Control Systems & Electrical Equipment

Commissioning, Testing, and Electrical System Start-Up

Introduction

To guarantee continuity and effective operations, this Control Systems and Electrical Equipment training course will stress the importance of all electrical devices and equipment in electrical installations. Common components found in most electrical installations today include transformers, motors, variable frequency drives, uninterruptible power supplies, and batteries. Because they are safeguarded by complex and advanced relays and protective systems, safe operations are crucial.

Protection systems are put in place to stop electrical plant damage from faults and to start isolating the affected portions so that the supply remains continuous throughout the system. Recent advancements in technology have placed a strong emphasis on the development of integrated protection and control, along with modifications to how industrial and utility organizations function.

This course session will emphasise:

- The design and functionality of motors and transformers
- The features of drives with changing speeds
- The use and significance of batteries and UPS
- The kinds of upkeep
- The protective relays' functions

Objectives

Upon completion of this training program, attendees will get the ability to:

- Describe the different kinds of motors and transformers.
- Recognize the significance of batteries and an uninterruptible power source.
- Examine the different transformer testing.
- Describe how the various kinds of testing equipment work.
- Identify the symbols in electrical schematics.

Training Methodology

Participants in this Electrical Engineering course will be guaranteed to comprehend the control systems of electrical equipment. The comprehensive lecture notes will be sent in copy form to each attendee. Using PowerPoint slides, movies, and computer displays, the presenter will introduce and cover the subjects.

To maximize delegate engagement, the training course is organised to be interactive. It is encouraged to ask questions throughout and throughout the daily sessions. Workshop sessions on problem-solving will include discussions of needs-based case studies and examples.

Organizational impacts

Following the Course N Carry training course, the following would happen within the organisation:

- Developed a methodical approach and comprehension of the installed primary electrical equipment
- Gratitude for the labor force's assistance with electrical equipment maintenance, repair, and troubleshooting
- Proper use of measuring and testing equipment
- Case studies and examples to highlight the topics being covered
- Technical content suitable for the organisations in question
- Make sure that the electrical installation is operating safely.

Personal Imapct

Following the successful completion of this training program, the delegate will comprehend:

- Recognize the features and functions of transformers and motors.
- Gain a deeper understanding of the construction and operation of batteries, UPSs, and variable speed drives.
- Use schematics and single-line graphics to troubleshoot
- Recognise regular work procedures and has the ability to create task plans and maintenance schedules.
- Utilise up-to-date knowledge when utilising measurement and testing equipment.
- Capable of troubleshooting issues with AC motors

Who should attend?

The construction, functionality, and operations of the key electrical equipment components will be understood by the technicians and maintenance personnel. They will be able to do efficient maintenance tasks as a result.

Though a wide range of professionals can benefit from this training, the following will be especially noted:

- Engineers in Electrical
- Managers in charge of electrical installations, maintenance technicians, and electrical supervisors
- Engineers for Projects

Course Outline

Day 1

The Electrical Device and Equipment Technology

- Batteries and Power Transformers for Power Supplies (UPS)
- Disconnect switches under Generators - Switchgear
- Neutral Ground Resistors (NGR) and grounding
- Motor Control Centres (MCC)
- Drives with Variable Frequency and Speed (VFD/VSD)
- Safeguarding and Numeral Relays Features
- Protection of Motors and Feeders

Day 2

Transformer Examinations and Examination of Test Outcomes

- Transformer Site Acceptance Test Functional Tests
- Cooling of Transformers
- Transformer Vector Group Selection
- Transformer Upkeep
- Analysing sweep frequency response to diagnose transformers
- For brand-new power and distribution transformers, ester-base oil

Day 3

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- Deterioration of Solid and Liquid Insulation in Digital Multimeter Switchgears
- Pyrometers and Temperature Probes for Insulation Resistance Testers
- Sensors and Resistance Temperature Detection
- Hydrometers with digital displays
- Cable Fault Finders

Day 4

The Understanding of Motor Control Systems and Electrical Drawings

- The Value of Electrical Schematics
- Diagrams with a single line Significance and Explanation
- Control circuit types
- Techniques for AC Motor Starting
- Soft Starters
- Upkeep of AC motors
- Fixing issues with AC motors
- Synchronous motors versus induction motors

Day 5

The use of condition-based maintenance and maintenance strategies

- The Value of Upkeep
- Strategies for Maintenance
- Thermography
- Drives with Partial Discharge Variable Speed Upkeep
- Battery Charging and Maintenance for UPS Systems
- Conclusion Q&A session