Course description
INTCB-LS04
Difference between IEC 60439 & IEC 61439

Course goal
The goal of the course is to improve the ability of Personnel from Process Industries & Infrastructure sector Customers and Consultants responsible for engineering, commissioning, operation and Maintenance of Low Voltage switchgear to use and select the Low voltage products in better way.

Learning objectives
Upon completion of this course, attendees shall be able to:
- Familiar and understand the requirements of IEC standards for Low Voltage switchgear.
- Familiar with ABB MNS switchgear, its operation & construction for ease of operation and its maintenance.
- Understand the critical elements of MNS switchgear such as Busbars, Modules, Starter, Incomer, selection of equipments.

Participant profile
Personnel from Process industries and Consultants responsible for engineering, commissioning, operation and Maintenance of substations

Prerequisites
Degree or diploma in engineering, basic knowledge of Electrical power distribution

Topics
- Conventional Switchgears (MNS 3.0 / MNS R)
  - Class Room Module:
    - Construction of MNS switchgear
    - Difference between Conventional & Intelligent switchgears
    - Difference between MNS 3.0 & MNS R Switchgears
    - Type of Applications
    - Type of Modules (WD / Plugin / Fixed)
    - Difference between Power & Auxiliary circuit
    - Type of SCPD & It's importance
    - Applicable Standards

- Intelligent Switchgears (MNS with Relay Solution)
  - Class Room Module:
    - Difference between Conventional & Intelligent Relay solution
    - Type of Relay solution in LPLS
    - Introduction to M10x relays & it's advantages over conventional solution
    - Identification of type of M10x relays & it's accessories
    - Communication features of M10x relays
    - Brief Introduction to UMC relay solution in MNS switchgear
  - Field Module (Factory Visit & Demonstration)
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Integrated Intelligent Switchgears (MNS iS)
- Class Room Module:
  - Product Presentation on MNS iS
  - Difference between Intelligent Relay solution & MNS iS
  - MNS iS Components (MLink, MControl, MView etc)
  - advantages over conventional & Relay solution
  - Communication features of MNS iS
  - Introduction to MNavigate
- Field module (Factory visit & demonstration)

Introduction of Applicable IEC Standards
- Class Room Module:
  - List of Standards applicable for Low Voltage switchgear
  - Introduction to IEC61439-1/2
  - Difference between IEC60439 & IEC61439
  - Types of Testing (Type test / Routine test)
  - Internal arc test as per IEC61641
  - Ingress protection as per IEC60529

Course type and methods
This is an instructor led seminar (practical exercises where ever applicable). The language of the course is English.

Course duration
The duration of the course is one day.
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Course Outline

Day 1

- Introduction to IEC 61439-1 & 2
- Difference between IEC 60439 & IEC 61439
- Major Technical Changes with respect to IEC 61439
- Manufacturer Compliance
- Validation of Type Test certificates carried out inline with IEC60439