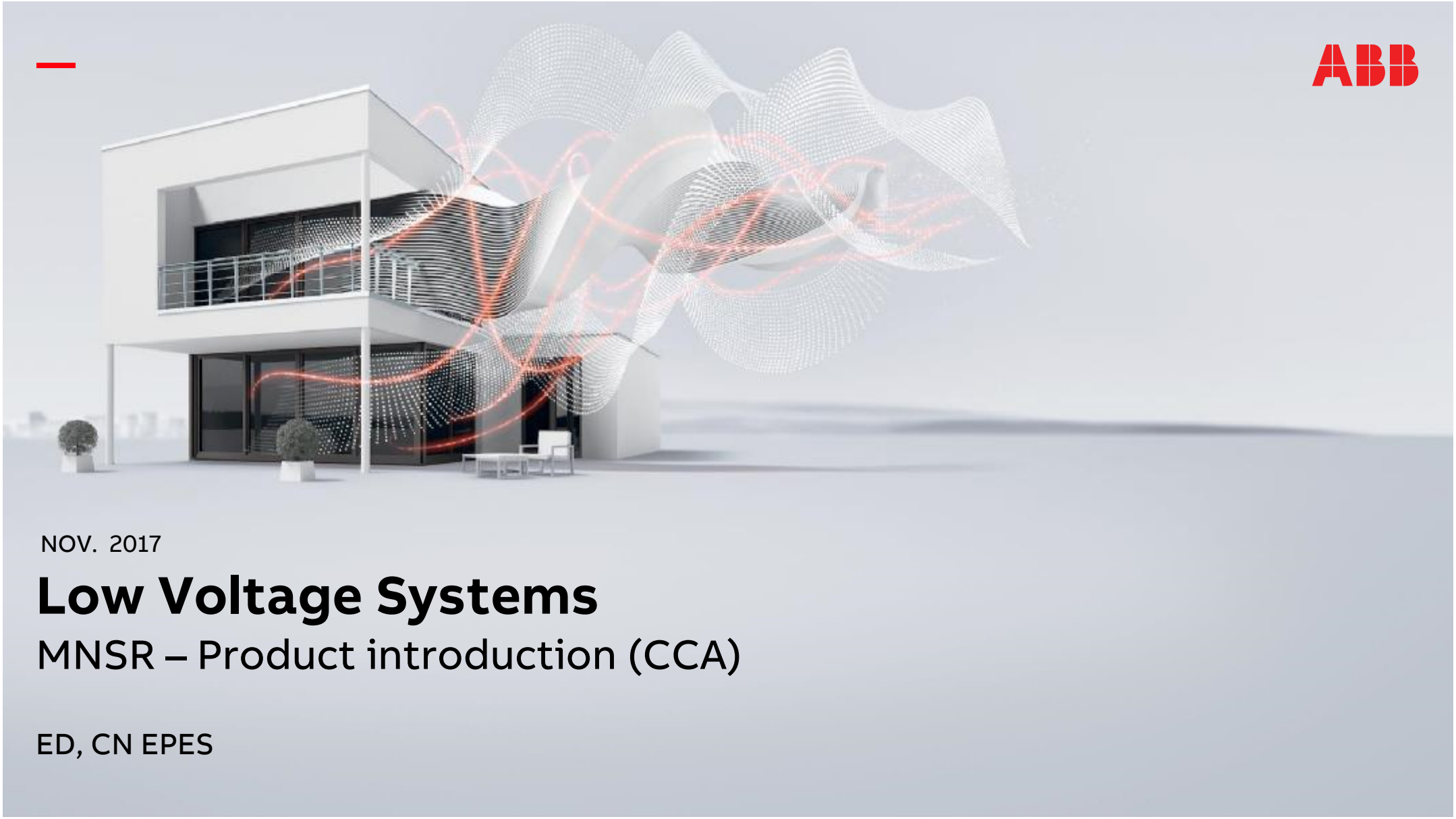


NOV. 2017

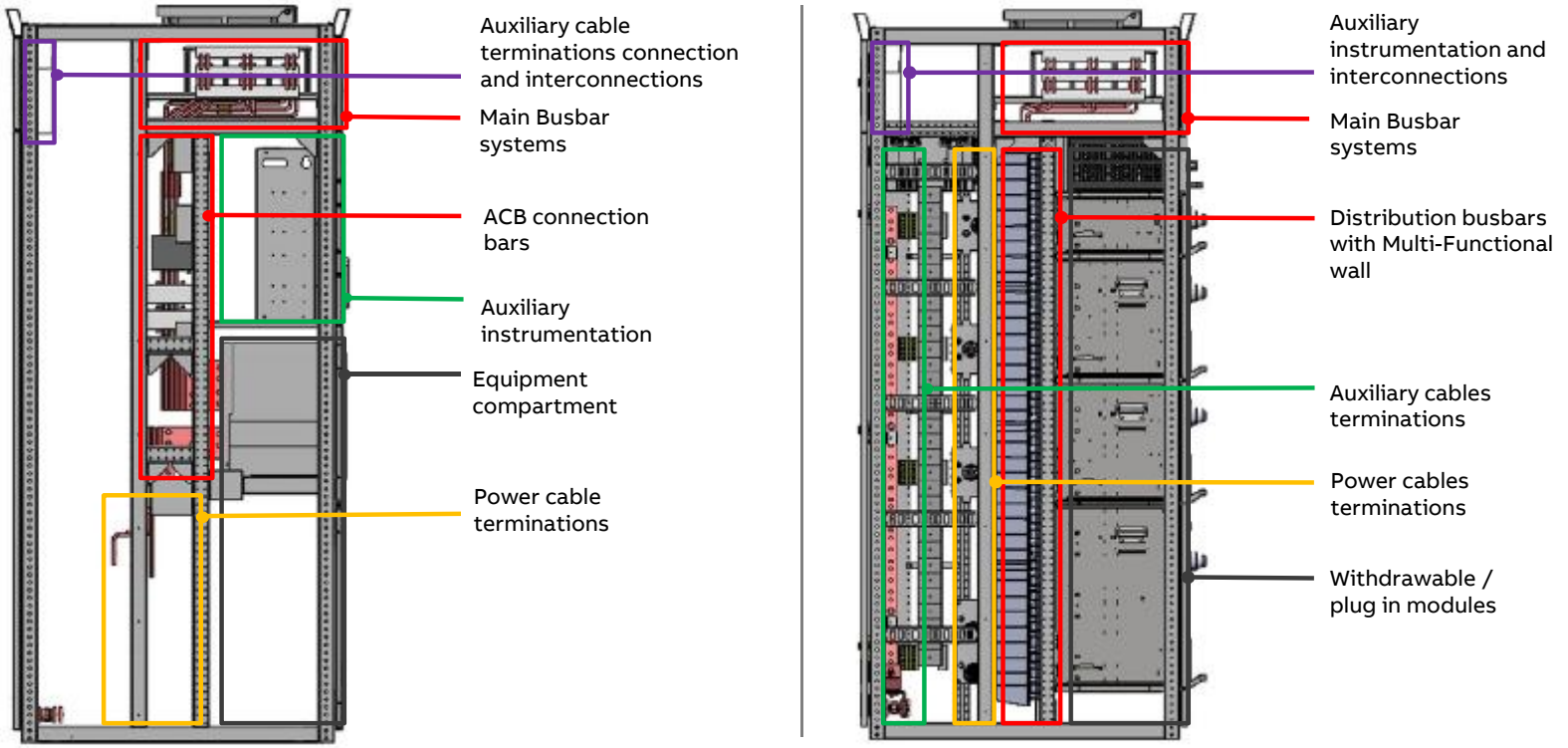
Low Voltage Systems

MNSR – Product introduction (CCA)

