TRAINING TITLE

Motor Control Centers (MCC) (Engineering) - Basics

Training Duration

5 days

Training Venue and Dates

Ref. No. EE175	**Motor Control Centers (MCC) (Engineering) - Basics**	**5**	**04-08 Aug. 2025**	**$5,500**	**Abu Dhabi, UAE**

In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- **$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch**

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

This course is designed to provide participants with the skills and knowledge needed to perform effective maintenance, troubleshooting, and repairs on electrical control panels. Control panels are integral to the operation of industrial machinery and processes, and ensuring their proper function is critical for the safety, reliability, and efficiency of operations. The course will cover the components, operation, and maintenance practices necessary to keep control panels in optimal condition, including safety protocols, testing, and troubleshooting methods.

TRAINING OBJECTIVES

By the end of the course, participants will be able to understand

- Understand the components and function of industrial control panels.
- Perform routine maintenance tasks on control panels, ensuring proper operation.
- Troubleshoot common issues with control panels and take corrective actions.
- Inspect and test control panels for operational reliability.
- Implement safety standards and procedures when working with control panels.
- Understand and comply with relevant electrical codes and standards (e.g., IEC, NEC).

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WHO SHOULD ATTEND?

- Electrical engineers and technicians involved in maintaining control panels.
- Maintenance personnel responsible for the upkeep of electrical equipment and systems.
- Operators and supervisors working with control panels in industrial environments.
- Safety officers and quality inspectors overseeing control panel installations and maintenance.

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.
Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

COURSE PROGRAM:

Day 1: Introduction to Control Panels and Their Components

- Overview of control panels: Types and functions in industrial systems
- Key components of control panels:
  - Circuit breakers, relays, switches, fuses, and disconnects
  - PLCs (Programmable Logic Controllers), HMI (Human-Machine Interface), and motor starters
  - Control transformers and power supplies
- Understanding electrical diagrams: Single-line diagrams, wiring diagrams, and layout drawings
- Types of control systems: Local vs. remote control, manual vs. automatic control
- Standard symbols and notation used in control panel design

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Day 2: Installation and Configuration of Control Panels

- General guidelines for control panel installation
- Preparing and wiring control panels: Best practices and considerations
- Grounding and earthing of control panels to ensure safety
- Configuring and connecting control devices: PLCs, relays, starters, and HMI interfaces
- Control panel power-up and system initialization
- Ensuring compliance with local and international electrical codes (e.g., IEC, NEC)

Day 3: Routine Maintenance and Inspections of Control Panels

- Importance of routine inspections for control panels
- Visual inspection: Identifying signs of wear, damage, or overheating
- Cleaning procedures to remove dust, dirt, and moisture
- Checking and tightening electrical connections and terminals
- Evaluating component health: Circuit breakers, relays, fuses, and other elements
- Testing the functionality of control systems: PLCs, motor starters, and protection devices
- Documenting and reporting findings

Day 4: Troubleshooting and Diagnostics of Control Panels

- Common control panel issues: Faulty wiring, malfunctioning components, and incorrect settings
- Troubleshooting electrical components:
    - Testing switches, relays, and transformers with a multimeter
    - Verifying continuity and insulation resistance
    - Diagnosing faulty PLCs and HMI connections
- Fault isolation techniques: Using signal testing, continuity testing, and visual inspections
- Practical troubleshooting steps for common faults (e.g., blown fuses, tripped breakers, stuck relays)
- Case studies of real-world troubleshooting scenarios

Day 5: Advanced Maintenance Techniques and Safety Protocols

- Advanced diagnostics tools: Oscilloscopes, insulation testers, and thermal imaging cameras

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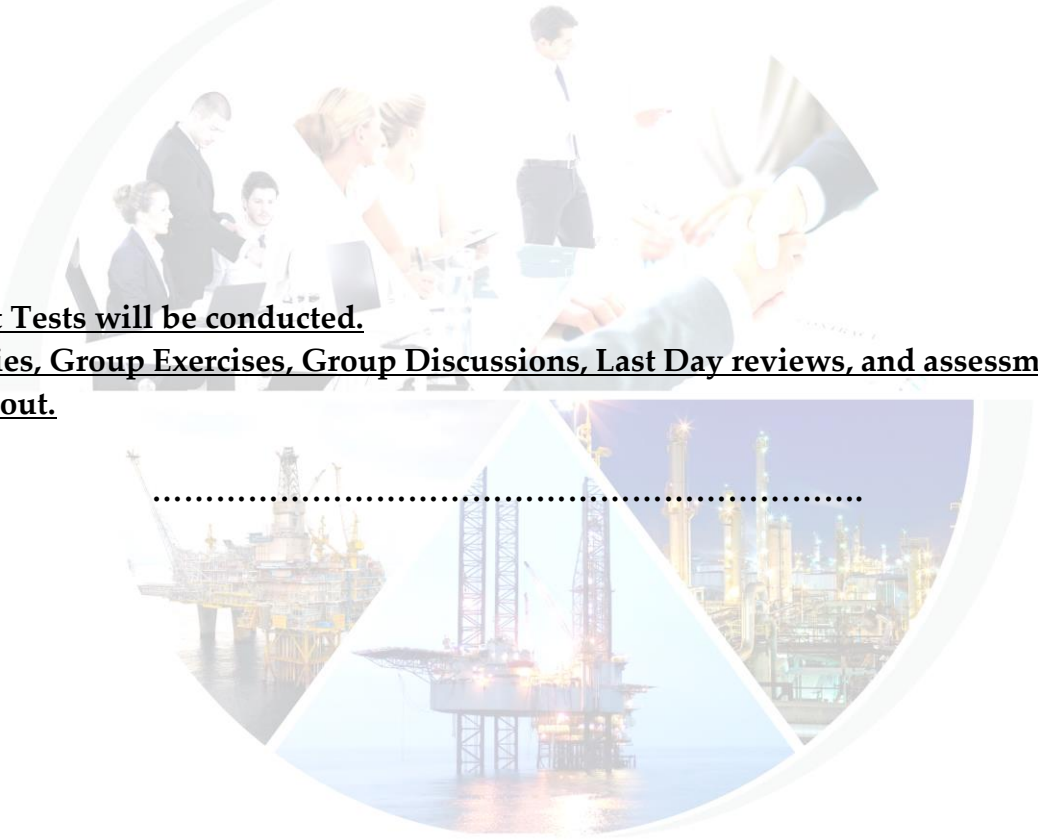
- Preventive maintenance: Creating maintenance schedules and checklists
- How to conduct load testing and verify the performance of control systems
- Upgrading and retrofitting control panels: Adding new components or systems
- Safety protocols when working with control panels:
    - Lockout/tagout (LOTO) procedures
    - PPE (Personal Protective Equipment) requirements
    - Electrical hazards and arc flash safety
- Regulatory and standards compliance (e.g., UL, IEC, NEC)
- Final assessment, review of key concepts, and Q&A session



NOTE:
Pre-& Post Tests will be conducted.
Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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