

Electrical Maintenance Management for Mechanical Supervisors

Cost: \$2499.00

This five day course is designed for mechanical supervisors responsible for the maintenance of low voltage electrical systems and the supervision of electrical personnel. This course provides a solid understanding of the operation and maintenance of low voltage electrical equipment. Maximum emphasis is placed on safety, maintenance and testing practices, and cost-effective programs. The goal of this course is to give participants the knowledge to safely, effectively, and credibly manage electrical personnel.

Who Should Attend:

Supervisors, Managers and Colleagues who oversee and/or work along side electrical maintenance groups during their daily duties.

TEST ELECTRICAL CIRCUITS

Objective: Use DMM's to conduct basic tests on electrical circuits

SUBTOPICS:

- Use Digital Multimeters
- Measure Voltage
- Measure Current
- Measure Power

TEST ELECTRICAL COMPONENTS

Objective: Use an ohmmeter to conduct basic tests on electrical components

SUBTOPICS:

- Test Conductors
- Measure Circuit Resistance
- Test Insulation

APPLY ELECTRICAL FUNDAMENTALS

Objective: Relate fundamental electrical laws to the operation of DC and AC circuits

SUBTOPICS:

- Apply Ohm's Law
- Apply Watt's Law
- Apply Direct Current Theory
- Apply Alternating Current Theory
- Troubleshoot Electrical Circuits

OPERATE ELECTRICAL SYSTEMS

Objective: Inspect and evaluate the construction and operation of electrical circuits

SUBTOPICS:

- Identify Color Coding

- Plan Circuit Device Installation
- Inspect 120 Volt Circuit Installations
- Plan 120/240 Volt Circuit Installations
- Evaluation Transformer Applications
- Compare Three Phase System

INTERPRET ELECTRICAL DIAGRAMS

Objective: Read, interpret and use electrical diagrams

SUBTOPICS:

- Use dc schematics
- Use ac schematics
- Use wiring diagrams
- Use ladder diagrams
- Use 3 line diagrams
- Use Single Line Diagrams
- Use protection & control diagrams

INSPECT SINGLE PHASE EQUIPMENT

Objective: Replace single phase electrical equipment following the proper methods, techniques and applicable regulations

SUBTOPICS:

- Inspect Wires
- Inspect Cables
- Inspect Cord Ends
- Inspect Lights
- Inspect Receptacles
- Inspect Single Phase Motors
- Inspect Single Phase Panels

IDENTIFY ELECTRICAL PROBLEMS

Objective: Troubleshoot electrical circuit and system faults

SUBTOPICS:

- Identify System Problem
- Identify Maintenance Problems
- Identify Operating Problems
- Troubleshoot Circuit Faults

IDENTIFY ELECTRICAL HAZARDS

Objective: Recognize the damage electricity can cause to the human body, identify common causes and follow safe work practices and procedures

SUBTOPICS:

- Avoid Equipment Damage
- Avoid High Voltage Burns
- Avoid High Line Contact
- Avoid Low Voltage Burns
- Follow Safe Work Procedures
- Follow Safe Work Practices

IDENTIFY SYSTEM FAULTS

Objective: Test, troubleshoot and diagnose single phase electrical circuit problems following proper methods and techniques

SUBTOPICS:

- Troubleshoot Open Circuits
- Troubleshoot Short Circuits
- Troubleshoot Crossed Wires
- Troubleshoot Overloads

MAINTAIN PROTECTIVE SYSTEMS

Objective: Maintain the systems that protect people, equipment, materials and the environment

SUBTOPICS:

- Describe Power Company Grounding
- Ground Electrical Systems
- Bond Electrical Equipment
- Ground Electrical Equipment
- Maintain Double Insulation
- Inspect Fuses
- Inspect Breakers
- Inspect GFCI's

TEST SAFETY AND CONTROL DEVICES

Objective: Test circuit safety, control and magnetic devices

SUBTOPICS:

- Test Magnetic Devices
- Test Safety Devices
- Test Control Devices

INSPECT THREE PHASE EQUIPMENT

Objective: Replace three phase electrical equipment following proper methods, techniques and applicable regulations

SUBTOPICS:

- Inspect Three Phase Cables
- Inspect Three Phase Panelboards
- Inspect Three Phase Cables
- Inspect Three Phase Manual Starters
- Inspect Three Phase AC Motors
- Inspect Three Phase Magnetic Starters
- Inspect Three Phase Motors

MAINTAIN CABLES

Objective: Manage medium voltage cable inventory and the electrical workers responsible for them

SUBTOPICS:

- Describe the construction of shielded and non-shielded cable
- Describe how to splice or terminate cable
- Describe the methods of testing cables and interpretation of test results

