

Alberto Carini, LPLS Italy, March 2012

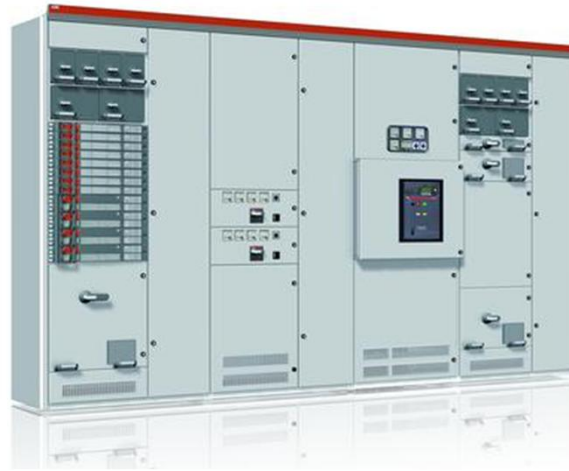
MNS3.0

Product presentation

MNS3.0

The ABB Motor Control Center

Introduction
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- Granted performances
- Electrical performances
- Mechanical Characteristics
- MCC Cubicles

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Granted performances

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Institut "Prüf- und Forschungsanstalt für elektrische Hochleistungstechnik" GmbH
 (Unternehmens- und Handelsregister-Prüfungsanstalt) Independent, accredited test laboratory

IPH BERLIN

TEST CONFIRMATION
 on the given range of performed tests

Client: **ABB Schaltanlagentechnik GmbH**
 Wallstader Straße 59
 D-68526 Ladenburg

Manufacturer: **ABB Schaltanlagentechnik GmbH**

Equipment under test: **Low-voltage switchgear assembly**
 Low-voltage switchgear assembly System WMS 3.8

Type: **Outgoing unit with withdrawable parts 4E, 4E/4, 4E/3, 4E, 1E/4 and 3A 2 of different combinations and incoming unit with circuit breaker NEGANAX F2-2500**

Rated voltage	Rated current	Rated short-time withstand current	Rated impulse withstand current	Degree of protection (IP Code)
690 V	up to 6600 A	100 kA	100 kA	IP 42

Normative document: IEC 60694-1:1999+Corrigendum 1992
 EN 60694-1:1994
 DIN EN 60439 Teil 1 (VDE 0660 Teil 150) 1994-04
 IEC 60614:1996-01
 I TGR 175 902 E (ABB Gebäudetechnik AG, Test 100000500)

Range of performed tests: * Test under conditions of arcing due to internal fault with a prospective short-circuit current of 60 kA and a prospective peak withstand current of 143 kA at a prospective arc duration of 0.3 s and a test voltage of 750 V.

Date of test: 9 and 10 October 1996 and 20 to 21 November 1996

Test result: The equipment under test has fulfilled the criteria 1 to 6 according to IEC 1041:1995-01 and the criteria 15 of I TGR 175 902 E.
 The performed tests are documented in the IPH Test Report No. 117.333.4.973

Dr. Ing. R. Pflüger
 Head of low-voltage test laboratory

Ronald Borchert
 Test engineer

Berlin, 20 January 1997

This document and test results are reproduced in electronic format with approval of IPH.
 The test results are valid only in the scope stated.
 It is not possible to issue a certificate of conformity for the test results. The test results are valid only for the test results.
 The responsibility for the test results is with the customer. The test results are valid only for the test results.
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- 1.2 billion of MNS system installed in the world since 1973
- A long history of tests and certifications
- ASTA certification for internal arc proof up to 100 kA, 300ms at 690V
- Tested according Germanischer Lloyd
- Shock and vibrations test (IABG)
- Seismic test for safety area in nuclear power plants (DLR)

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Electrical performances

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- Rated Current 6300A
- Rated peak withstand current I_{pk} 250kA
- Rated short time withstand current I_{cw} 100kA
- Arc fault containment 100kA x 300ms
- Rated frequency 50/60Hz

