

ELECTRICAL PREVENTIVE MAINTENANCE

ELC014

COURSE DESCRIPTION

Statistics indicate that more fires start from electrical system failure than from any other cause. Electrical equipment is usually well designed and properly installed. However, the principal reason for electrical system breakdown is the failure to maintain the installation in its designed state.

Instituting a preventive maintenance program which consists of routine inspections, tests and service of electrical equipment can significantly reduce the potential for breakdown. Without an electrical preventive maintenance program, your facility assumes a risk of serious electrical failure and the heightened potential consequences of fire and/ or production interruption.

COURSE GOAL

To enhance the participants' knowledge, skills and abilities necessary for proper inspection and protection of electrical equipment.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Identify the function and operation of the electrical equipments.
- Identify components of a successful electrical preventive maintenance program.
- Determine the Personal Protective Equipment (PPE) requirements for electrical troubleshooting.
- Safely and correctly verify a circuit is de-energized.
- Distinguish between the different types of electrical maintenance.
- Perform proper maintenance on substations Equipment.
- Identify different types of transformers.
- Perform proper maintenance on transformers.
- Identify and perform proper maintenance on H.V. Switchgear and Underground Cables
- Observe power quality problems and troubleshooting techniques for facility distribution systems and three-phase loads.
- Be ready to read and interpret electrical diagrams.

WHO SHOULD ATTEND

The course curriculum is designed Especially for Electric Power Engineers, Plant Engineers, Apprentice Electricians, Journeyman Electricians, Maintenance Technicians, Supervisors, and Inspectors.

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. Overview of Electrical Systems.

- Basic Elements of Electrical Generation, Transmission & Distribution systems.

2. Introduction to Engineering Maintenance

- Background
- Maintenance and Maintenance Engineering Objectives
- Maintenance Facts and Figures
- Engineering Maintenance in the 21st Century
- Maintenance Terms and Definitions

3. Preventive Maintenance

- Preventive Maintenance Elements, Plant Characteristics in Need of a PM Program, and a Principle for Selecting Items for PM
- Important Steps for Establishing a PM Program
- PM Measures
- Mean Preventive Maintenance Time (MPMT)
- Median Preventive Maintenance Time (MDPMT)
- Maximum Preventive Maintenance Time (MXPMT)
- PM Models
- PM Advantages and Disadvantages

4. Engineering Services for Substations

- Content & Subdivision of Engineering Services
- Continuous Operation Readiness of E. Equipments
- The Equipment Technical State
- Technical Maintenance of Equipment
- Maintenance Main Activities
- Factors Affecting Maintenance Planning

5. Transformer Construction, Operation and Maintenance

- Safe areas.
- Insulating Media

- Electrical Bushings
- Load Tap Changers
- Loading and Thermal Performance
- Transformer Connections
- Transformer Testing
- Load-Tap-Change Control and Transformer Paralleling
- Power Transformer Protection
- Transient-Voltage Response
- Transformer Installation and Maintenance
- Problem and Failure Investigation
- On-Line Monitoring of Liquid-Immersed Transformers

6. H.V. Switchgear and Underground Cables.

- H.V. Switchgear Installations
- Power Circuit breakers
- Construction and Operation of Typical C.B.
- Circuit Breakers Maintenance, Inspection And Service
- Testing of High Voltage A.C. Circuit-Breakers
- Circuit Breaker Performance
- Cable Types
- Conductor and Insulating Materials
- Typical Constructions of UC
- Cables Joints
- Cable Maintenance
- Troubleshooting of Three Phase System
- Identify and Repair Short Circuits Faults.
- Locate and Fix Ground Faults.
- Testing and Troubleshooting of Magnetic and Control Devices.
- Using Electrical Troubleshooting Charts.
- Troubleshoot and Repair Control Circuits and Magnetic Devices.

7. Reading Electrical Diagrams

- American Standard Graphic Electrical Wiring Symbols.
- Wiring Diagram Examples.
- Identify Color Coding