THE ELECTRICITY FORUM
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Electrical Maintenance Training

Contact us Today for a FREE quotation to deliver this course at your company?s location.

https://www.electricityforum.com/onsite-training-rfq

Preventive maintenance is the key to reducing accidents, saving lives, and avoiding costly breakdowns and work stoppages. This latest Edition has been updated to reflect the latest industry developments and safety strategies. Our Electrical Maintenance training course is your best guide for creating and administering an effective Electrical Preventive Maintenance (EPM) program.

A well-administered EPM program is the surest way to reduce accidents, save lives, and minimize costly breakdowns and unplanned shutdowns of production equipment Learn about preventive maintenance for industrial and commercial electrical systems and equipment, and learn test procedures you can implement at once.

Our Electrical Maintenance Training course is an in-depth examination of the most recent standards governing Electrical Maintenance Practices, NFPA 70b - Recommended Practices For Electrical Equipment Maintenance and CSA Z463 Workplace Electrical Equipment Maintenance Practices. These recommended practices apply to preventive maintenance for electrical, electronic, and communication systems and equipment installed in industrial, commercial and institutional power systems.

This Electrical Maintenance Training course is designed to alert electrical maintenance personnel in utility, industrial, commercial and institutional facilities to the latest North American Electrical Maintenance and Testing Specifications.

These specifications cover the suggested field tests and inspections that are available to assess the suitability for continued service and reliability of electrical power distribution equipment and systems.

The purpose of these specifications is to assure that tested electrical equipment and systems are operational and within applicable standards and manufacturer's tolerances and that the equipment and systems are suitable for continued service. This program will also deal with the important subject of troubleshooting electrical systems and choosing the proper preventive maintenance testing equipment and procedures.

LEARNING OUTCOMES

Upon completion of this course, the participant should be able to:

- Learn How to design and implement a cost-effective electrical maintenance program.
- Learn the essential procedures for the safe operation, repair, testing, and maintenance of major power equipment.
- Students will learn how to establish what electrical maintenance work can be done in-house or contracted out.

WHO SHOULD ATTEND

This comprehensive two-day course is designed to benefit those working in maintenance that desire to increase their practical knowledge of electrical maintenance standards and practices. The course is open to industrial, commercial and institutional electrical engineering and maintenance professionals, plant electricians, electrical maintenance supervisors, field and plant personnel.

STUDENTS RECEIVE

- **FREE** 130-Page Electrical Testing and Maintenance Handbook (Value $20)
- **$100 Coupon** Toward any Future Electricity Forum Event (Restrictions Apply)
- 1.4 Continuing Education Unit (CEU) Credits
- **FREE** Magazine Subscription (Value $25.00)
- Course Materials in Paper Format

COURSE OUTLINE

Instructor:

John Robin, *Arc Flash/Electrical Maintenance/Safety Consultant, The Electricity Forum*

DAY ONE

Part 1
Why Establish an Electrical Preventive Maintenance (EPM) Program
Value and Benefits of a Properly Administered EPM Program EPM and Energy Conservation

Part 2
What is a EPM and what are its benefits?

- Planning an EPM Program
- Personnel Safety
- Equipment Loss
- Production Economics

- Main Parts of an EPM Program
- Programmed Inspections
- Recordkeeping
- Training for Safety and Technical Skills

Part 3
Planning and developing a program

- Survey of Electrical Installations
- Data Collection
- Single Line Diagrams and Data
- Electrical Equipment Installation Change
- Lighting System Diagrams
- Ventilation
- HVAC
- Control and Monitoring
- Emergency Procedures
- Test and Maintenance Equipment
- Identification of Critical Equipment
- Establishment of a Systematic Program
- Inspection Frequency
- Forms, Planning, Records

Part 4
Personal Safety

- Qualification, Tools, Equipment, Training, Arc Flash, NFPA 70e, PPE

Part 5
Fundamentals of Electrical Equipment Maintenance

- Scheduling, cleaning, environmental concerns, equipment additions and retrofits

Part 6
Substations and Switchgear Assemblies

- Insulators
- Conductors
- Air-Disconnecting Switches
- Grounding Equipment
- Enclosures
- Switchgear Assemblies
- Air Circuit Breakers
- Arc Interrupters
- Oil Circuit Breakers
- Interrupter Switches
- Gas-Insulated Substations and Gas-Insulated Equipment
- Maintenance and Repair of the GIS and GIE
- Surge Arresters
- Instrument Transformers and Auxiliary Transformers
- Protective Relays, Meters, and Instruments
- Ground-Fault Indicators
- Network Protectors