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Electrical performances

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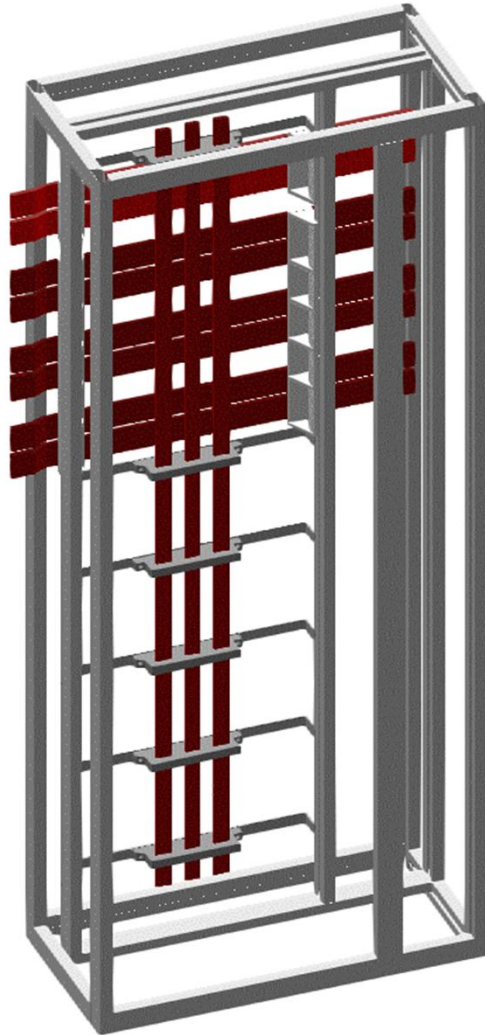


- Rated insulation voltage U_i 1000Vac – 1500Vdc
- Rated operating voltage, U_e 690 Vac – 750Vdc
- Rated impulse withstand voltage 6/8/12kV
- Overvoltage category II / III / IV
- Degree of pollution 3

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Electrical performances

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Main busbar

- Rated current 6300A
- Peak withstand current 250kA
- Short-time withstand current 100kA

Distribution busbars

- Rated current 2000A
- Peak withstand current 176kA
- Short-time withstand current 100kA

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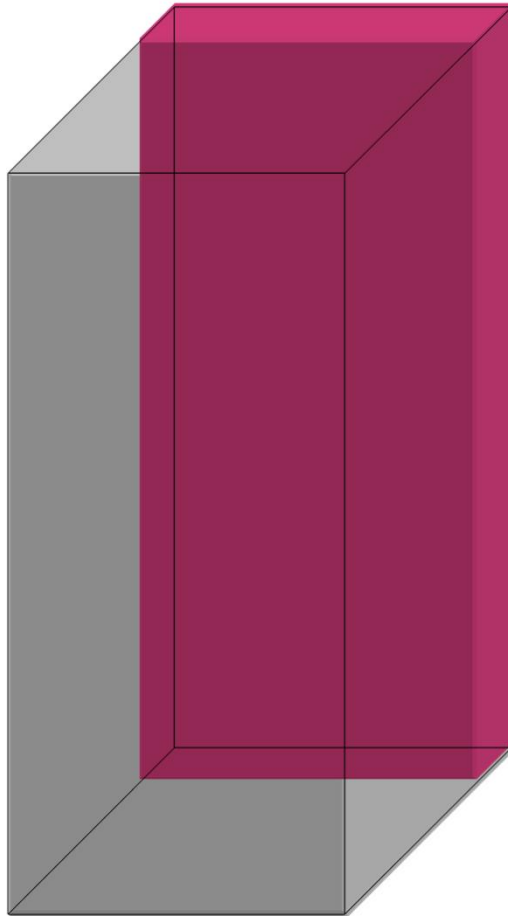


