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# Industrial Electricity Basics - Maintenance and Safety

[View Course Details](#)

## COURSE DATES AND TIMES

**October 15-16 , 2026**

10:00 am - 4:30 pm ET

## Why Industrial Electricity Basics Matters

Industrial Electricity Basics provides a practical introduction to the generation, distribution, and use of electrical power in industrial facilities. This course explains core electrical concepts—including voltage, current, resistance, AC and DC power, and three-phase systems—and connects them directly to real-world industrial equipment and operations.

Rather than focusing solely on theory, the training demonstrates how electrical fundamentals affect the performance of motors, transformers, control panels, and power distribution systems commonly found in industrial and commercial environments. Participants gain a clearer understanding of how electricity behaves under load and how misunderstandings at the fundamentals level often lead to poor troubleshooting decisions, unnecessary parts replacement, equipment downtime, and safety risks.

The course also builds essential electrical safety awareness by explaining how foundational knowledge supports hazard recognition, safe work practices, and informed decision-making around lockout/tagout and energized equipment. Emphasis is placed on helping non-electrical personnel and early-career technicians develop confidence when working around electrical systems or communicating with electricians and engineers.

Industrial Electricity Basics is ideal for maintenance personnel, technicians, operators, and supervisors who require a solid understanding of electricity in industrial settings and want to improve their ability to support safe, reliable, and efficient electrical operations.

An electrical circuit provides the path for electrical energy to flow from power plants through distribution systems into facilities where it is used to operate electrical devices. Understanding how voltage, current, and resistance interact within an electrical circuit helps

explain how electrical energy is generated, transferred, and safely controlled from large utility power plants down to the equipment used in industrial and commercial environments.

## Learning Outcomes

By the end of this course, participants will be able to:

- Understand the key components of industrial electrical systems and their functions.
- Apply theoretical knowledge to identify and troubleshoot common electrical problems in industrial settings.
- Communicate confidently with colleagues and suppliers about electrical systems and their applications.
- Recognize the importance of electrical safety practices, including the correct use of PPE and adherence to Lockout/Tagout procedures.
- Understand the critical role of maintenance in electrical system safety and reliability.

### WHO SHOULD ATTEND

This course is ideal for professionals who need a working knowledge of industrial electrical systems but do not require hands-on training, including:

- **Facility Managers:** Those responsible for overseeing operations and decision-making about electrical systems and maintenance.
- **Technical Sales and Support Staff:** Sales professionals who interact with industrial clients and need to understand electrical products and systems for better communication.
- **Safety Professionals:** Those responsible for developing safety protocols around electrical systems and ensuring compliance with industrial safety standards.
- **Aspiring Professionals:** Individuals preparing to enter the industrial maintenance or electrical field, looking for a strong theoretical foundation.
- **Industrial Maintenance Personnel:** Electricians, technicians, and maintenance staff who need a conceptual understanding of industrial electricity.
- **Engineers:** Engineers involved in industrial processes who need to understand the electrical systems powering their designs.
- **Students and Trainees:** Those seeking to build foundational knowledge for careers in industrial maintenance or electrical engineering.

### STUDENTS RECEIVE

- Industrial Electricity Basics Course Certificate
- 1.2 Continuing Education Unit (CEU) Credits
- \$100 Coupon Toward any Future Electricity Forum Event (Restrictions Apply)
- FREE 100-Page Digital Electrical Maintenance Handbook (Value \$20)
- FREE Digital Magazine Subscription (Value \$25.00)
- Course Materials in PDF Format

### COURSE OUTLINE

# Industrial Electricity Basics - Course Outline

## DAY ONE

### 1: Basics of Industrial Power Systems

- AC and DC in Industrial Settings:
- Differences between AC and DC systems
- Applications of each in industrial environments

#### Electrical Basics:

- Voltage, Current, Resistance: Definitions and relationships
- Ohm's Law: Calculations and applications

#### Circuit Building:

- Simple, Series, Parallel, and Combination Circuits
- Using multimeters to measure voltage, current, and resistance

#### Safety Fundamentals:

- Verifying de-energization of circuits
- Identifying common failure modes: Open/short circuits, ground faults

### 2: Power and Power Systems

#### Electrical Power:

- Definition, calculation, and units of measurement

#### Single-Phase and Three-Phase Power:

- Understanding the differences
- Applications in industrial settings

#### Transformers:

- Purpose and basic operation
- Types of transformers used in industry

### 3: Test Equipment and Troubleshooting

#### Electrical Test Equipment:

- Multimeters, voltage testers, clamp-on ammeters, megohmmeters

#### Basic Troubleshooting:

- Reading electrical single-line diagrams
- Identifying branch circuit and control circuit problems

- Practical troubleshooting techniques (if time allows)

#### **4: Low Voltage Power Distribution**

##### **Understanding Industrial Electrical Systems:**

- Distribution systems: Overview of components and layout
- Low voltage system examples (100V, 208V, 600V)

##### **Key Components:**

- Power factor correction: Why it's important
- Transformers: Delta vs. Wye connections
- Automatic Transfer Switches (ATS): Purpose and operation

##### **Electrical Protection:**

- Low voltage fuse protection and circuit breakers
- Molded Case Circuit Breakers (MCCB)
- Electrical Protective Relays
- Introduction to Protection Schemes

## **DAY TWO**

#### **5: Advanced Power Distribution and Equipment**

##### **Industrial Electrical Systems (continued):**

- Feeders, disconnects
- Motors, panelboards, and branch circuits
- Motor Control Centers (MCCs)

##### **Emergency Backup Power:**

- Backup electrical generators
- UPS systems and battery systems

##### **Electrical Grounding and Bonding:**

- Requirements for safety and operation
- Building Systems: (Brief overview)
- Building Automation Systems (BAS)
- Fire Protection Systems

#### **6: Electrical Safety in Industry**

##### **NFPA 70E/CSA Z462: (Overview)**

- Hazards of electricity: Shock, arc flash, arc blast
- Personal Protective Equipment (PPE)

- Lockout/Tagout (LOTO) procedures
- Safe work practices

## **7: Maintenance and NFPA 70B/CSA Z463**

### **Electrical Maintenance Standards:**

- Proactive vs. reactive maintenance
- Different maintenance strategies
- Link between maintenance and safety
- General practices (e.g., insulation testing)
- Specialized equipment maintenance

## **COURSE SCHEDULE**

### **Both Days:**

Start: 10:00 am - Eastern Time

Finish: 4:30 pm - Eastern Time

Contact us Today for a FREE quotation to deliver this course at your company's location.

[Request Quote](#)