

# Basic AC & DC Electric Motor Training | eLearning Course



## eLearning Course: MB862

Amatrol's Multimedia Courseware - Basic Electrical Machines (MB862) teaches learners essential industrial motor concepts applicable throughout modern industry. Industrial motors are used in a wide variety of industrial, commercial, and residential applications. Learners using Amatrol's basic electrical machines eLearning course begin by studying DC motors and then move on to several types of AC motors. From these building blocks, learners begin practicing industry-relevant industrial motor skills, like wiring, testing, analyzing, operating, and reversing several different types of standard industrial motors.

## In-Depth AC & DC Motor Curriculum

### Comprehensive Basic Electrical Machines Curriculum Connected to Real-World Skills

Amatrol's basic electrical machines eLearning course covers important topics, such as:

#### DC Series Motors

Learners begin with an introduction to DC series motors, including electric motor safety and DC series motor operation. Individual lessons focus on topics like basic components of electric motors, DC motor wiring configurations, and reversing a DC series motor. Learners will also practice skills, such as connecting and operating a DC series motor and reversing the rotation of a DC series motor.

#### DC Shunt and Compound Motors

Learners will study the components and operation of DC shunt and compound motors. Individual lessons focus on topics like how a DC motor is wired for self-excited shunt operation, advantages of a separately-excited DC shunt motor, and the types of DC compound motor configurations. Learners will also practice skills, such as connecting and operating a self-excited DC shunt motor, reversing the rotation of a DC shunt motor, and connecting and operating a cumulative DC compound motor.

#### Motor Speed and Torque

Learners using Amatrol's basic electrical machines eLearning course will study basic principles of motor speed and torque, including motor speed and torque measurement. Individual lessons focus on topics like methods used to measure motor speed, how torque is calculated, and applications for measuring torque. Learners will also practice skills, such as measuring the speed of a motor using a photo tachometer, calculating the load on a motor that uses a gear drive or belt drive system, and determining the torque delivered by a motor using current measurements.

### **Motor Performance**

Learners will study various aspects and components of motor performance, including motor power and efficiency. Individual lessons focus on topics like the importance of motor efficiency, motor performance characteristics, and speed/torque characteristics of DC motor configurations. Learners will also practice skills, such as calculating the efficiency of a motor given input and output power, measuring and calculating the performance characteristics of a DC motor, and plotting and analyzing the efficiency vs. power curve of a DC motor.

## **AC & DC Motors**

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### **Split-Phase AC Motors**

Learners using Amatrol's basic electrical machines eLearning course will study various aspects and components of split-phase AC motors, including characteristics of alternating current. Individual lessons focus on topics like methods of representing AC voltage, types of single-phase AC motors, and how to calculate AC motor synchronous speed. Learners will also practice skills, such as converting between the effective value of AC voltage and the peak voltage, connecting and operating a split-phase motor, and measuring and graphing split-phase motor performance characteristics.

### **Capacitor-Start AC Motors**

Learners will study the components and operation of capacitor-start AC motors, including power factor and bleeder resistors. Individual lessons focus on topics like calculating power factor, advantages of a capacitor-start motor, and the purpose of a bleeder resistor. Learners will also practice skills, such as calculating apparent power given input voltage and current, correcting the power factor by calculating the correction capacitor value, and reversing the rotation of a capacitor-start motor.

### **Permanent-Capacitor and Two-Capacitor Motors**

Learners using Amatrol's basic electrical machines eLearning course will study basic principles of permanent-capacitor and two-capacitor motors. Individual lessons focus on topics like advantages of permanent-capacitor motors, the operation of a capacitor-start capacitor-run motor, and how the speed of a permanent-capacitor motor is controlled. Learners will also practice skills, such as measuring and graphing permanent-capacitor motor performance characteristics, connecting and operating a capacitor-start capacitor-run motor, and reversing the rotation of a capacitor-start capacitor-run motor.

### **Three-Phase AC Induction Motors**

Learners will study various aspects and components of three-phase AC induction motors, including their operation, characteristics, and configurations. Individual lessons focus on topics like categories of three-phase AC motors, applications of a three-phase induction motor, and how to connect a dual-voltage delta motor for low or high voltage. Learners will also practice skills, such as connecting and operating a three-phase induction motor, measuring and graphing induction motor performance characteristics, and reversing the rotation of a three-phase induction motor.

## **Interactive eLearning with Learning Management System**

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### **Highly-Interactive Multimedia Format Appeals to All Learning Styles**

Amatrol's basic electrical machines eLearning course features interactive eLearning curriculum that integrates various types of learning methods to create an engaging, effective learning experience. Amatrol's multimedia [eLearning](#) curriculum includes text with voiceovers, videos, 3D animations, pictures, and interactive activities, quizzes, and self-reviews.

### **Free Learning Management System (LMS)**

Amatrol eLearning is easy-to-use for both students and instructors. Its web-based interface is simple to navigate and available on any WebGL-compatible Internet browser. Instructors love Amatrol eLearning for its simple, yet sophisticated Learning Management System (LMS). The LMS allows instructors to create custom courses, monitor student participation, track course progress, assess knowledge levels prior to a course, and test knowledge levels after completion. Learners appreciate the fact that they can start and stop as needed, moving through each Amatrol course at their own pace. If a self-review reveals that they didn't understand a particular topic as well as they thought they did, they can revisit it before moving on.

## **Additional Info**

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### **Requires:**

- Computer (see [Computer Requirements](#))

### **Options:**

- Basic Electrical Machines Learning System (85-MT2)

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### **Address**

**Amatrol  
2400 Centennial Blvd  
Jeffersonville, IN 47130**

### **Contacts**

**email: [contact@amatrol.com](mailto:contact@amatrol.com)  
phone: (800) 264 8285**