Functional compartments
column with ACB breaker

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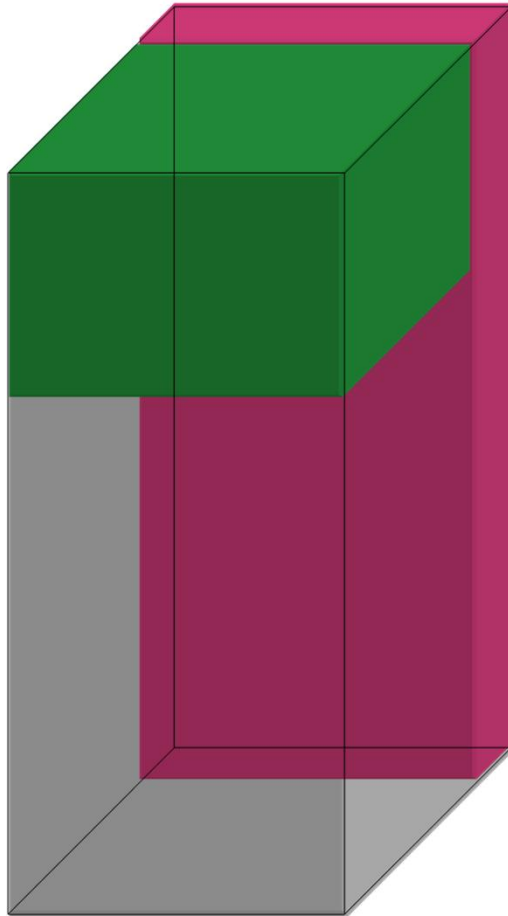
Functional compartments
column with ACB breaker

- Busbar

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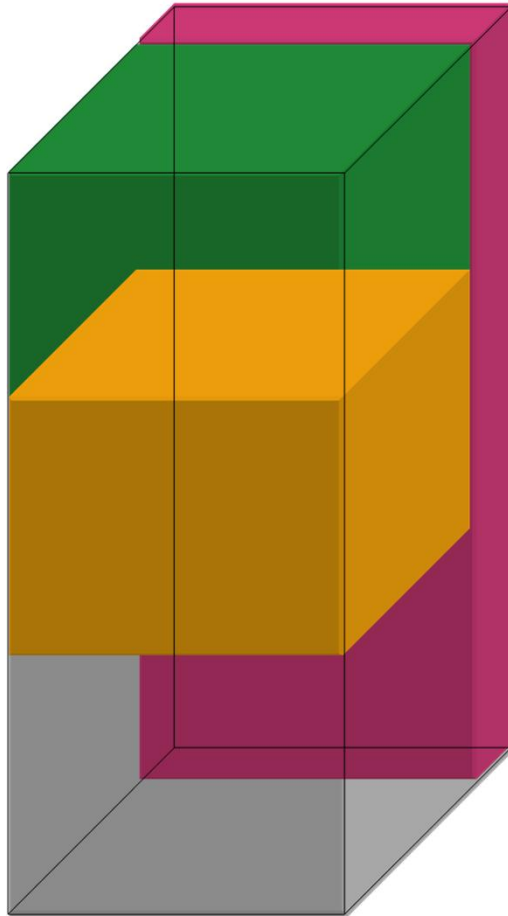
Functional compartments
column with ACB breaker

- Busbar
- Instrumentation

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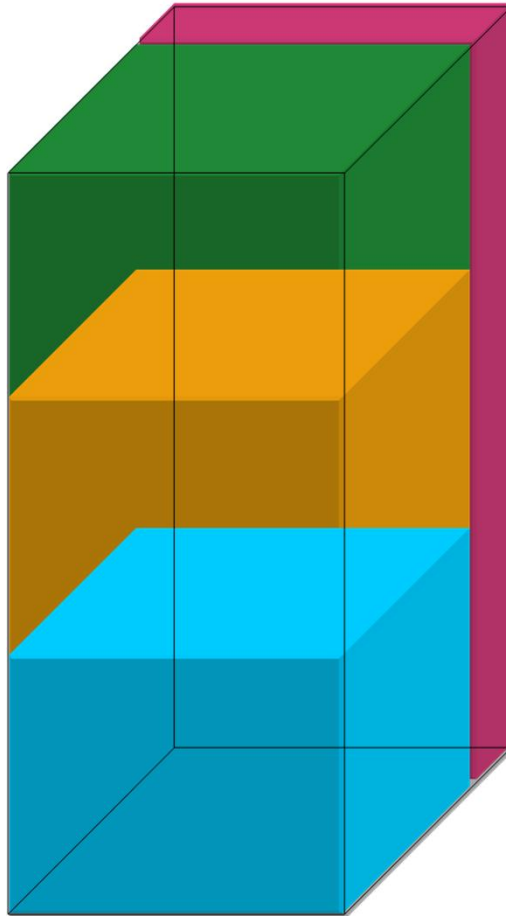
Functional compartments
column with ACB breaker

