Control Circuits and Reading of Electrical Drawings

4 – 8 January 2027
Paris (France)



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Introduction

Control circuits and electrical drawings play a vital role in industrial and commercial electrical systems, ensuring efficient operation, troubleshooting, and maintenance. Understanding electrical motor control circuits, industrial control circuits, and pressure control circuits is essential for engineers, technicians, and electricians involved in designing, analyzing, and troubleshooting control circuits.

This course provides a comprehensive understanding of control circuits, their components, and methods to interpret different types of electrical drawings. Participants will engage in hands-on exercises, learning how to make electrical drawings, troubleshoot control circuits, and optimize electrical systems for enhanced reliability and safety.

Course Objectives

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

- Understand the fundamentals of control circuits and their key components.
- Analyze and interpret various types of electrical drawings.
- Learn the standards and symbols used in electrical schematics.
- Develop skills to troubleshoot control circuits and improve system efficiency.
- Design and optimize basic electrical control circuits for real-world applications.



Course Outlines

Day 1: Basics of Control Circuits

- Introduction to control systems and circuits.
- Key components of control circuits relays, switches, contactors, sensors, etc..
- Basic electrical control circuits theory and functionality.
- Common applications of control circuits in industrial automation.
- Safety protocols for handling and maintaining control circuits.

Day 2: Electrical Drawing Basics

- Different types of electrical drawings: schematic, wiring, and layout diagrams.
- Understanding control circuits and electrical symbols based on IEC, and ANSI standards.
- How to read and interpret single-line diagrams.
- Introduction to ladder logic diagrams and their role in motor control.
- Hands-on practice: Interpreting and analyzing typical electrical drawings.



Day 3: Control Circuit Operation and Troubleshooting

- Types of control circuits: manual, automatic, and semi-automatic control.
- Common industrial control circuits: start-stop, reversing, interlocking.
- Troubleshooting control circuits: detecting faults and diagnosing failures.
- Using timers, sensors, and overload protection in control circuits.
- Workshop: Building and testing a basic electrical motor control circuit.

Day 4: Advanced Electrical Drawings and Analysis

- In-depth study of wiring diagrams and connection layouts.
- Cross-referencing complex schematics for troubleshooting.
- Interpreting control panel layouts and terminal block connections.
- Identifying and resolving common issues in electrical drawings.
- Case study: Analyzing real-world electrical drawing types for construction.

Day 5: Designing and Optimizing Control Systems

- Principles of designing efficient control circuits.
- Techniques to make electrical drawings using software tools.
- Improving efficiency and reliability in control circuits.
- Integrating IoT and automation in industrial control circuits.
- Final project: Designing and documenting a complete control circuit.



Why Attend this Course: Wins & Losses!

- Develop expertise in electrical motor control circuits and industrial control circuits.
- Enhance troubleshooting control circuits skills for system optimization.
- Learn how to read and create different types of electrical drawings.
- Gain hands-on experience in control circuit design and maintenance.
- Improve electrical safety practices and compliance with industry standards.

Conclusion

Mastering control circuits and electrical drawings is essential for electrical engineers, technicians, and automation specialists. This course provides a structured approach to understanding control circuits, interpreting different types of electrical drawings, and applying troubleshooting control circuits techniques to optimize industrial electrical systems.

By learning how to make electrical drawings, analyze electrical control circuits, and enhance system efficiency, participants will gain the technical expertise required to design and maintain industrial control circuits with confidence. Enroll today and elevate your electrical engineering skills!