ED, CN EPES

MNSR

Construction details: compartments



MNSR

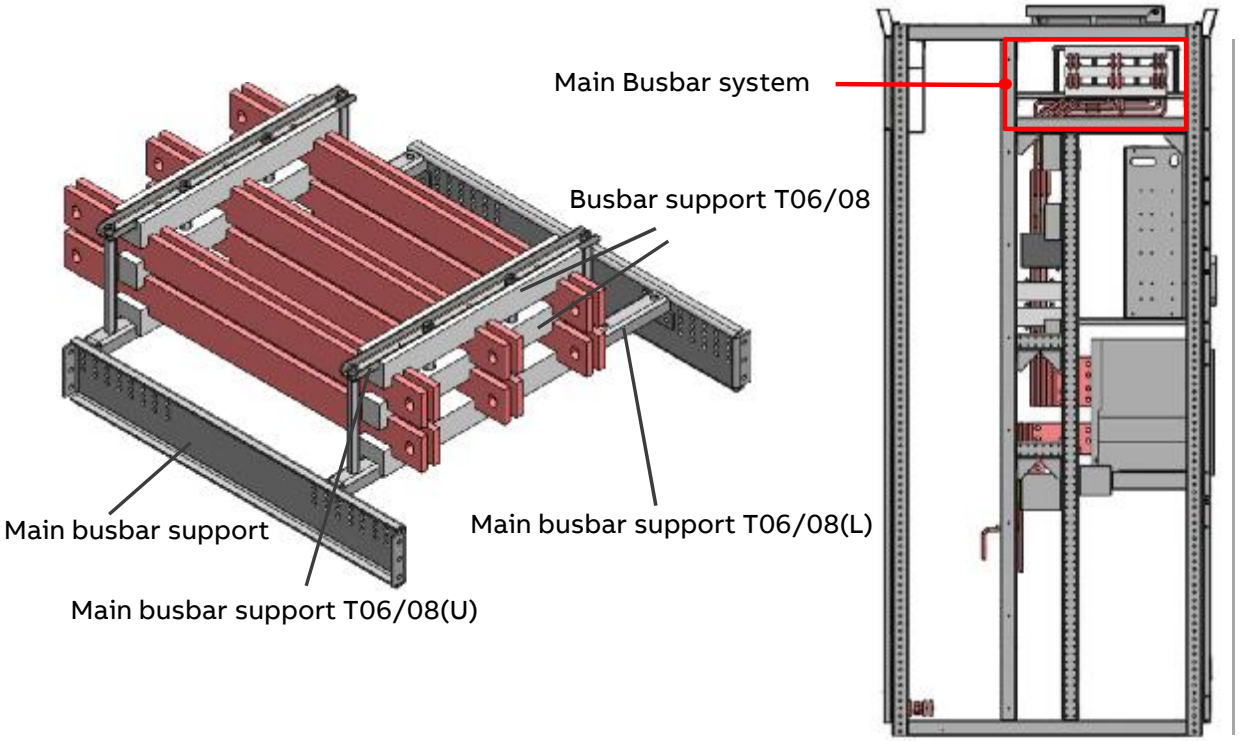
Technical data

Rated voltages	Rated insulation voltage Ui	1000 Vac, 1500 Vdc
	Rated operating voltage Ue	690 Vac, 750 Vdc
Rated current-Main busbars	**Main busbars-CCA**	
	Rated current Ie	up to 3200A
	Rated peak withstand current Ipk	up to 176kA
	Rated short-time withstand current Icw	up to 80kA
	Main busbars-Copper	
	Rated current Ie	up to 6300A
	Rated peak withstand current Ipk	up to 220kA
	Rated short-time withstand current Icw	up to 100kA
Rated current-Distribution bars	Rated current Ie	up to 2000A
	Rated peak withstand current Ipk	up to 176kA
	Rated short-time withstand current Icw	up to 80kA

Dimensions	Cubicles and frame	DIN 41488
	Recommended height	2300 mm
	Recommended width	400, 600, 800, 1000, 1200 mm
	Recommended depth	1000, 1200 mm
Degrees of Protection	According to IEC 60529	External from IP 30 to IP 54 Internal from IP 2X

