

## Course description

# INTCB-LS01

# MNS Low Voltage Switchgear Conventional & Intelligent Solutions

## 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>■ History of Switchgear Evolution</li><li>■ Conventional &amp; Intelligent Switchgears</li><li>■ MNS Switchgear Overview</li><li>■ Classification of MNS Switchgear</li><li>■ Brief on Equipment selection for LV Switchgear</li><li>■ Shopfloor Visit &amp; Hands on experience</li><li>■ Routine Verification Test</li></ul>

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