

## 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 it's 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
<ul style="list-style-type: none"><li>■ Introduction to IEC 61439-1 &amp; 2</li><li>■ Difference between IEC 60439 &amp; IEC 61439</li><li>■ Major Technical Changes with respect to IEC 61439</li><li>■ Manufacturer Compliance</li><li>■ Validation of Type Test certificates carried out inline with IEC60439</li></ul>

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