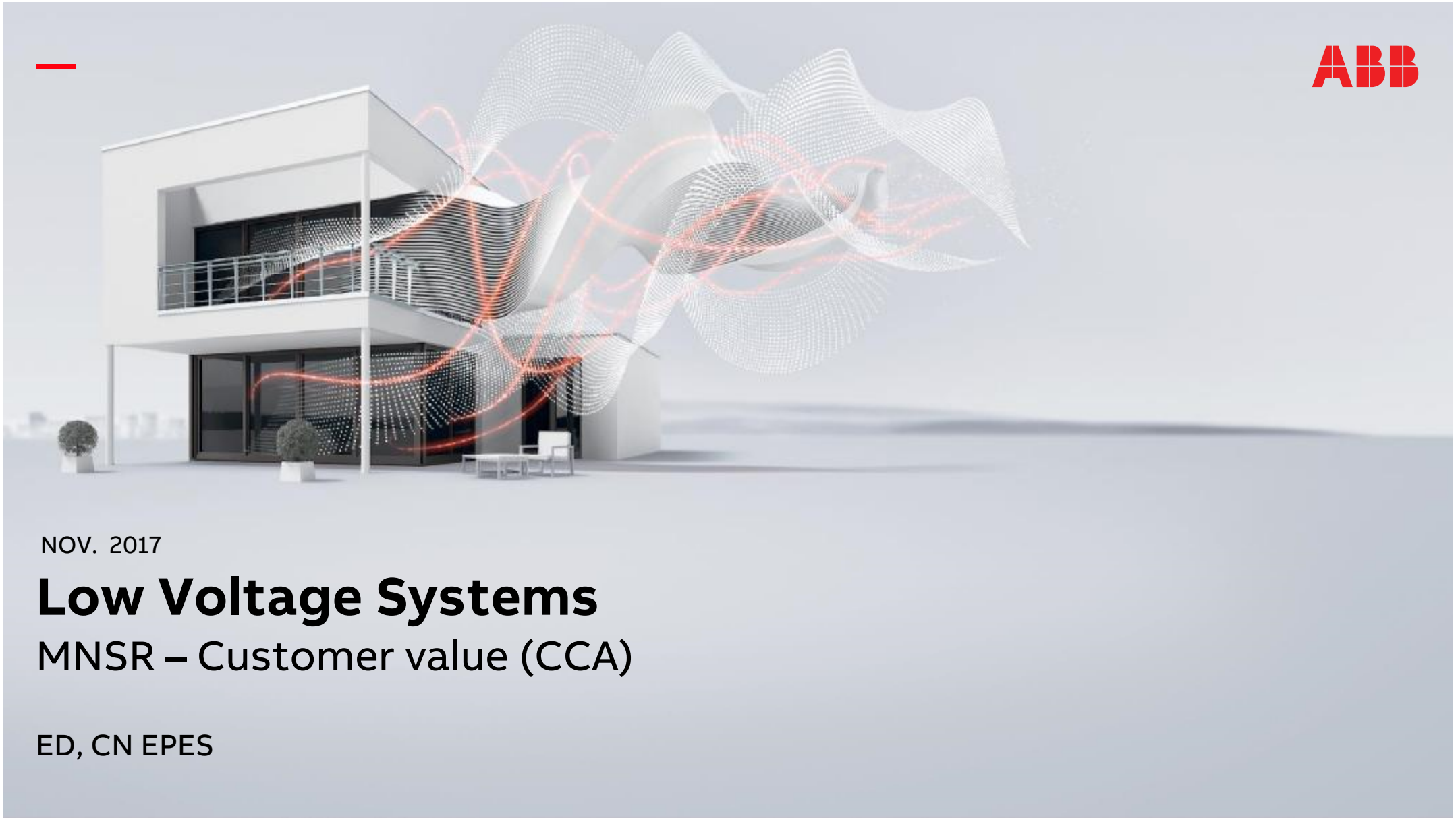
MNSR

Main busbar systems



Main busbar systems			Dimensions				
Dimensions (mm) L1-L3	Rated current Ie/ [A] IP42	Arrangement of Busbar	Height of cubicle	Depth of cubicle	Height of B.C.	Depth of B.C.	Height of Com.
2x10x30	1250		2300	1000	250	600	1800
2x10x40	1600						
2x10x60	2000						
4x10x40	2500						
4x10x60	3200						
6x10x40	4000		2300	1200	250	800	1800
6x10x60	5000						
2-(6x10x40)	6300		2300	1200	450	800	1600

Remark: For rated current 4000~6300A, the material of busbar is Copper.



NOV. 2017

Low Voltage Systems

MNSR – Customer value (CCA)

ED, CN EPES

MNSR

Customer value

Safety

Reliability

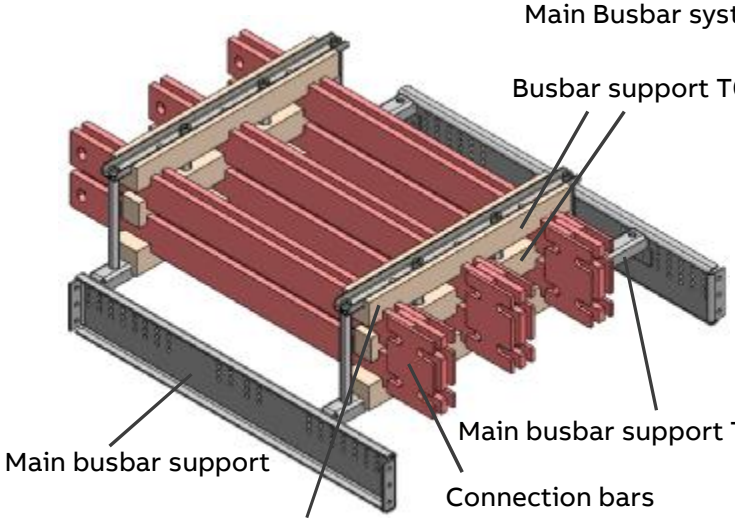
Flexibility

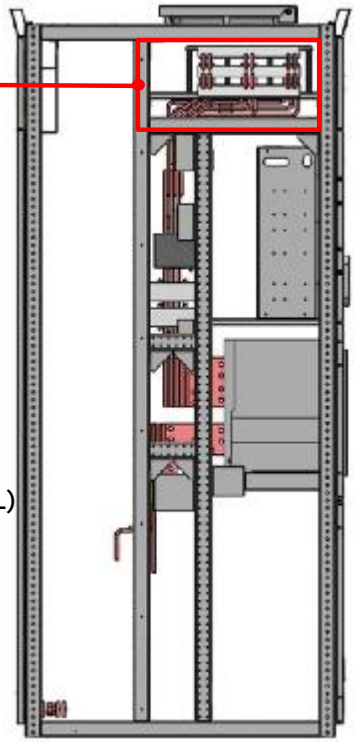
Ease of maintenance

Ease of doing business

MNSR

Main busbar systems





Main busbar arrangement
- Easy to connect & extend
- Optinum heat dissipation
- Single panel packing (w≥600mm)

MNSR

Electrical characteristics

3-pole busbar systems (CCA)

Dimensions [mm]	Design		Rated current In / [A]			Conditional short-circuit current Icw(1sec.)/[kA]	Peak withstand current Ipk/[kA]
L1-L3	Main busbar Support	Depth C - profiles	IP30/40	IP31/41 IP32/42 Roof plate with pressure relieve	IP54 closed metal roof		
2x30x10			1250 (1)	1250	1000	35/50	73.5/105
2x40x10			1600 (1)	1600	1250	35/50	73.5/105
2x60x10			2000 (1)	2000	1500	50/65/75/80	105/143/165/176
4x40x10	antimagnetic		2500 (1)	2500	2000	50/65/75/80	105/143/165/176
4x60x10	antimagnetic		3200 (1)	3200	2500	65/75/80	143/165/176
6x40x10	antimagnetic	antimagnetic	4000 (2)	4000	3200	65/75/80/100	143/165/176/220
6x60x10	antimagnetic	antimagnetic	5000 (2)	5000	4000	100	220
2x6x40x10	antimagnetic	antimagnetic	6300 (2)	6300	4600	100	220

Remark: busbar support set spacing of 600mm.

1. Compare to busbar system (Copper),cost saving 25%~37%.
2. For rated current 4000~6300A, the material of busbar is Copper.

MNSR

Electrical characteristics

4-pole busbar systems (CCA)

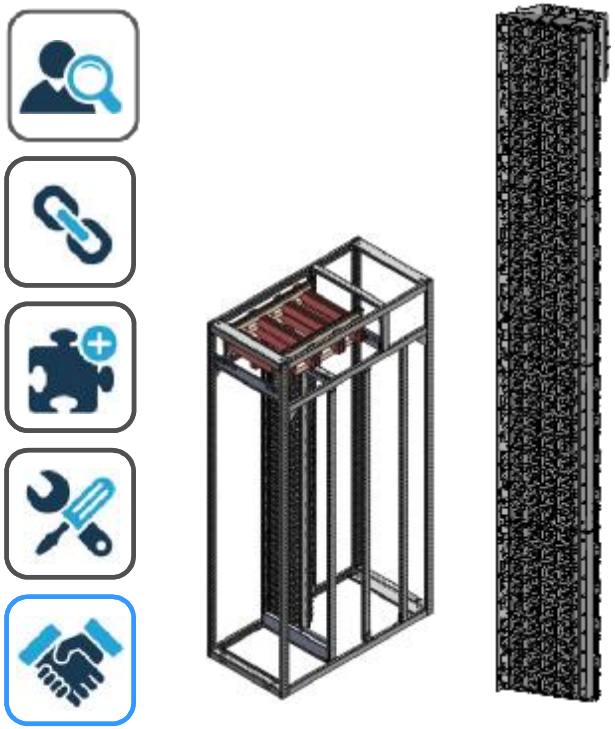
Dimensions [mm]	Design		Rated current In / [A]			Conditional short-circuit current Icw(1sec.)/[kA]	Peak withstand current Ipk/[kA]
L1-L3	Main busbar Support	Depth C - profiles	IP30/40	IP31/41 IP32/42 Roof plate with pressure relieve	IP54 closed metal roof		
2x30x10			1250 (1)	1250	1000	35/50	73.5/105
2x40x10			1600 (1)	1600	1250	35/50	73.5/105
2x60x10			2000 (1)	2000	1500	50/65/75/80	105/143/165/176
4x40x10	antimagnetic		2500 (1)	2500	2000	50/65/75/80	105/143/165/176
4x60x10	antimagnetic		3200 (1)	3200	2500	65/75/80	143/165/176
6x40x10	antimagnetic	antimagnetic	4000 (2)	4000	3200	65/75/80/100	143/165/176/220
6x60x10	antimagnetic	antimagnetic	5000 (2)	5000	4000	100	220
2x6x40x10	antimagnetic	antimagnetic	6300 (2)	6300	4600	100	220