- Busbar
- Instrumentation
- Air circuit breaker

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Functional compartments
column with ACB breaker

- Busbar
- Instrumentation
- Air circuit breaker
- Cable

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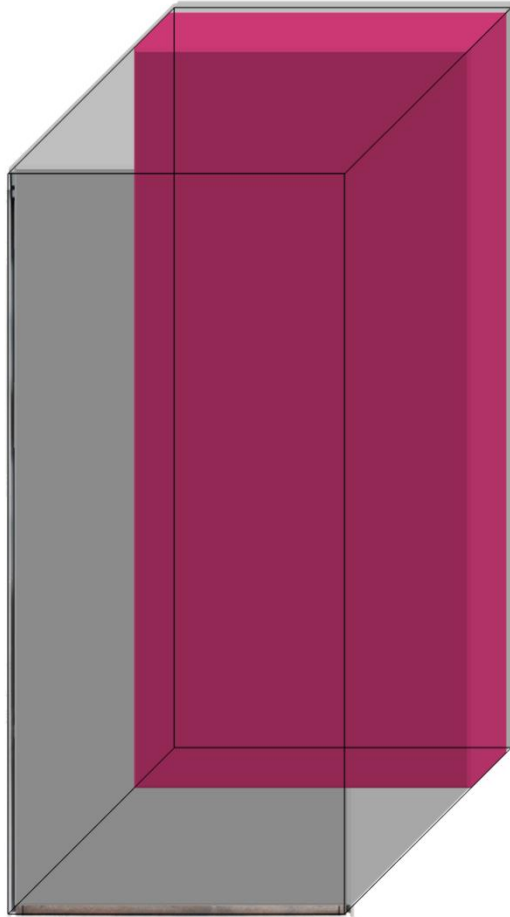


