Content
Community
Connection

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Electrical Maintenance Safety Training

Course details: https://www.electricityforum.com/electrical-training/high-voltage-electrical-maintenance-training

Medium and High Voltage Electrical Maintenance and Testing of electric power systems is essential to the safe operation of any electrical system, regardless of its size, type or industry. Electrical worker inexperience and poor electrical maintenance planning will inevitably result in costly equipment failure, downtime and productivity losses, not to speak of the risk of electrical safety accidents, injury and death.

The importance of planning, programming and implementing electrical maintenance practices will be emphasized. This course also deals with safety considerations involved in electrical maintenance procedures for all the components of any electrical system. This will be an interactive forum where the instructor will lead the discussion between students so to maximze the educational experience.

STANDARDS GOVERNING ELECTRICAL MAINTENANCE

This course on electrical maintenance standards, procedures and solutions to electrical maintenance and testing problems will deal with specific issues relating to electrical testing and troubleshooting procedures and equipment selection, and is based on the following standards:

This presentation is designed to alert Canadian electrical maintenance personnel in utility, industrial, commercial and institutional facilities to the latest International Electrical Testing Association (NETA) Maintenance and Testing Specifications. These NETA maintenance 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.

WHO SHOULD ATTEND

This course is a must for electrical engineers, electrical maintenance personnel, plant electricians, electrical contractors, power specialists, maintenance managers, consultants and technologists responsible for the design, construction, installation, inspection, operation, or maintenance of electrical systems, electrical technicians, inspectors, safety personnel and other employees responsible for the operation and maintenance of electrical systems in a commercial, industrial, institutional or utility setting.

COURSE OUTLINE

MV/HV Electrical Maintenance And Testing of Electric Power Systems

Course Instructor

John Robin, *Electrical Maintenance Consultant, The Electricity Forum*

DAY ONE

SESSION 1: INSULATION MATERIALS AND TESTING METHODS

- Review of insulation materials and the methods to quickly and accurately diagnose insulation quality.
- Qualities of good insulation and factors affecting deterioration
- Methods of testing insulation and interpretation of test results

SESSION 2: POWER CABLE TESTING

- Cable construction and the methods to splice or terminate the various types of cable.
- Electrical code and splicing
- Difference between hot shrink stress cones and Cold shrink
- Examples of Stress cones and failure caused by poor installation
- Videos on stripping high voltage cable for termination
- Example of stripping high voltage cable
- Construction of shielded and non-shielded cable
- Cable installation methods
- Methods of testing cables and interpretation of test results

SESSION 3: POWER TRANSFORMER TESTING

- Review: Function and operation of electrical transformers.
- Interpret nameplate data
- Air cooled versus oil cooled; benefits and drawbacks
- Transformer protection systems
- Design and construction of power transformers
- Proper oil sampling methods
- Testing and scheduling maintenance procedures

- Recommendations for testing from CSA Z463 , Canadian maintenance standards
- Electrical safety procedures for power transformers

SESSION 4: INSTRUMENT TRANSFORMER TESTING

- Instrument transformer operation and application
- Current transformer operation and application
- Purpose of instrument transformers in metering
- Safety procedures critical to instrument transformers
- Testing of instrument transformers

SESSION 5: BREAKERS AND SWITCHGEAR

- Various types of power switchgear
- Difference between Switches and Breakers
- Operation of switchgear
- HV switchgear tests
- Switchgear maintenance and schedule
- Switchgear safety procedures

SESSION 6: CIRCUIT BREAKER MAINTENANCE

- Various types of circuit breakers
- Safety procedures critical to circuit breakers
- Correct steps for removal and restoration of a circuit breaker
- Operation of electrically operated circuit breaker controls
- Operation of circuit breaker mechanisms
- Maintenance on Oil Circuit Breakers, SF6 and Vacuum Circuit Breakers

SESSION 7: POWER FUSE TESTING

- Function of power fuses.
- Various types of fuses
- Testing fuse integrity and reliability
- Safety procedures when working with power fuses
- Correct steps for removal and restoration of power fuses

DAY TWO

SESSION 8: ELECTRICAL SAFETY AND ARC FLASH AWARENESS

- Define the Flash Protection boundary
- Define the two CSA Z462 shock protection boundaries and describe their use
- Identify the key objectives of job safety planning
- List the personal protective equipment required for shock protection
- List the steps to install and remove temporary protective grounding equipment
- Explain what an arc flash is and the injuries that can result
- Identify when an arc flash hazard exists
- Difference between “arc-rated” and “flame-resistant” clothing
- Select appropriate personal protective equipment for arc flash hazards using table

SESSION 9: PROTECTIVE RELAYS

- Principles and operation of protective devices.
- Power system disturbances
- Protective functions of various relays
- Relay settings and understanding probable problems

SESSION 10: POWER SYSTEM CO-ORDINATION

- Principles of co-ordination of protective devices.
- Process of power system co-ordination
- Interpreting time/current curves
- Videos on Coordination studies

SESSION 11: POWER SYSTEM STARTERS

- Operation of high voltage starters
- Various types of starters
- Types of motor protection
- Test procedures for starters
- Safety procedures critical to starters

SESSION 12: ELECTRIC MOTOR TESTING

- Operation of large horsepower motors.
- Various types of electric motors
- Test procedures for motors
- Motor maintenance and schedule
- Safety procedures critical to motor starters

SESSION 13: CAPACITOR TESTING

- Operation of high voltage capacitors.
- Various types of capacitor installations
- Test procedures for capacitors
- Safety procedures critical to capacitors

SESSION 14: GENERATOR MAINTENANCE

- Operation of high voltage generators.
- Operation of various types of generators
- Test procedures for generators
- Generator maintenance and schedule
- Safety procedures critical to generators

SESSION 15: EMERGENCY POWER SYSTEM TESTING

- Operation of various high voltage emergency power systems.
- Various types of emergency systems: batteries, transfers, ties, temporary etc.
- Test procedures for operation of these systems
- Maintenance and schedule for emergency systems
- Critical safety procedures

COURSE TIMETABLE

Both days:
Start: 8:00 a.m.
Coffee Break: 10:00 a.m.
Lunch: 12:00 noon
Restart: 1:15 p.m.
Finish: 4:30 p.m.

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