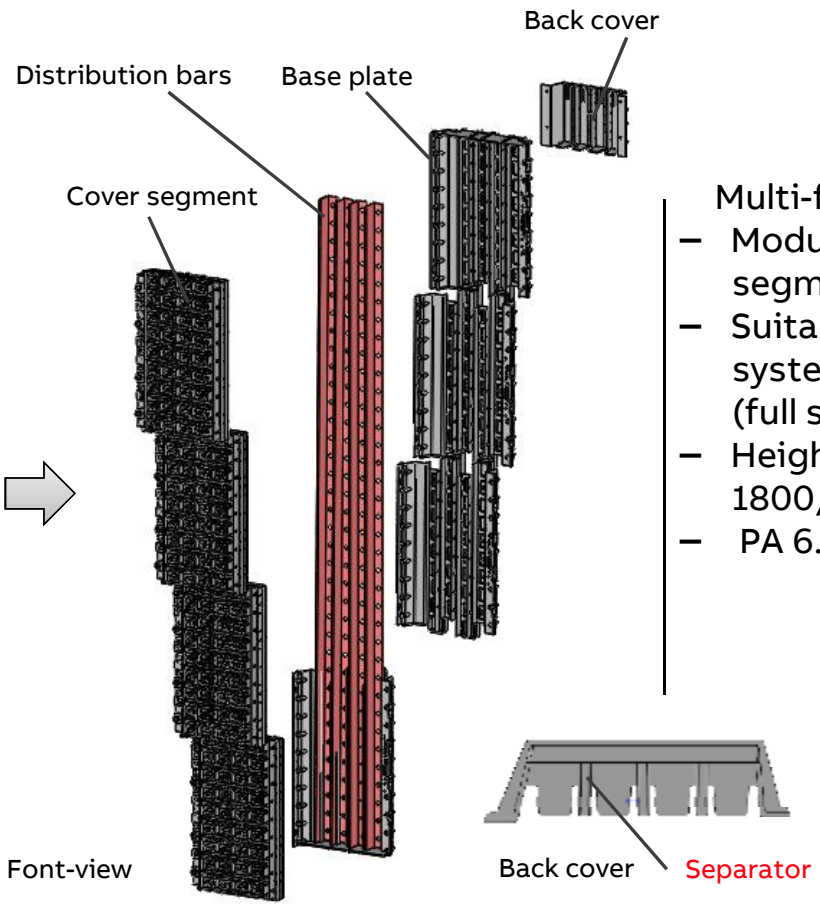
Remark: busbar support set spacing of 600mm.

1. Compare to busbar system (Copper),cost saving 25%~37%.
2. For rated current 4000~6300A, the material of busbar is Copper.

MNSR

Multi-functional wall



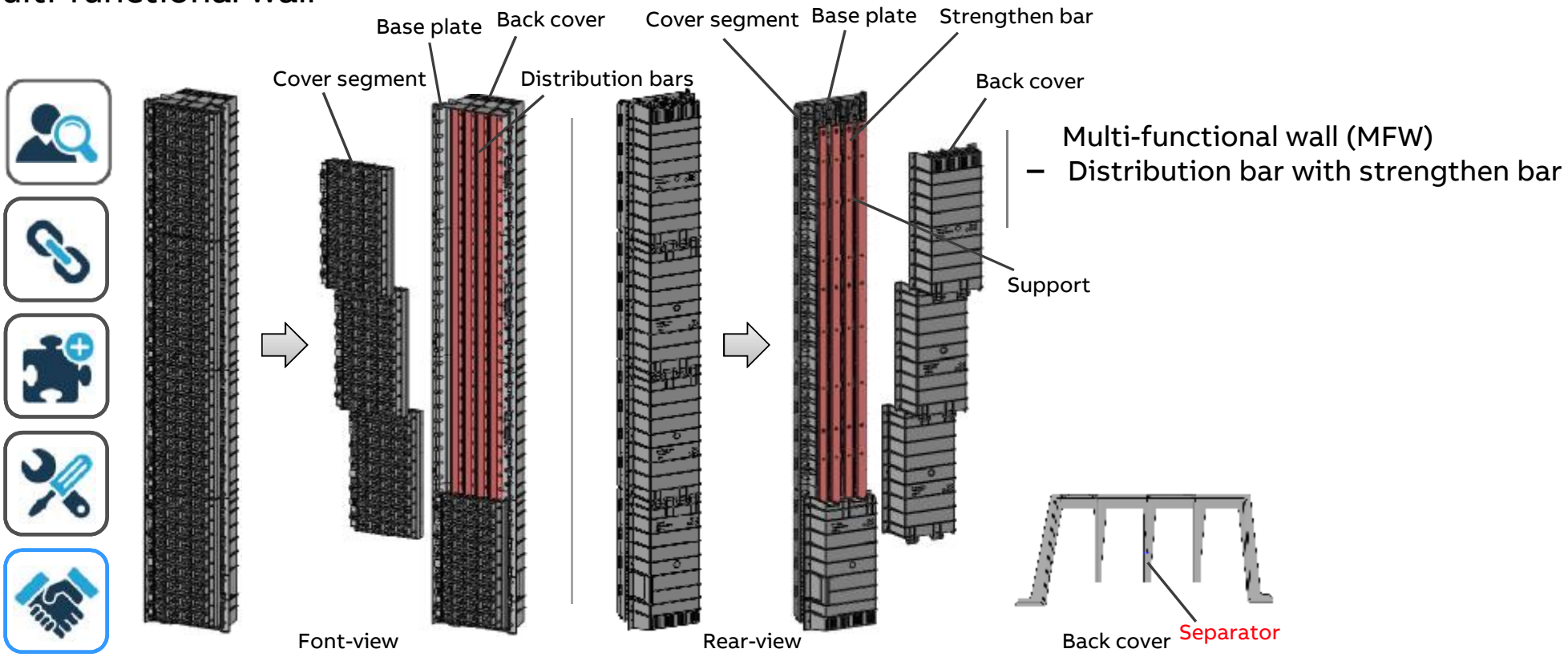


Multi-functional wall (MFW)

- Modular design (Base plate/ Cover segment/back cover)
- Suitable for 4pole distribution bars systems of L50x30x5mm each bar. (full size neutral bar)
- Height of distribution bar: (Copper) 1800/1600/1400/900mm
- PA 6.6

MNSR

Multi-functional wall



MNSR

Electrical characteristics

3-pole distribution bar systems

Dimensions [mm]	Meterial	Type	Rated current In / [A]			Thermal short-circuit current Icw(1sec.) / [kA]	Short-circuit strength Ipk / [kA]
			IP30/40	IP31/41 IP32/42 Roof plate with pressure relieve	IP54 closed metal roof		
50x30x5	Cu	MFW	750	750	600	65	143
50x30x5+1x30x10	Cu	MFW	1500	1500	1200	80	176