MAINTAIN SWITCHGEAR & DISCONNECTS

Objective: Manage the testing, troubleshooting and maintenance of switchgear and disconnects

SUBTOPICS:

- Describe the various types of disconnect
- Explain maintenance on disconnects
- Review safety procedures critical to disconnects
- Describe the operation of switchgear
- Describe tests that can be done on switchgear
- Explain switchgear maintenance and schedule
- Review safety procedures critical to switchgear

MAINTAIN TRANSFORMERS

Objective: Manage the testing, troubleshooting and maintenance of transformers

SUBTOPICS:

- Interpret nameplate data
- Describe protection system
- Describe construction of transformers
- Describe maintenance procedures, testing and schedule
- Review safety procedures critical to power transformers

MAINTAIN INSTRUMENT TRANSFORMERS

Objective: Manage the testing, troubleshooting and maintenance of instrument transformers

SUBTOPICS:

- Describe CT operation and application
- Explain the purpose of IT's in metering
- Explain the purpose of IT's in protection
- Review safety procedures critical to IT's
- Explain testing of IT's

MAINTAIN FUSES

Objective: Manage the application of industrial fuses

SUBTOPICS:

- Describe the various types of fuses
- Review safety procedures critical to fuses
- List the correct steps for removal and restoration of fuses

MAINTAIN BREAKERS

Objective: Manage the testing, troubleshooting and maintenance of breakers

SUBTOPICS:

- Review safety procedures critical to breakers
- List the correct steps for removal and restoration of a circuit breaker
- Describe the operation of electrically operated circuit breaker controls
- Describe the operation of breaker mechanisms
- Explain breaker maintenance and schedule
- Review safety procedures critical to breakers

MAINTAIN RELAYS

Objective: Manage the testing, troubleshooting and maintenance of relays

SUBTOPICS:

- Describe power system disturbances
- Describe the protective functions of various relays
- Interpret relay flags and deduce probable cause

MAINTAIN STARTERS

Objective: Manage the testing, troubleshooting and maintenance of starters

SUBTOPICS:

- Describe various types of starters
- List types of motor protection
- Explain test procedures for starters
- Explain starter maintenance and schedule
- Review safety procedures critical to starters

APPLY COORDINATION

Objective: Manage a coordinated electrical protection system

SUBTOPICS:

- Explain the process of co-ordination
- Interpret time/current curves

MAINTAIN MOTORS

Objective: Manage the testing, troubleshooting and maintenance of motors

SUBTOPICS:

- Describe various types of motors
- Explain test procedures for motors
- Explain motor maintenance and schedule
- Review safety procedures critical to starters

MAINTAIN VSD'S

Objective: Manage the testing, troubleshooting and maintenance of VSD's

SUBTOPICS:

- Describe VFD operation
- Explain VFD maintenance and schedule
- Review safety procedures critical to VFD's

MAINTAIN GENERATORS

Objective: Manage the testing, troubleshooting and maintenance of generators

SUBTOPICS:

- Describe the operation of various types of generators
- Explain test procedures for generators
- Explain generator maintenance and schedule
- Review safety procedures critical to generators

MAINTAIN EMERGENCY SYSTEMS

Objective: Manage the testing, troubleshooting and maintenance of emergency systems

SUBTOPICS:

- Describe various types of emergency systems: batteries, transfers, ties, temporary etc.
- Explain test procedures for operation of these systems

- Explain maintenance and schedule for emergency systems
- Review critical safety procedures

IMPLEMENT CSA Z462/NFPA 70E

Objective: Apply the standards of CSA Z462/NFPA 70E

SUBTOPICS:

- Limits of approach for electrical shock and flash hazards
- Arc flash parameters
- Determine curable burn distance during a short circuit
- Determine energy released during a short circuit
- Techniques for reducing arc flash energy
- Selection of proper personal protective equipment (PPE)

"It gave people with a non-electrical background a better understanding of the electrical field and associated gear. I now feel I can understand what an electrician is telling me. Good course with a wide range of topics."

- Craig Riegling, Devon Canada

Excellent content that will serve as a great reference manual, this is definitely a worth while course."

- Dan Shafransky, Howe Sound Pulp and Paper, Ltd.

" The instructor was excellent and course content was good overall, lots of practical work, which is an absolute necessity in this kind of work"

- Greg Beach, Procter & Gamble

"An excellent hands on course. Very practical, prepare to be challenged!"

- Angie Grier, Procter & Gamble

"Very informative and easy to follow, the course was put in laymen's terms and simplified for ease of understanding. The course was geared to the type of operation that I work in."

- Lloyd Ayotte, Casino Windsor