

## Overview

- We offer trainee's proper skills training which will help them to protect and prevent equipment damage
- Our training reinforces your staff with the understanding of control equipment operation, correct procedures and techniques to be used during troubleshooting
- Our training reinforces the important safety concerns that must be maintain during troubleshooting of equipment to keep your staff safe
- Our training will help eliminate "dangerous situations" in your maintenance engineering operations from lack of proper training, skills and troubleshooting techniques
- Reduce downtime. It is estimated that 30-40% of downtime can be directly attributable to a shortcomings in skill levels and training, therefore decreasing production efficiency

## Objectives

- List several methods of controlling a motor.
- Describe the operation of a magnetic motor starter.
- Explain overcurrent protection of a motor and motor circuit.
- Determine the size of the components of a motor circuit.
- Wire a start-stop station or a single-contact control device.
- Identify common control devices from their schematic symbols.
- Wire a simple control circuit from a control ladder diagram.
- Name the NEMA enclosure types and give an example of their applications.
- Preventive maintenance, troubleshooting and Energy Consideration



**SBL CLAIMABLE**





## **Who Should Attend**

This course is designed for the electrician, technician, or engineer who needs an understanding of the application, operation, maintenance and troubleshooting of motor control systems. The course is also designed around the Maintenance Fitter who requires electrical knowledge to fulfil a multi-skilling role within his company. The candidate does not require an electrical background, but it would be an obvious advantage

## **Workshop Methodology**

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Designing Circuits
- Videos and General Discussions

# Workshop Outline

## DAY – 1

### Module 1:

- 1.1 Three Wire Controls
- 1.2 Separate Controls
- 1.3 Hand-Off-Automatic Controls

### Module 2:

- 2.1 Sequence Controls
- 2.2 Reversing Controls
- 2.3 Jogging Controls

### Module 3:

- 3.1 Timing Relay Circuits
- 3.2 Starting Methods
- 3.3 Deceleration Methods
- 3.4 Over current protection

### Module 4:

- 4.1 How to determine size of the components and cable
- 4.2 Common control device and schematics diagram
- 4.3 calculation on cable size using IEEE Rules and Regulation Drawing and designing motor starters and selection of relay, contactors and overload

## DAY – 2

### Module 5:

- 5.1 Electrical Symbols and Line Diagram.
- 5.2 Control Logic
- 5.3 AC Manual Motor Starters

### Module 6:

- 6.1 Magnetism and Solenoids
- 6.2 AC Electro-Mechanical Magnetic Motor Starters
- 6.3 Introduction to Motor Overload Protection Relays
- 6.4 Select Switch Controls and interlock system

### Module 7:

- 7.1 Time Delay Relays
- 7.2 Control Devices
- 7.3 Motor Reversing method
- 7.4 Hand's on practical Start and Stop with single contact
- 7.5 Start and Stop practical direct on line, Forward and Reverse and application in the industry

### Module 8:

- 8.1 Soft starter and VFD drive system for energy saving
- 8.2 NEMA Enclosure and application for various load
- 8.3 OSHA Tag out/ Lock out Requirements
- 8.4 Preventive Maintenance ,Troubleshooting Technique and Energy efficiency motor

**If you have any enquiries, please contact:**  
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