



## MV Circuit Breakers Design, Application and Maintenance Training

### Description

#### Course Description

Participants will learn safe and proper maintenance and testing procedures on a variety of 480V circuit breakers, including Siemens, ABB, Westinghouse, GE, Square D, Federal Pioneer, and ITE. Topics for Low-Voltage Circuit Breakers will include maintenance and adjustment requirements, as well as insulation resistance, contact resistance and high current primary injection tests.

Participants will also learn safe and proper maintenance and testing procedures on a variety of 4160V & 13,800V circuit breaker manufacturers. Topics for Medium-voltage circuit breakers will include maintenance and adjustment requirements, as well as insulation resistance, contact resistance, high potential and power factor testing.

All testing and maintenance is done in accordance with manufacturers specifications and recommendations, NETA, ANSI and NEMA standards

#### Course Objective

- Use manufacturer instruction literature and established industrial standards to perform required inspection, checks, lubrication, and adjustments on both low and medium voltage circuit breakers.
- How to perform insulation resistance test on both low and medium voltage circuit breakers and interpret test data.
- How to perform contact resistance test on both low and medium voltage circuit breakers and interpret test data.
- How to perform a high current primary injection test on low voltage circuit breakers and interpret test data.
- How to perform high potential test on medium voltage circuit breakers and interpret test data.
- How to perform a power factor / dissipation factor test on medium voltage air & vacuum circuit breakers and interpret test data

#### Course Outline

- Circuit interrupters up to 34.5 kV.

- Switching problems.
- Fault analysis (simple methods, Symmetrical components & PU systems).
- Breaking and making capacities.
- Theory of circuit interruption with different switching mediums.
- Circuit breaking under unfavorable operating conditions.
- Circuit interruption in different mediums (OCB, VCB, Sf6 CB & ACB)
- Ratings & de-ratings of Circuit breakers.
- Anti-pumping & trip supervision relays.
- Safety features of MV switchboards.
- Comparison of interrupting devices.
- Operating mechanisms.
- Protective relay fundamentals.
- Arc flashing & Electric hazards.
- Authorizations for operation MV switchgear.
- Tests & commissioning of MV switchgear.
- Trouble shooting of different circuit breaker failures.
- Preventive maintenance of MV CBs.
- Maintenance work instructions.
- Related IEC/ANSI standards.

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