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Electrical Equipment & Control Systems: Commissioning, Testing & Start-Up of Electrical

6 - 10 January 2025

Singapore

Electrical Equipment & Control Systems: Commissioning, Testing & Start-Up of Electrical Systems

course code: C8008 From: 6 - 10 January 2025 Venue: Singapore - course Fees: 5500 Euro

Introduction

The safe and efficient operation of modern electrical equipment and control systems requires the successful testing, start-up and commissioning of this equipment, or system, to ensure correct operation, plus;

- Accurate troubleshooting
- Subsequent repair of this equipment, or system
- Ensuring continued productivity

Delegates are encouraged to bring with them any technical issues that they may wish to discuss during the seminar.

Objectives

On successful completion of this seminar, participants will have:

- A better understanding of commissioning procedures
- A better understanding of troubleshooting procedures
- An improved capability in the use of test equipment
- A better understanding of failure modes and failure analysis
- A refreshed awareness of electrical safety concerns

Training Methodology

Each course participant will receive a copy of the comprehensive course notes. The presenter will outline and discuss the topics using ‘power point’ and DVD’s. The course is designed to have an interactive format to maximize delegate participation. Questions and answers are encouraged throughout and at the daily work sessions. Needs-Based case-studies and examples will be discussed in problem solving workshop sessions. Only minimum note taking is encouraged to ensure maximum delegate attention during the course.

Organisational Impact

On successful completion delegates will have:

- Developed a structured approach to electrical commissioning, testing and troubleshooting
- Been given methods/solutions for various electrical problems
- Interacted and gained from shared experiences
- Examples and case studies to illustrate the material being discussed
- Technical material appropriate to the organisations represented

Personal Impact

On successful completion of this course delegates will be able to:

- Use test equipment for electrical commissioning and servicing
- Better understand the design, functionality and failure modes of electrical equipment and control systems
- Utilize single-line diagrams and schematics for troubleshooting
- Understand standard work practices plus be able to develop job plans, which assist in successful commissioning and troubleshooting
- Show a refreshed knowledge of electrical safety

SEMINAR OUTLINE

DAY 1

The Technology of Electrical Equipment

- Transformers - Power supplies (UPS) - Batteries
- Generators - Switchgear - Disconnect switches
- Neutral ground resistors (NGR)
- Motor control centers (MCC) - Variable frequency/speed drives (VFD/VSD)
- Programmable logic controllers (PLC) - Distributed control systems (DCS)
- Power monitoring
- Control relays/timers/switches - Motor/feeder protective devices
- Miscellaneous equipment - Heaters, solenoid valves, electric valve actuators and signalling/alarm devices

DAY 2

Commissioning and Testing of Electrical Equipment

- Methods
- Principles - Special techniques
- NEC check lists

Troubleshooting of Electrical Equipment

- Methods - Terminology - Principles
- Special techniques
- Case studies/examples
- Single line drawings
- Group exercises

DAY 3

The Use of Test Equipment

- Digital voltmeter (DVM)
- Megger
- Frequency meter
- Temperature probes/pyrometers
- Ammeters, Power meters
- Load banks
- Digital hydrometers

- Cable fault locators

DAY 4

The Interpretation and Use of Drawings

- Single-line electrical drawings
- Control schematics
- Wiring lists
- P&ID’s
- Logic and standard symbols

The Development of a Job Plan

- Identification of the troubleshooting step-by-step sequence
- Procedure preparation
- Follow-up
- Safety considerations and training

DAY 5

The Identification and Repair of Problems/Failures

- Common mode failures,Phase imbalance
- Electronic component failure, Fusing
- Fusing
- Motor windings/bearings/brushes
- Excitation circuits
- Battery cells, Inverters/rectifiers
- Inverters/rectifiers
- Bushings - Switches
- Control circuits
- Ground faults

A review of Safety Requirements

- Area classifications
- NEC electrical codes, Safety Information

Open session: Case Studies, Questions and Answers