Functional compartments
MCC column

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Functional compartments

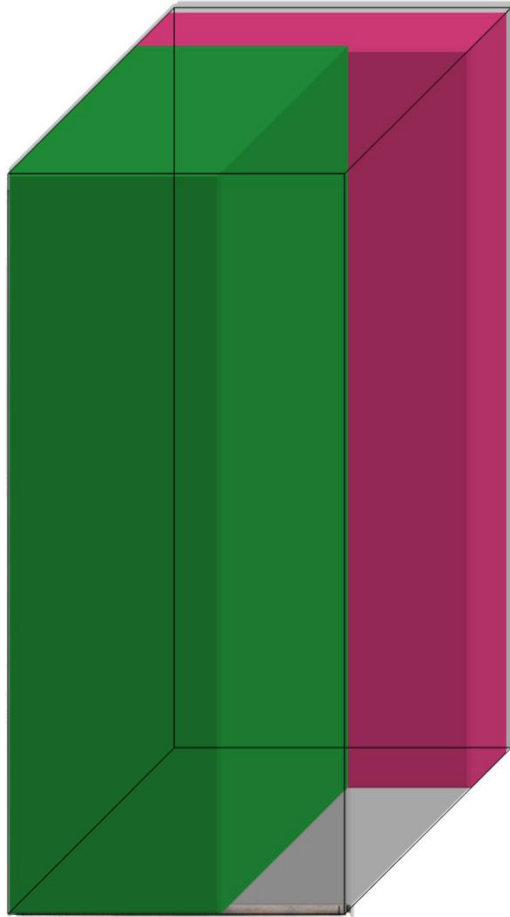
MCC column

- Busbar

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Functional compartments

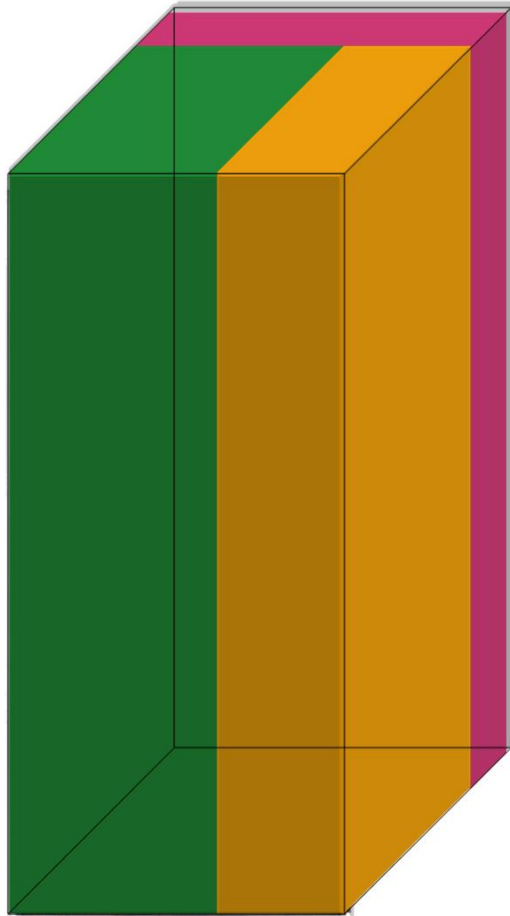
MCC column

- Busbar
- Equipment

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Functional compartments

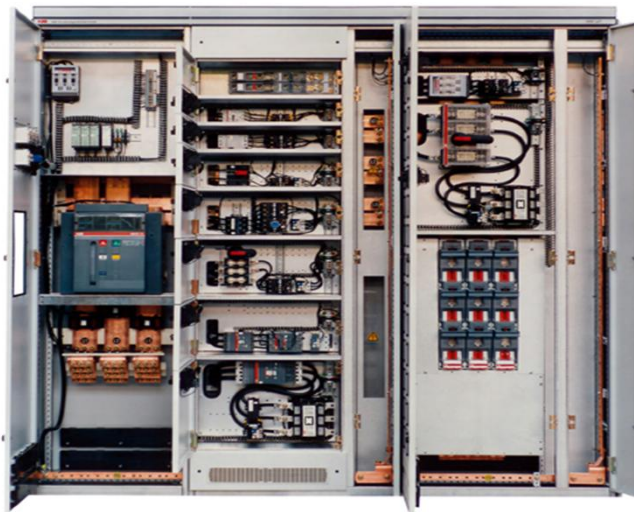
MCC column

- Busbar
- Equipment
- Cable

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Dimensions (mm)

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

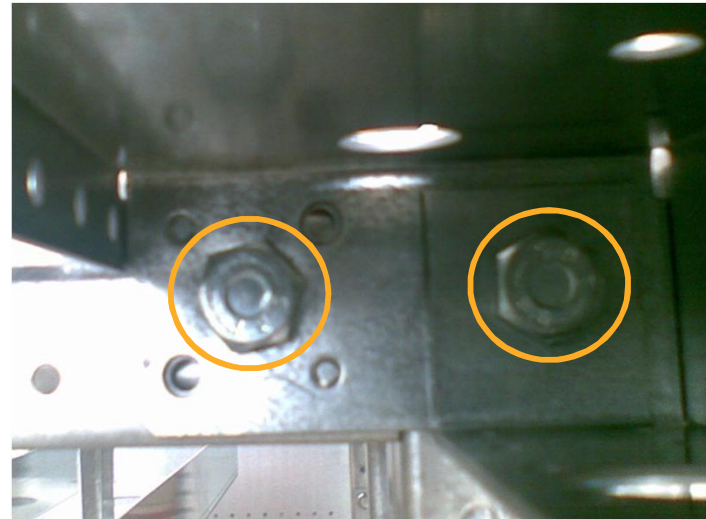
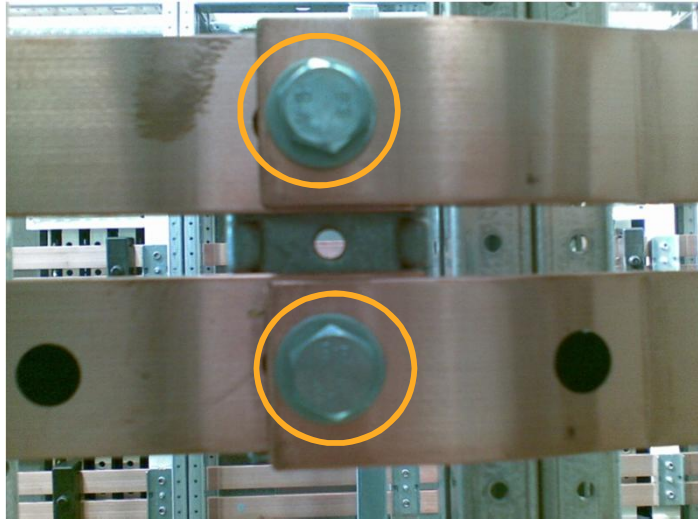
Surface protection

