

COURSE DESCRIPTION

# INTCV384 HV/MV Switchgear (CB, CT/CVT, DS & Surge Arrestor) O&M (AIS & GIS) – Level 1



#### The goal

The goal of the course is to provide a complete foundational understanding of the internal and external elements of the Circuit Breakers, CT /CVT, Disconnector, Surge Arrestor and Gas Insulated Switchgears (GIS) and the critical aspects of operation and maintenance.

#### Learning objectives

Upon completion of this course, participants will be able to:

- Become conversant in fundamentals of switchgear design, application and construction.
- Understand critical elements of switchgear operation and maintenance.
- Identify content of electrical safe work programe, understand process for care and use of personal protective equipment and understand hazards.

#### **Participant profile**

This course is designed for trainees and engineers responsible for the maintenance and testing of industrial and utility substations. (Less than 5 years' experience)

#### Prerequisites

- Degree or diploma in engineering, basic knowledge of power system.
- This course requires working knowledge of basic electricity. Students must wear safety toe shoes or boots while entering the labs. No shorts or sandals will be allowed.

# Topics

#### Circuit Breakers (HV & MV)

- Sulphur hexafluoride (SF<sub>6</sub>) Properties, pressures, density switch, moisture, safety & environment.
- Fundamentals of circuit breakers arc extinguishing the arc in SF<sub>6</sub>and vacuum circuit breakers

- Design & functioning of circuit breaker components – Pole construction, operating mechanisms, operating sequences of interrupting chamber, name plate data
- Control schematics of circuit breakers manufacturing.
- Maintenance plan, tools required for maintenance,
- Site testing
- Trouble shooting
- Practical work on circuit breakers and associated operating mechanism, testing demonstration in training center switchyard and manufacturing unit.

#### Instrument Transformers (CT/CVT)

- Fundamentals of CTs & CVTs.
- Theory on working of CTs & CVTs.
- Construction, Name plate data.
- Maintenance plan, tools required for maintenance.
- Practical Demo manufacturing of CT & CVT, testing, oil sampling, DGA in training center switchyard and manufacturing unit.
- Site testing
- Trouble shooting

#### Disconnector

- Product design & operation current path, support insulator, base frames, linkages, operating mechanism
- Maintenance and inspection
- Site testing.
- Practical demo of various components of disconnector, operation of disconnector in training center switchyard and manufacturing unit.

#### Surge Arrestor

- Need of overvoltage protection, Handling of overvoltages.
- Surge arrester: Definition, use, features, function, and construction.
- Applicable standards.
- Maintenance, troubleshooting and site testing.

#### Gas Insulated Switchgear (GIS)

- Comparison of AIS V/s GIS, Salient features,
- GIS Components Circuit Breaker, Current Transformer, Voltage Transformer, Isolator, Fast acting earth Switch, Enclosures, Insulators

- Different Interconnection arrangements
- Construction and operation of GIS
- Operation and Maintenance
- Troubleshooting
- Site Testing & care

**Safety:** standards and regulations, safe work procedures, and usage of personal protective equipment

• Case Studies, Q & A, Open Discussion

# Course type

This is an instructor led seminar with practical demonstration at experience center demo room, switchyard and guided tour to manufacturing facilities. The language of the course is English.

# Learning methods and tools

Lectures, demonstrations, practical exercises. Laptop or tablet is required to have access to the e-documentation. Please bring your own device.

# Duration

The duration of the course is Five days.

# To Register:

LMS:-<u>MyLearning</u>

Sign In: check <u>IE browser setting</u> Click SIGN IN to Sign-up or Log-in with your ABB account.

Search: please enter course number INTCV384 into the search field. (Please check the language filter EN)

The latest version of the course portfolio, and course schedule can be found on our

#### ABB PowerTEC Webpage :

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