Part 7
Power and Distribution Transformers

- Liquid-Filled Transformers
- Regular Inspections
- Current and Voltage Readings
- Temperature Readings
- Liquid-Level Indicator and Pressure/Vacuum Gauges
- Special Inspections and Repairs
- Liquid Maintenance and Analysis

- Fault-Gas Analysis
- Dissolved-Gas-in-Oil Analysis
- Dry-Type Transformers
- Regular Inspections
- Current and Voltage Readings
- Temperature Readings

Part 8
Power Cables

- Visual Inspection
- Aerial Installations
- Raceway Installations
- Cable Testing

Part 9
Motor Control Equipment

- Motor Control Preventive Maintenance Guide
- Components and Maintenance of Motor Controls
- Enclosures
- Bus Bar, Wiring, and Terminal Connections
- Disconnects
- Molded Case Breakers
- Fuses
- Contactors
- Motor Overload Relays — Thermal Types
- Pilot and Miscellaneous Control
- Devices
- Mechanical Interlocks

Part 10

Electronic Equipment

- Care and special precautions

DAY TWO

Part 11
Molded-case Circuit Breakers

- Types of Molded-Case Circuit Breakers
- Phase-Fault Current Conditions
- Ground-Fault Tripping
- Special-Purpose Breakers
- Inspection and Cleaning
- Loose Connections
- Mechanical Mechanism Exercise

Part 12
Ground Fault Protection
Personal and Equipment Protection

Part 13
Fuses

- Fuses Rated 1000 Volts or Less
- Fuses Rated over 1000 Volts
- Installing and Removing Fuses
- Inspection, Cleaning and Servicing
- Replacement

Part 14
Rotating Equipment

- Maintenance, cleaning, Testing
- Stator and Rotor Windings
- Brushes, Collector Rings, and Commutators
- Bearings and Lubrication

Part 15
Lighting

- Cleaning, Relamping, Disposal

Part 16
Wiring Devices and Portable Tools
Heavy-Duty Industrial-Type Plugs, Cord Connectors, and Receptacles Periodic Inspection of Crucial Wear Points Employee Training Cord and Attachment Plug Care

Part 17
Testing and Test methods

- Acceptance Tests and Maintenance Tests
- Frequency of Tests
- Special Precautions and Safety
- Qualifications of Test Operators
- Insulation Testing
- Dielectric Absorption
- Protective Device Testing

- Circuit Breaker Tests
- Transformer Turns-Ratio and Polarity Tests
- Impedance Testing of Equipment Grounding Conductor
- Infrared Inspection
- Meggaring, Continuity, Hi-Pot testing of equipment

Part 18
Uninterruptible Power Supply (UPS) Systems

- UPS System Maintenance Procedures — General
- System Tests, Routine Maintenance, Special Tests

Part 19
Power Quality

- Harmonics
- Transients (Surges)
- Voltage Sags and Swells
- Long-Duration Undervoltages and
- Sustained Voltage Interruptions
- Unbalanced Voltages and Single Phasing
- Symptoms — Grounding
- Voltage Fluctuations and Flicker

Part 20
Grounding

- Symptoms and Causes of Inadequate Grounding
- Grounding System Inspection, Testing, and Monitoring
- Solutions to Inadequate Grounding

Part 21
Supervisory Control and Data Acquisition (SCADA)

- Concurrent Maintenance
- Preventive Maintenance
- Testing
- Reliability-Centered Maintenance (RCM)

Part 22
EPM from Commissioning (Acceptance Testing) Through Maintenance

- Commissioning Planning Stages
- Submit Functional Performance Tests (FPTs)
- Costs of Commissioning, New Construction
- Suggestions for Inclusion in a Walk-Through Inspection Checklist

Part 23
Single line Diagrams and Symbols

Part 24
Forms to Document all Tests and Inspections

- Battery inspections
- Breaker Inspections
- Test Results
- Transformer tests, inspections,
- Ground System Tests
- Long-Term Maintenance Guidelines

COURSE SCHEDULE

Both days:

Start: 8:00 a.m.
Coffee break: 10:00 a.m.
Lunch: 12:00 noon
Finish: 4:30 p.m.

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