- Frame: Alu - Zinc coated
- Internal subdivision : Alu - Zinc coated
- Transverse section : Alu - Zinc coated
- Painting: RAL7035

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The cubicles structures and the busbars are fixed with special screw and ESLOCK bolts

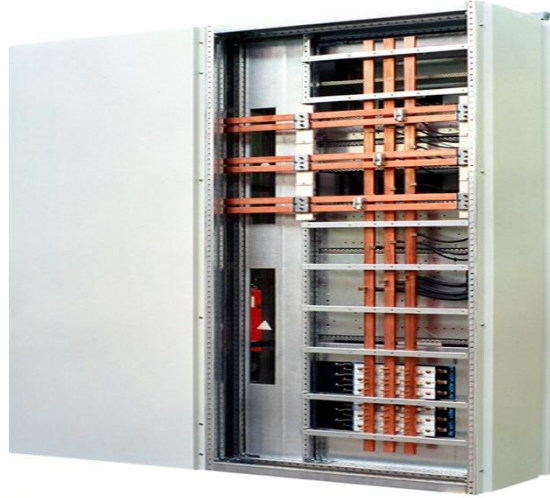


Maintenance free !

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Main busbars position

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



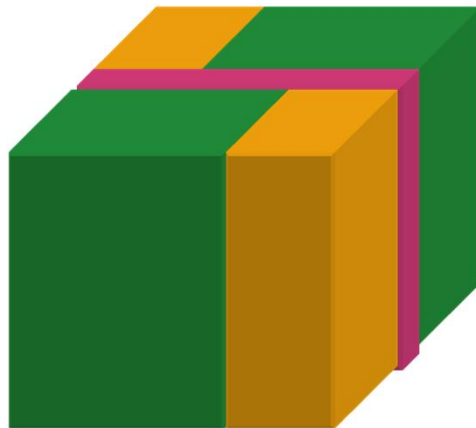
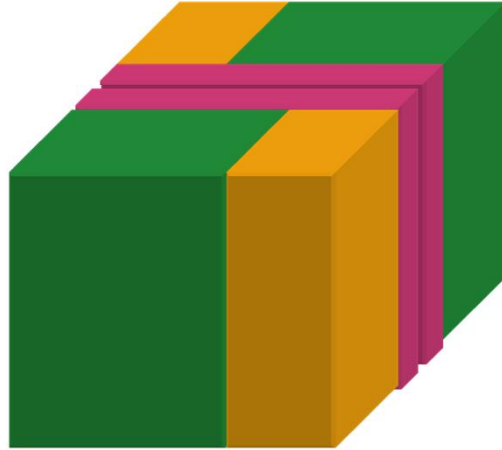
Busbar Treatment

