MNS iS
The Intelligent MCC
MNS iS
The MCC evolution

Introduction
Performances
Mechanical characteristics
Cubicle design
Components
Connection & Communication
Software
MService

Traditional MCC

Intelligent relays

MCC with integrated intelligence
MNS iS
The intelligent MCC

- Integrated intelligence on board
- Designed to be connected with ECS & DCS
- “Condition Monitoring” for proactive maintenance
- Front access to power cables (wall standing installation)
- Power and control cables segregated
- Seismic execution
MNS iS
Electrical characteristics

- Rated current (main busbars) 6300A
- Short Circuit current 100kA - 1s
- Rated peak withstand current 250 kA
- Arc proof execution up to 100kA x 0,3s - 400V
- Rated Insulation voltage 1000Vac – 1500Vdc
- Rated frequency 50/60Hz
MNS iS
Mechanical characteristics: from IP20 up to IP 54

First digit: protection against solid foreign objects
- 0 = No protection
- 1 = solid bodies > 50mm
- 2 = solid bodies > 12mm
- 3 = solid bodies > 2.5mm
- 4 = solid bodies > 1mm
- 5 = dust protected

Second digit: protection against water
- 0 = No protection
- 1 = vertically dripping water
- 2 = dripping water (15° tilted)
- 3 = sprayed water (60° tilted)
- 4 = splashing water (all direction)
Multifunction wall:

- Segregation and insulation of the distribution busbars
- Segregation of the main busbar from the functional units
- Free Fault zone: sensible reduction of possible to have an internal arc
- IP2X guarantee also with drawers removed
MNS iS
Mechanical characteristics

Dimensions (mm)
- Height: 2200
- Width: 400, 600, 800, 1000, 1200
- Depth: 400, 600, 800, 1000, 1200
- Basic grid size (DIN 43660): E=25mm

Surface protection
- Frame: Alu - Zinc coated
- Internal subdivision: Alu - Zinc coated
- Transverse section: Alu - Zinc coated
- Painting: RAL7035
MNS iS
Mechanical characteristics

Main busbars position
- Upper
- Lower
- Upper & Lower (double busbars system)

Busbar Treatment
- Bare
- Silvered
- Tin Plated
MNS iS
Cubicles design

- Main busbars (front access)
- Auxiliary compartment (MControl, MLink)
- Power cables compartment
- Drawers compartment (MStart, MFeed)
- Control panel (MView)
The main components of MNS iS are:

1. **MStart/MFeed** drawer units with “power parts”
2. **MControl** protection and control unit
3. **MLink** communication interface (up to 60MControl)
4. **MView** Human Machine Interface (touch screen)
MNS iS
Drawers MStart - MFeed

- No traditional thermal overload relays (TOL by MControl)
- Current & voltage sensors
- Temperature sensors on power contacts
- High standardization (spare parts reduction)
- More compact drawers (standard height 6E against traditional 8E)
- 4 programmable Led
- Pad lockable handles
- Safety check on correct location
MNS iS
Metering sensors

- Reliable technology used also for frequency drivers
- Current and voltage measure always available
- High metering accuracy
  - +/- 2% voltage sensors
  - +/- 2% current sensors
- No saturation on current measuring
Protection and control MControl

- Protection functions (TOL, phase lost, undervoltage ….)
- management external input like manual reset push button, emergency push button
- PTC card for motor winding supervision (option)
- I/O (analogs e digitals) that can be increased with additional card
- Reprogrammable
MNS iS
Communication interface MLink

- Collector of MControl signals through internal bus
- Up 60 MControl
- Serial interface to supervision systems
- Possibility of double MLink with redundancy and self diagnostic
MNS iS
Human Machine Interface MView

- HMI Interface
- Control unit based on “Touch screen” technology
- Visualization of all the information coming from the MLink
- Possibility of access restriction by Password
With MConnect is possible the complete integration of the breakers T7, X1 and Emax in to the MNS iS Platform

For the integration breakers must be equipped with the correct trip unit:

- X1      PR332 / PR333
- Emax    PR122 / PR123
- T7      PR332
The MNS iS includes feeders equipped with variable speed drive type ABB ACS 850

- Withdrawable execution up to 55kW, fix version up to 200kW
- ACS850 feeder control and monitoring by MView
- Reduction of the plant consumption through the motor speed control: A pump or fan running at half speed consumes only one eighth of energy.
MNS iS Connections

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Internal and External connections architecture
MNS iS
Internal and External connections protocols

- MControl / MConnect – MLink = Internal protocol
  Master/Slave with RS485 peer to peer communication.
- MLink – MView = Connection with Ethernet TCP/IP
- MLink – OPC Server = Connection with Ethernet TCP/IP
- MLink – Switchgear Navigator = Connection with Ethernet TCP/IP
- MControl – Process control system = Profibus DP with RS485
- MLink – Process control system =
  1. Modbus RTU with RS485/422/232 or Ethernet TCP/IP
  2. Profibus DP / DP V1 with RS 485
  3. Profinet
MNS iS
Possibility of dual redundancy

- Redundant fieldbus communication increases process availability.
- Inbuilt functionality controlling switching command permissions.
- Ability to read information from the system simultaneously by both controller A and controller B.
- Web interfaces are automatically directed to the primary MLink.
MNS iS Software

- MNS Engineering (only ABB Engineers): Used for switchgear configuration and engineering
- MNavigate (ABB & customer): software for information management and setting (like protections)
- MView (ABB & customer): only for visualization of data from switchgear front
MService is the software package to monitor and control the MNS iS system; it offers:

- Proactive maintenance = maintenance only when is needed
- To have a report per each fault and the possible solutions
- To have a complete data logging of the plant
- Reduction of the number and the durance of “out of service”