



Content
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Industrial Electricity Basics

Course details: <https://electricityforum.com/electrical-training/industrial-electricity-basics>

COURSE DATES AND TIMES

March 17-18 , 2025

10:00 am - 4:30 pm ET

September 18-19 , 2025

10:00 am - 4:30 pm ET

Industrial Electricity Basics - This 12-hour, two-day live online training course provides a clear and foundational understanding of power systems, specifically designed for non-electrical professionals who need to grasp the fundamentals of industrial power systems. Through a comprehensive approach, this course will explain how the key components of industrial power systems relate to each other and function as a whole. From understanding AC/DC power to navigating the complexities of electrical distribution systems, you'll develop a strong conceptual knowledge that will allow you to work more effectively in environments where electricity plays a critical role.

Our course provides real-world examples and visual examples to clarify complex concepts and enhance learning, making it perfect for those who want to understand industrial electricity and power systems.

What You'll Learn:

- **Electrical Fundamentals:** Gain a solid understanding of AC/DC power, voltage, current, resistance, and Ohm's Law.
- **Industrial Power Systems:** Explore the concepts of single-phase and three-phase power, transformers, and electrical distribution systems.
- **Electrical Safety:** Learn about electrical hazards and critical safety procedures such as Lockout/Tagout (LOTO) and the use of personal protective equipment (PPE).
- **Power Distribution:** Understand low voltage and high voltage power distribution systems and their components, including transformers, automatic transfer switches (ATS), and power factor correction.

- Troubleshooting Concepts: Study basic troubleshooting techniques and how to diagnose common issues in electrical systems using diagrams and theoretical methods.

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

- Certificate of Course Completion
- FREE 100-Page Digital Electrical Maintenance Handbook (Value \$20)
- \$100 Coupon Toward any Future Electricity Forum Event (Restrictions Apply)
- 1.2 Continuing Education Unit (CEU) Credits
- 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.

<https://electricityforum.com/onsite-requestforquote>