- Bare
- Silvered
- Sleeved

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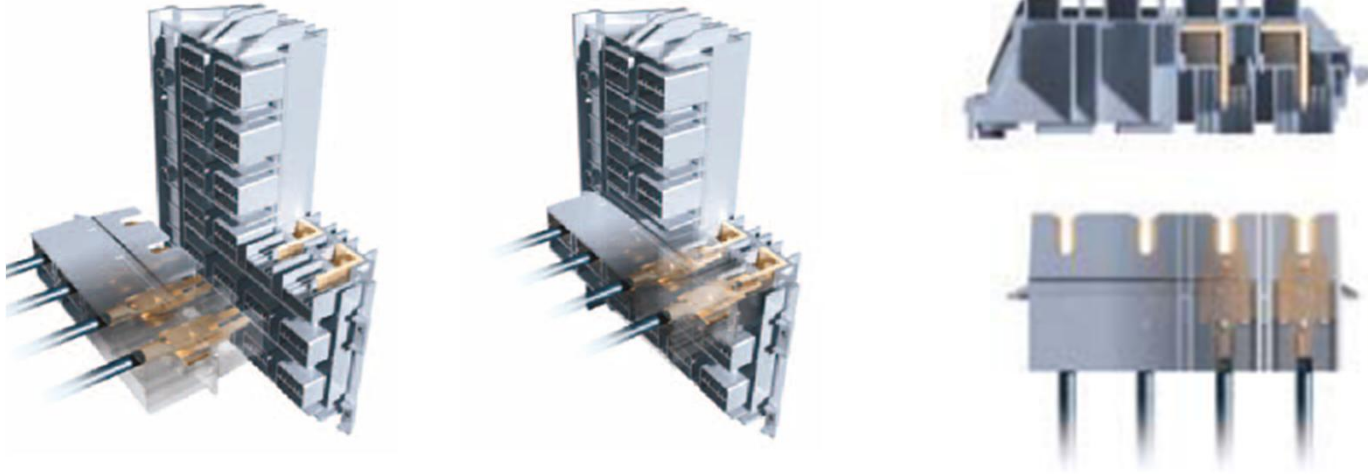
Busbar front access allow wall standing installation and special layout with reduce footprint:

- Back to back : two separated busbar compartments
- Duplex: one common busbar compartment

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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

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Mechanical characteristics : from IP20 up to IP54

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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



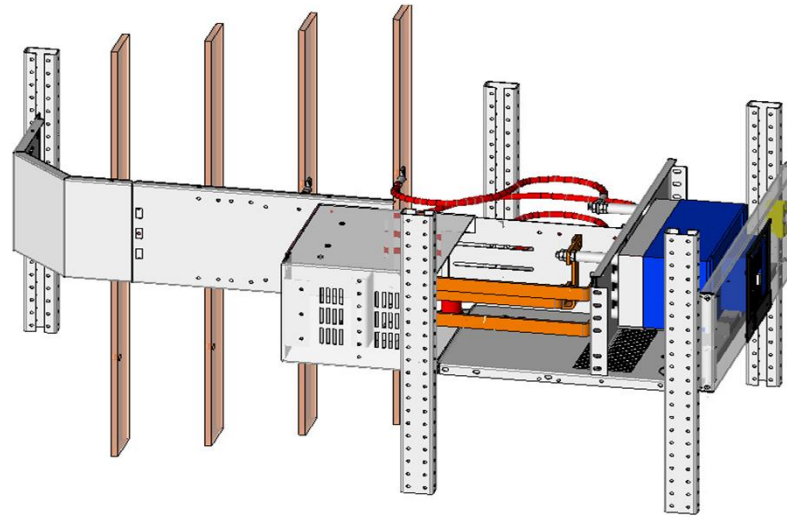
Second digit: protection against Water

- 0 = No protection
- 1 = vertically dripping water
- 2 = dripping water (15° tilted)
- 3 = sprayed water (60° tilted)
- 4 = splashing water (all direction)

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Mechanical characteristics: segregation form up to 4b