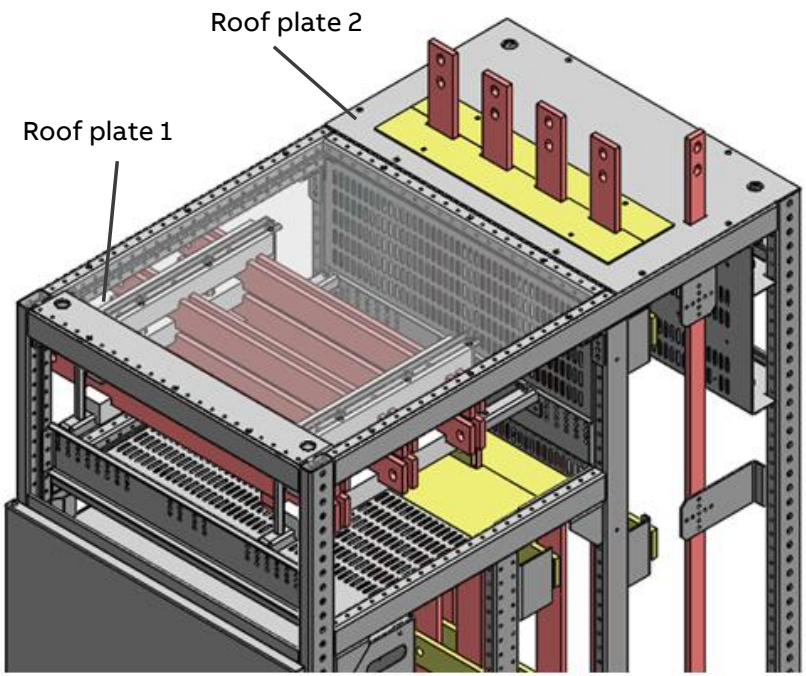
4-pole distribution bar systems

Dimensions [mm]	Meterial	Type	Rated current In / [A]			Thermal short-circuit current Icw(1sec.) / [kA]	Short-circuit strength Ipk / [kA]
			IP30/40	IP31/41 IP32/42 Roof plate with pressure relieve	IP54 closed metal roof		
50x30x5	Cu	MFW	750	750	600	65	143
50x30x5+1x30x10	Cu	MFW	1500	1500	1200	80	176

Remark: The material of distribution busbar is Copper.

MNSR

Internal separation & roof plate



Internal separation：

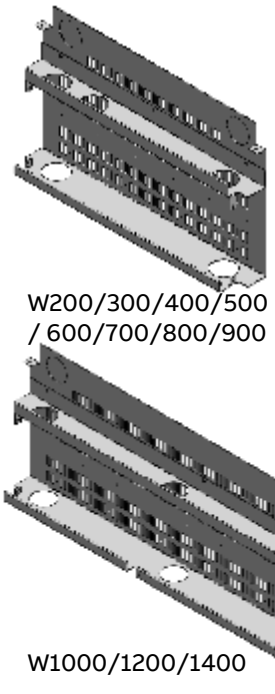
- Form 4a

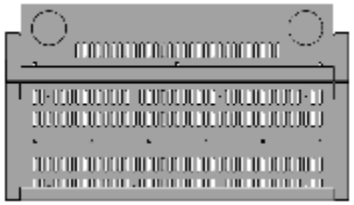
Roof plate

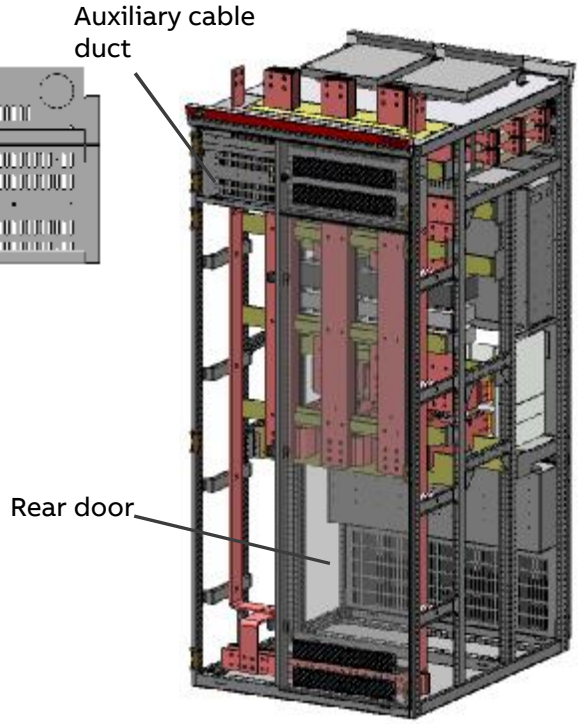
- For I/O bars or cables from top side，1 roof plate divided into 2 roof plates
- For IP30/40: metal mesh
- For IP31/41/32/42: sheet metal with ventilation flaps(pressure relieves)

