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 (SF₆) – Properties, pressures, density switch, moisture, safety & environment.
• Fundamentals of circuit breakers - arc extinguishing the arc in SF₆ 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 Arrester
• 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:- MyLearning
Sign In: check IE browser setting 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:
http://new.abb.com/service/abb-university/india
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