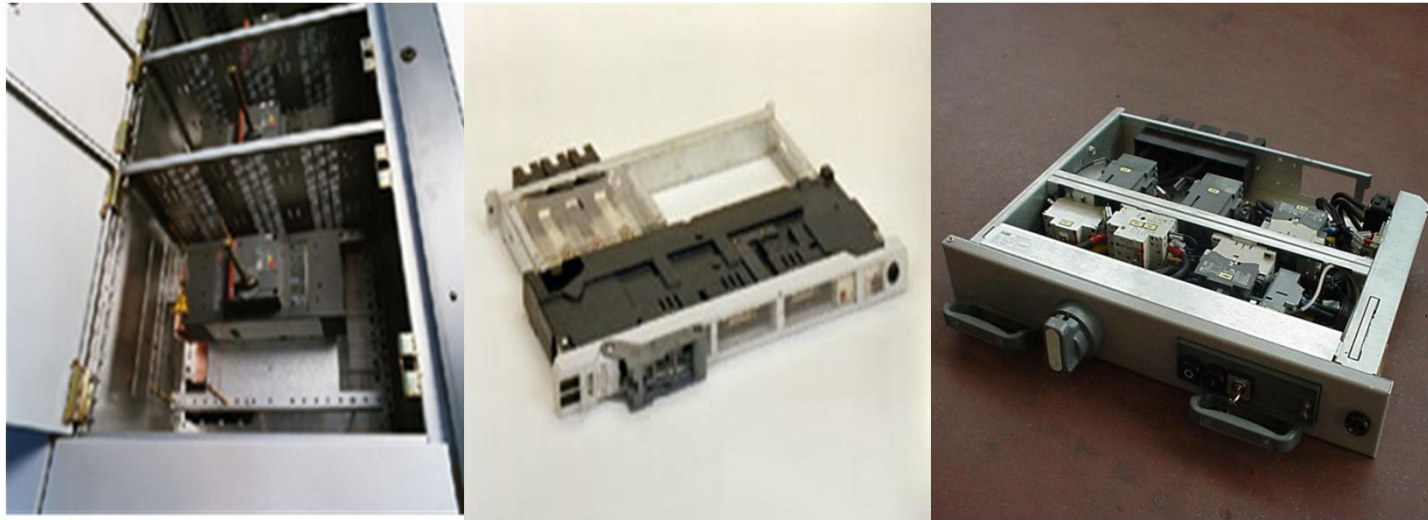
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Form 4b: segregation of the busbars from functional units and between functional units; segregation of the terminals from the functional units and from the busbars; the terminal for external conductors are in the same compartment as the associated functional unit..

MNS3.0 MCC Cubicles

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Wide range of solution

- Fix modules
- Removable modules (SlimLine)
- Withdrawable modules

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	Switch Position	Module position	Main and auxiliary circuits
	ON	insert	All main and control circuit are connected
	OFF Can be locked with 3 padlocks	insert	All main and control circuit are disconnected
	TEST Can be locked with 3 padlocks	insert	All main circuits are disconnected, the control circuits are connected
	MOVE	Insert / insulated / removed	All main and control circuits are disconnected
	ISOLATED Can be locked with 3 padlocks	The module is 30mm draw out of the cubicle	All main and control circuits are disconnected and the isolating distance is fulfilled

Friendly use: all the operations are made with only one switch keeping the highest safety standard

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Modularity and flexibility

- Interchangeable modules
- Possibility to modify the modules layout with reduce “out of Service” time
- Modules for industrial drives and Soft starters
- Reactive power compensation modules

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Unit equipped with variable Speed Drive

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- MNS offer feeders equipped with variable speed drive type ABB ACS 850
- Withdrawable execution up to 55kW, fix version up to 200kW
- Reduction of the plant consumption through the motor speed control: A pump or fan running at half speed consumes only one eighth of energy.

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Intelligent feeders

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- Possibilità di integrare relè multifunzione all'interno dei moduli estraibili
- Ad esempio ABB M102 completo di tutte le funzioni di
 - Protezione (26, 27, 37, 46, 49, 51LR, 66...)
 - Misure (A, V, Hz, kW, kVA, kWh....)
 - Comunication (Profibus DP, Modbus RTU)

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....the best choice for:

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Plant	Larbaa, Algeria
Customer	Sonelgaz
EPC	Ansaldo Energia
Segment	Power
Notes	Total installed power 600MW; 280MW in beginning phase plus 380MW of further extension

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....the best choice for:

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Plant	3SUN Solar modules factory Italy
Customer	3SUN (JV Enel Green Power-Sharp-ST)
EPC	MW Italy Srl
Segment	Industries
Notes	First Italian factory for microfilm solar panel

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....the best choice for:

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Plant

Shah Gas, Abu Dhabi

Customer

ADNOC

EPC

Saipem, Technicas Reunidas, Samsung

Segment

COG

Notes

Target production 1 billion cubic feet a day (cf/d) of sour, or sulphur-rich, natural gas

Switchgears equipped with MSpeed & M102

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Plant

Colt data center, Italy

Customer

Colt Telecommunications

Installer

Atel Sesti

Segment

Data Center

Notes

Total installed power 8MVA; supplied 800 PDU's

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for a better world™