MNSR

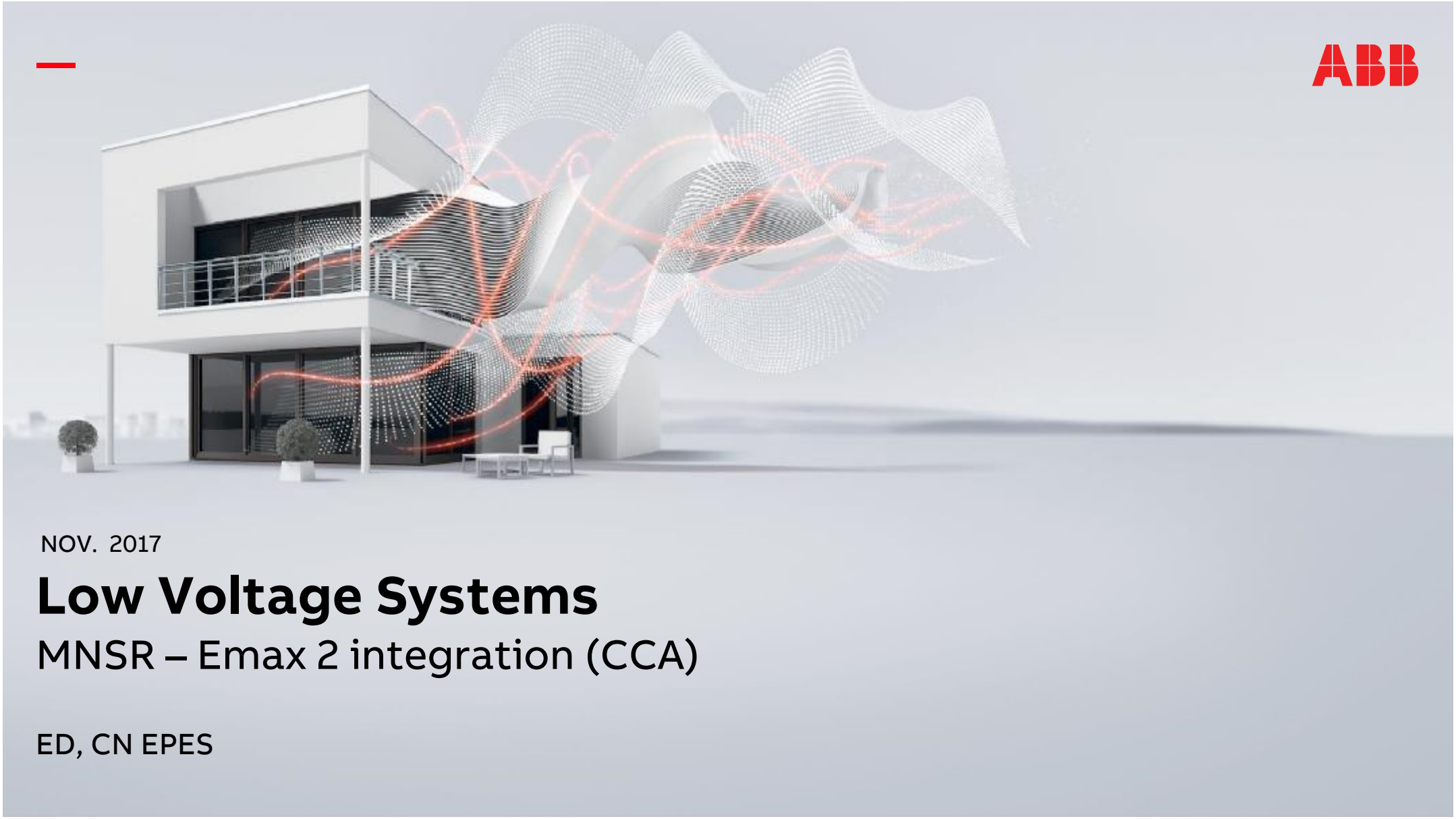
Auxiliary cable duct







- Auxiliary cable duct
- Rear door



NOV. 2017

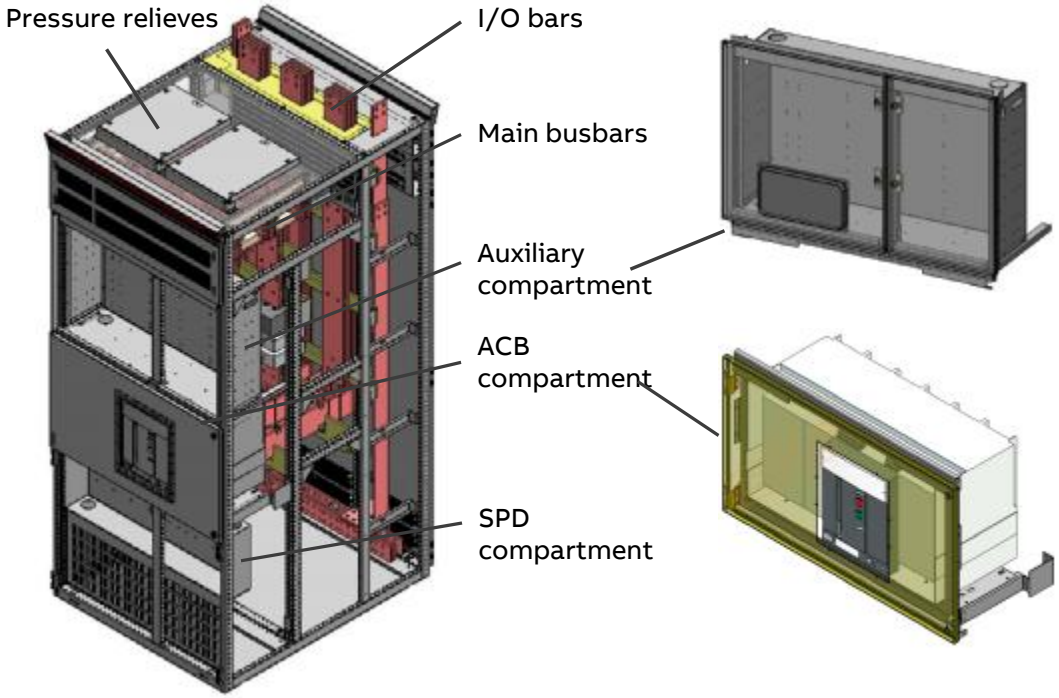
Low Voltage Systems

MNSR – Emax 2 integration (CCA)

ED, CN EPES

MNSR

Emax 2 integration

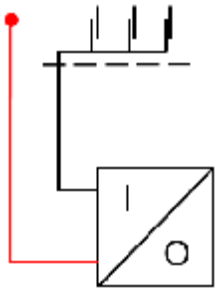
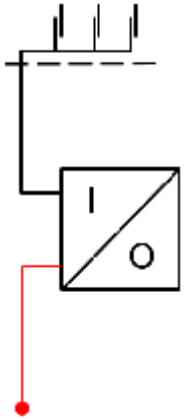
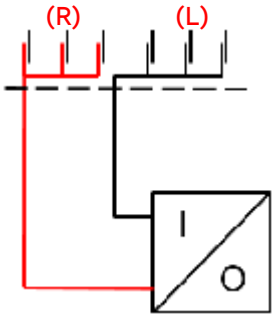


- Auxiliary compartment integration (auxiliary compartment + door)
- For w1000/1200mm，with 2 doors
- Roof plate with pressure relieves (IP31/32/41/42)

MNSR - Emax 2 integration

Connection types

Connection types

Connection type 1	Connection type 2	Connection type 3
		
TF-BTI (+150/-350) BTIC	TF-BBI BBIC	TFL-BFR

Standard Section Width (SSW)

Breakers	Type	Performance level	3P	4P	Busbie
			SSW	SSW	SSW
Main busbar systems (≤3200A)					
E1.2 (1)	W	B-C-N	400	600	600
E2.2 up to 2000A (1)	W	B-N-S-H	400	600	600
E2.2-2500 (1)	W	N-S-H	600	600	600
E4.2 up to 3200A (1)	W	N-S-H	800	1000	1000
Main busbar systems (4000A-5000A) (2)					
E1.2 (1)	W	B-C-N	400	600	-
E2.2 up to 2000A (1)	W	B-N-S-H	400	600	-
E2.2-2500 (1)	W	N-S-H	600	600	-
E4.2 up to 3200A (1)	W	N-S-H	800	1000	1000
E4.2 4000A (3)	W	N-S-H-V	800	1000	1000
E6.2 up to 5000A (3)	W	H-V	1000	1200	1200
Main busbar systems (6300A) not available. (2)					
E1.2 (1)	W	B-C-N	400	600	-
E2.2 up to 2000A (1)	W	B-N-S-H	400	600	-
E2.2-2500 (1)	W	N-S-H	600	600	-
E4.2 up to 3200A (1)	W	N-S-H	800	1000	-
E4.2 4000A (3)	W	N-S-H-V	800	1000	1000
E6.2 up to 5000A (3)	W	H-V	1000	1200	1200
E6.2 6300A (3)	W	H-V	1200	1200	1200

Remark: (1) Compare to Connection bar (Copper), cost saving 14%~40%.
(2) The material of busbar (4000~6300A) is copper.
(3) The material of connection bar(4000~6300A) is copper.

MNSR - Emax 2 integration

Rated currents (CCA)

Rated currents

Icu 400V	ACB Rating	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
150	V						E4.2 to 3200A					
100	H		E2.2 to 2500A									
85	S											
66	N	E1.2 to 1600A										
50	C											
42	B											

The values are for IP42 enclosures, Form 4a.

Ventilated
- IP30/40
- IP31/41,32/42 Pressure relief roof plate

Non-ventilated
- IP54

MNSR - Emax 2 integration

Rated currents (Copper)

Rated currents

Icu 400V	ACB Rating	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
150	V								E4.2 to 3600A	E6.2 to 5600A		
100	H											
85	S											
66	N											
50	C											
42	B											

The values are for IP42 enclosures, Form 4a.

