

Power & Controls

Industrial Switchgear Maintenance

General Information

Course Code: SCT-EMISGM1A

Length: 5 Days

Audience

Personnel responsible for the daily operation and maintenance of Medium and Low Voltage Switchgear and Motor Control.

Profile

3.5 CEUs (Continuing Education Credits)

The Industrial Switchgear and Motor Control course provides the basic skills required to safely operate and maintain Medium Voltage switchgear, Low Voltage Switchgear, Medium Voltage Control and Low Voltage Motor Control Centers. Classroom instruction, video tapes, and demonstrations on typical equipment are employed. Sample circuit breakers are used for trouble shooting and replacement of typical parts.

The students will perform maintenance procedures on the equipment. Proper methods for performing the insulation resistance test, dielectric and vacuum integrity test, and contact resistance test are demonstrated and completed by the students.

Additional equipment, typically found on medium and low voltage switchgear and control such as protective relays and metering devices, is discussed.

Typical electrical drawings are employed to develop the ability to follow the schematics and wiring diagrams for the electrical operation of the equipment.

Each student receives an instruction book containing the relevant instruction manuals pertaining to the equipment and peripheral equipment such as digital meters and the electronic protective relays and other relevant information including a list of the IEEE device numbers.

Objectives

Upon completion of this course, the student shall be able to:

- Perform proper safety procedures
- Identify MV & LV switchgear and its ratings
- Identify MV & LV motor control and its ratings
- Identify Insulated case circuit breaker ratings
- Identify Molded case circuit breaker ratings
- Proper and safe racking procedure
- Perform Rack out - Lock out - Tag out procedure
- Verify operation of protective interlocks
- Perform Mechanical and Electrical operation
- Locate and replace close and trip coils and motor
- Interpret Siemens schematics and wiring diagrams
- Proper lubrication of truck and cubicle
- Test insulation and vacuum integrity
- Measure contact resistance

Topics

1. Safety procedures around Electrical Equipment
2. Introduction to Switchgear Ratings
3. Handling, storage and assembly
4. Circuit breaker and Motor control ratings
5. Cable and control wiring connections
6. PT and CPT units
7. Current Transformer safety
8. Circuit breaker racking procedures
9. Rack out, Lock out, tag out procedures
10. Explanation of Vacuum Interruption
11. Disassembly for maintenance
12. Replacing Trip coil, closing coil, and charging motor
13. Lubrication
14. Insulation testing (Megger)
15. Dielectric testing (High Potential)
16. Vacuum integrity testing
17. Contact resistance test (Ductor)
18. Setting the Static Trip
19. Testing the Static Trip with PTS-4 test set
20. Trip unit interchangeability
21. Setting the digital meter
22. Interpreting electrical drawings
23. Modern protective devices