describe the operation of a rotating magnetic field in an AC motor.
- Describe how frequency and number of poles affect motor synchronous speed.
- Describe the operation of a squirrel cage rotor in an induction motor.
- Define the term slip as it relates to an induction motor.
- Describe the operation of a permanent magnet AC motor.
- Describe the operation of a synchronous AC motor.
- Describe the concepts of linear and angular velocity, linear and angular acceleration, work, and power.
- Identify the primary causes of energy loss in an AC motor.
- Define the term efficiency as it relates to an AC motor and identify factors that affect efficiency.
- Describe the function of gear boxes.
- Describe various types of motor loads.
- Describe the motor speed-torque curve for various NEMA motor designs.
- Explain the importance of matching a motor to its load.

- Compare the common differences between NEMA and IEC motors.
- Identify and describe the common motor characters found on NEMA and IEC motor nameplates.

Topics

1. Introduction to AC Motors
 - a. Role of AC Motors
2. How an AC Motor Works
 - a. Motor Basics
 - b. Induction Motors
 - c. Synchronous Motors
 - d. Other Types of Motors
3. Motor Performance and Loads
 - a. Motor Performance Basic
 - b. Performance Criteria
 - c. Gear Boxes
 - d. Loads
 - e. Typical Motor Output
 - f. Matching Output Torque to Load
4. Standard Designs and Loads
 - a. Standard Motors
 - b. IEC Motor Designs
 - c. NEMA Motor Designs
 - d. Loads and Operating Conditions