Ventilated
- IP30/40
- IP31/41,32/42 Pressure relief roof plate

Non-ventilated
- IP54

MNSR - Emax 2 integration

Emax 1.2 rated current

Emax 1.2 rated current

Type of ACB Frame A	Section width 3pole / 4pole	Icu Type	Icu [kA]	Icw 1 s [kA]	Inc IP 30/40	Inc Pressure Relief IP 31/41/32/42	Inc IP 54	MCT	PCT
630	400/600	B	42	42	630	630	510	LN5/ LN4	LND5/ LND4
630	400/600	C	50	42	630	630	510		
630	400/600	N	66	50	630	630	510		
800	400/600	B	42	42	800	800	640		
800	400/600	C	50	42	800	800	640		
800	400/600	N	66	50	800	800	640		
1000	400/600	B	42	42	1000	1000	800		
1000	400/600	C	50	42	1000	1000	800		
1000	400/600	N	66	50	1000	1000	800		
1250	400/600	B	42	42	1250	1250	1000		
1250	400/600	C	50	42	1250	1250	1000		
1250	400/600	N	66	50	1250	1250	1000		
1600	400/600	B	42	42	1600	1600	1280		
1600	400/600	C	50	42	1600	1600	1280		
1600	400/600	N	66	50	1600	1600	1280		

Remark: Compare to Connection bar (Copper), cost saving 14%~40%.

MNSR - Emax 2 integration

Emax 2.2 rated current

Emax 2.2 rated current

Type of ACB Frame A	Section width 3pole / 4pole	Icu Type	Icu [kA]	Icw 1 s [kA]	Inc IP 30/40	Inc Pressure Relief IP 31/41/32/42	Inc IP 54	MCT	PCT
800	400/600	N	66	66	800	800	640	LN5/LN4	LND5/ LND4
800	400/600	S	85	66	800	800	640		
800	400/600	H	100	85	800	800	640		
1000	400/600	B	66	66	1000	1000	800		
1000	400/600	C	85	66	1000	1000	800		
1000	400/600	N	100	85	1000	1000	800		
1250	400/600	B	66	66	1250	1250	1000		
1250	400/600	C	85	66	1250	1250	1000		
1250	400/600	N	100	85	1250	1250	1000		
1600	400/600	B	42	42	1600	1600	1280		
1600	400/600	N	66	66	1600	1600	1280		
1600	400/600	S	85	66	1600	1600	1280		
1600	400/600	H	100	85	1600	1600	1280		
2000	400/600	B	42	42	2000	2000	1600	LN7A	LND10
2000	400/600	N	66	66	2000	2000	1600		
2000	400/600	S	85	66	2000	2000	1600		
2000	400/600	H	100	85	2000	2000	1600		
2500	600/600	N	66	66	2500	2500	2000	ASK105.10	LND10
2500	600/600	S	85	66	2500	2500	2000		
2500	600/600	H	100	85	2500	2500	2000		

Remark: Compare to Connection bar (Copper), cost saving 14%~40%.

MNSR - Emax 2 integration

Emax 4.2 rated current

Emax 4.2 rated current

Type of ACB Frame A	Section width 3pole / 4pole	Icu Type	Icu [kA]	Icw 1 s [kA]	Inc IP 30/40	Inc Pressure Relief IP 31/41/32/42	Inc IP 54	MCT	PCT
3200	600/800	N	66	66	2900	2900	2320	ASK105.10	LND10
3200	600/800	S	85	66	2900	2900	2320		
3200	600/800	H	100	85	2900	2900	2320		
3200	800/1000	N	66	66	3200	3200	2500	ASK105.10	LND10
3200	800/1000	S	85	66	3200	3200	2500		
3200	800/1000	H	100	85	3200	3200	2500		
4000 (1)	800/1000	N	66	66	3600	3600	2950	ASK127.10	LND11
4000 (1)	800/1000	S	85	66	3600	3600	2950		
4000 (1)	800/1000	H	100	85	3600	3600	2950		
4000 (1)	800/1000	V	150	100	3600	3600	2950		

Remark: Compare to Connection bar (Copper), cost saving 14%~40%.
(1) The material of connection bar(4000~6300A) is copper.

MNSR - Emax 2 integration

Emax 6.2 rated current

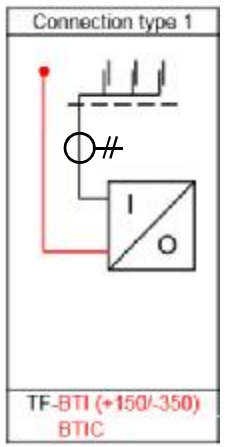
Emax 6.2 rated current

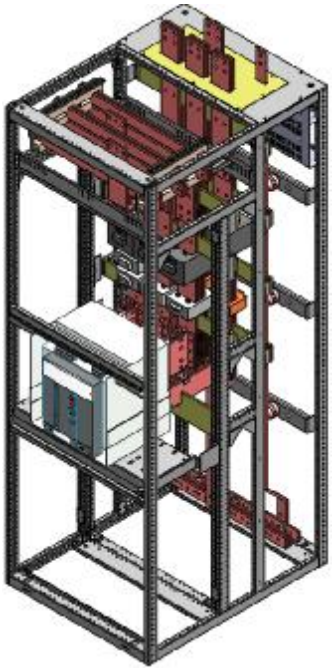
Type of ACB Frame A	Section width 3pole / 4pole	Icu Type	Icu [kA]	Icw 1 s [kA]	Inc IP 30/40	Inc Pressure Relief IP 31/41/32/42	Inc IP 54	MCT	PCT	
4000	1000/1200	H	100	100	4000	4000	3280	ASK127.10/ ASK129.10	LND11/ LND12	
4000	1000/1200	V	150	100	4000	4000	3280			
5000	1000/1200	H	100	100	5000	5000	4100			
5000	1000/1200	V	150	100	5000	5000	4100			
6300	1200/1200	H	100	100	5600	5600	4600	ASK129.10	LND12	not available.
6300	1200/1200	V	150	100	5600	5600	4600			not available.

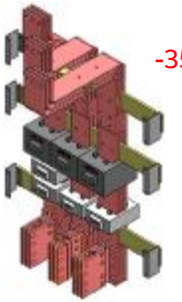
Remark: The material of connection bar(4000~6300A) is copper.

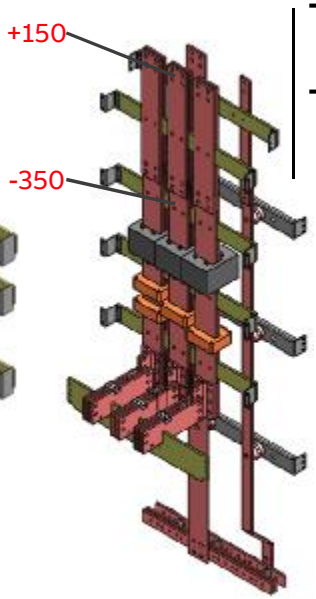
MNSR - Emax 2 integration

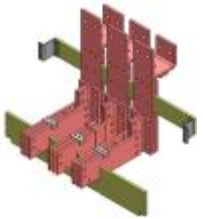
Connection type 1

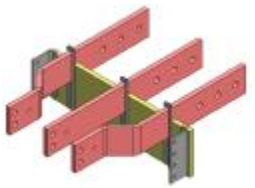












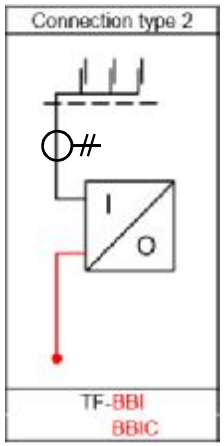
- Options for 2 CT's per phase Protection and / or Measuring
- If the main busbars are connected at the right side(W400), An additional spare section is needed.

