
Arabian Institute For Training

Electrical Drawings and Control Circuits

INTRODUCTION

- This Electrical Drawings and Control Circuits training seminar begin with the development of various relevant drawings and symbols representing devices that are vital in all electrical installation to ensure continuity and efficient operations. The primary and fundamental tool for troubleshooting and maintenance of an electrical installation is to understand and interpret electrical drawings and ladder diagrams.
- Electrical symbols, schematic, and wiring diagrams facilitate the operations of the electrical installation equipment. This programme will cover all these aspects of electrical blueprint reading and the tracing of circuits.
- It will familiarise engineers and technicians with the various standards and practices, also, to understand the power flow and equipment installed. As fitted diagrams and ladder diagrams will we presented to correlate with the electrical equipment installed. Tracing of electrical circuits with the relevant wiring diagrams will be demonstrated to ensure correct methods of troubleshooting.

This training seminar will highlight:

- The interpretation and understanding of standard electrical symbols
- The characteristics of single line diagrams
- The importance of ladder diagrams
- Using diagrams for circuit tracing
- Troubleshooting electrical system using diagrams

OBJECTIVES

At the end of this training seminar, participants will learn to:

- Describe the various types of electrical drawings
- Appreciate the importance of single line diagrams
- Analyse the various electrical ladder drawings
- Explain the operation of the electrical equipment using wiring and schematic diagrams
- Recognise the symbols in electrical drawings

TRAINING METHODOLOGY

- This Electrical Engineering course will ensure participants' understanding and importance of the set of drawings in an electrical installation. Each seminar participant will receive a copy of the comprehensive seminar notes. The presenter will outline and discuss the topics using computer displays, videos, and PowerPoint presentation. The seminar is designed to have an interactive format to maximize delegate participation. Questions and answers are encouraged throughout and at the daily sessions.

ORGANISATIONAL IMPACT

Upon completion of this training course, the organizational impact would be:

- Developed a structured approach and understanding of the various electrical drawings
- Appreciation of the single line diagrams
- The correct interpretation of ladder diagrams
- Examples of as fitted wiring diagrams interpretation
- Design and modification of control circuit diagrams
- Capability to read multi-page electrical drawings

PERSONAL IMPACT

Upon completion of this training course, the organizational impact would be:

- Understand the operations of electrical equipment with reference to ladder diagrams
- Better understanding the design and functionality of the electrical installation distribution via single line diagrams
- Utilize single-line diagrams and schematics for troubleshooting
- Understand the differences and relevance of the various types of electrical drawings
- Demonstrate confidence during fault tracing and troubleshooting
- Able to correlate between drawings and as fitted equipment

WHO SHOULD ATTEND?

- The technicians and maintenance staff will be able to comprehend the construction, operations, the function of major electrical equipment components. This will enable them to carry out effective maintenance activities.

This training course is suitable for a wide range of professionals but will greatly benefit:

- Electrical Engineers
- Electrical Supervisors
- Maintenance Technicians
- Managers in-charge of electrical installations

Course Outline

Introduction, Types of Drawings and Symbols

- Importance and Relevance of Drawings
- Categories of Electrical Drawing and their Characteristics
- Purposes served by Different Type of Electrical Drawings
- International Electrical Symbols and Drawings
- Applications and Functions of Numerical Relays
- Importance of CTs and VTs Information in Electrical Drawings

Interpretation and Significance of Single Line Diagrams

- Onset of a Single Line Diagram
- Importance of Single Line Diagrams
- Standardised Drawing Symbols
- Protective Devices Coordination in Single Line Diagrams
- Fault Current Calculations with Information from the Single Line Diagram
- Troubleshooting and Electrical Installation with the Relevant Diagrams

Ladder Diagrams Interpretation

- Types of Ladder Diagram
- Generic Electrical Equipment Ladder Diagrams
- Designing Control Circuits
- Interlock Control Circuits

Schematic and Control Circuits and its Merits

- VFD Schematics and its Operation related to Controlling Circuits
- UPS Power Supply Schematic Diagram Components Functionalities
- Reading and Tracing AC Input Diagrams and its Significance
- Identify Components in the Rectifier, Inverter and AC Outputs Schematic Diagrams
- Types of Protection Relays Schematics, Wiring, Operation and Functional Diagrams
- Motor Installation and Control Circuits

Logic Circuit Applications and Troubleshooting Strategies

- Logic Gates and Characteristics
- Digital Logic Functions
- Programmable Logic Controllers


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