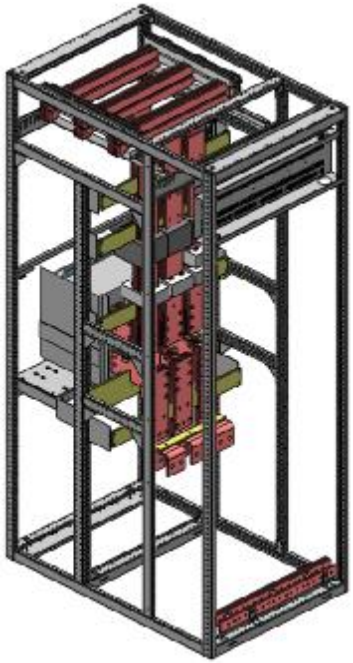
Option for E1.2/E2.2 1250A

TF | BTI +150/-350 | BTIC | BTIC

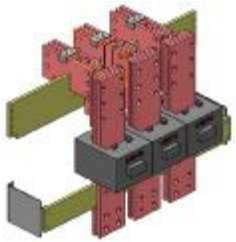
MNSR - Emax 2 integration

Connection type 2

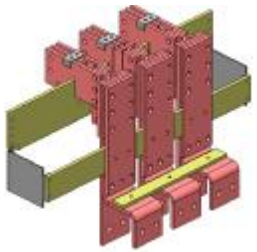




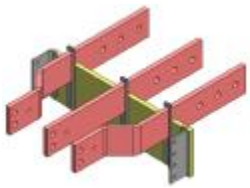
- Options for 2 CT‘s per phase Protection and / or Measuring
- If the main busbars are connected at the right side(W400), An additional spare section is needed.



BBI



BBIC

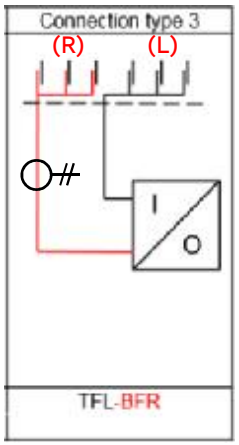


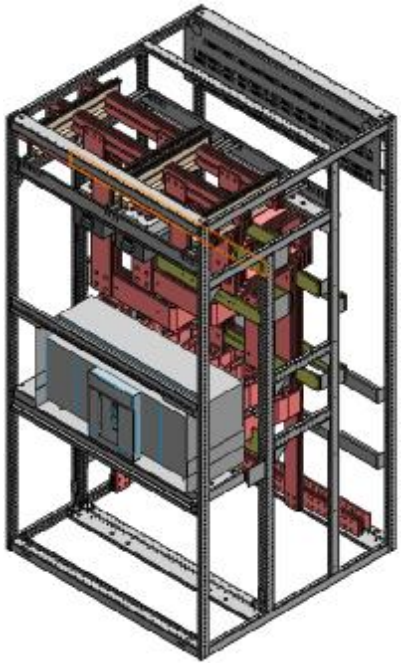
Option for E1.2/E2.2 1250A

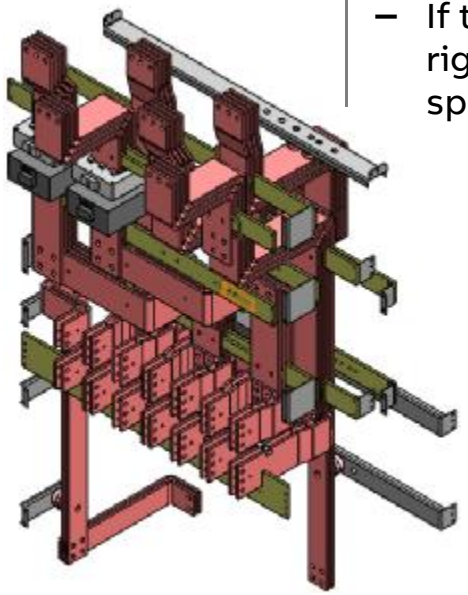
BBIC

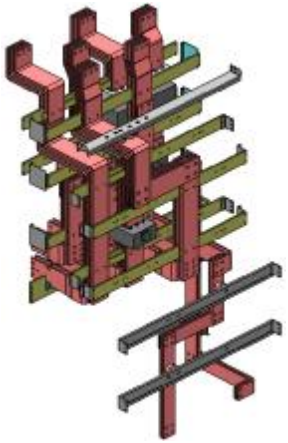
MNSR - Emax 2 integration

Connection type 3





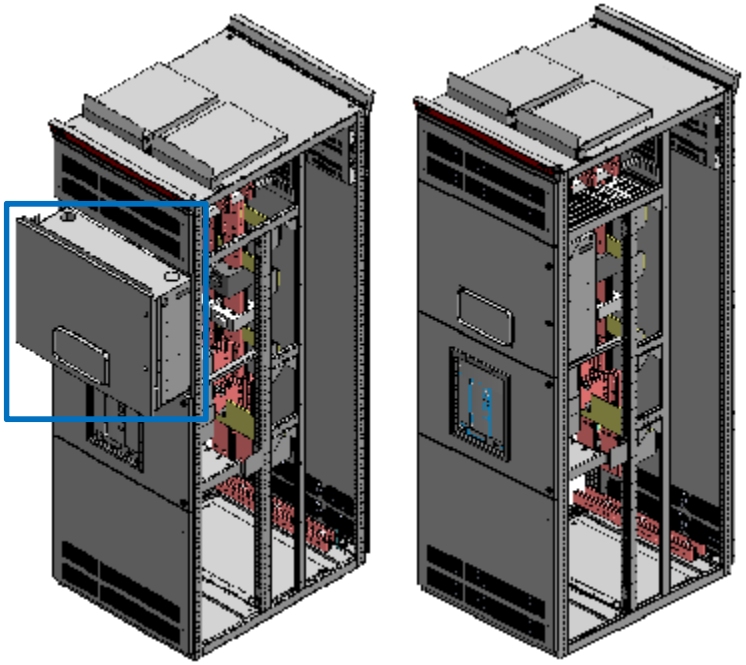


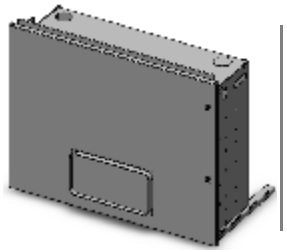


- Options for 2 CT‘s per phase Protection and / or Measuring
- If the main busbars are connected at the right side(E1.2/E2.2/E4.2),An additional spare section is needed.

MNSR - Emax 2 integration

Auxiliary compartment integration



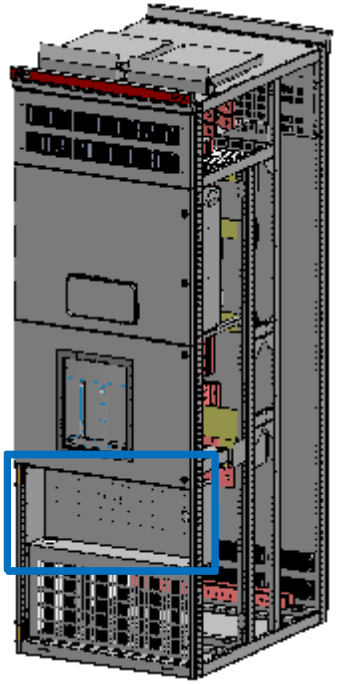


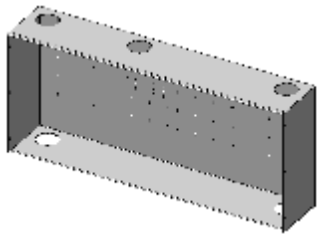
W400/600/800

- EQ 400
- Auxiliary compartment integration (auxiliary compartment + door)

MNSR - Emax 2 integration

SPD compartment





- Compartments for SPD(Surge Protection Device) as standard solutions