



Roberto Costanzo – Jornadas Técnicas ABB en Chile – Junio 2013

# UniSec

## Medium Voltage Air Insulated Switchgear for Secondary Distribution

# UniSec

## MV Air Insulated Switchgear for Secondary Distribution

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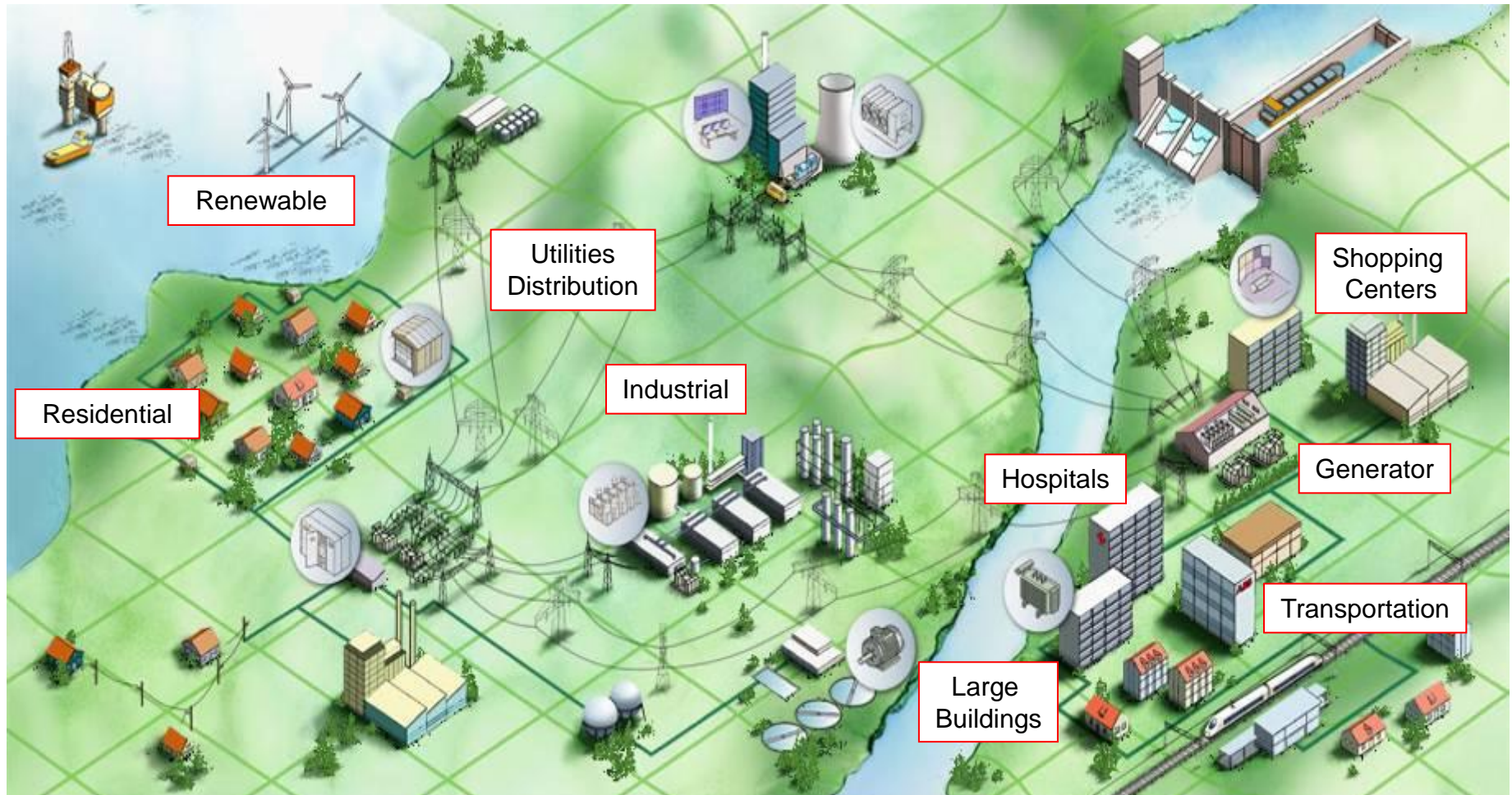


# UniSec

## Introduction

# UniSec

## Introduction - Applications





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## Introduction – Applications



### Customer Needs

- High reliability and safety
- Designed and Tested according IEC
- Continuity of service and stable supply
- Compact dimensions
- A wide range of functional units easy to extend and upgrade
- Safe and easy for operators in both maintenance and operating conditions
- Optimized life cycle cost – Modular solutions, reduced maintenance and number of spare parts
- Fast delivery time

# UniSec Applications

## Residential



Energy is distributed by a Transformer Substations

### Customer Needs

- Safety
- Continuity of service and stable supply
- Compact dimensions and low environmental impact



# UniSec Applications Industries



Stable and non-fluctuating power supply without outages

## Customer Needs

- High reliability and safety
- A wide range of functional units easy to extend and upgrade
- Safe and easy for operators in both maintenance and operating conditions



# UniSec Applications

## Utilities - Distribution



The distribution network refers to switching stations feeding, protecting, monitoring and controlling residential areas, industrial sites and large buildings

### Customer Needs

- Continuity of service and reliability
- Safe - Designed and Tested according IEC
- Life cycle cost - Standardized and modularized solutions, reduced maintenance requirements and number of spare parts
- Easy integration in existing networks and systems





# UniSec Applications

## Building & Transportation



- Hospitals
- Datacenter
- Large buildings
- Small scale power generation
- Transports
  - Airports
  - Rails
  - Metros
  - Highway/Tunnel

# UniSec Applications Renewable



**Wind generation**

**Solar plant**

**Hydro power**

**Waste to energy**

## **Customer Needs**

- Fast delivery time
- Compact dimensions
- Continuity of service and reliability
- Life cycle cost - Standardized and modularized solutions, reduced maintenance requirements and number of spare parts

# UniSec

## Product characteristics

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## Product Characteristics - IEC Standards



### Switchboard

IEC 62271-200

MV AC metal-enclosed switchgear

IEC 62271-105

Alternating current switch-fuse combinations

IEC 62271-1

High-voltage switchgear common specifications

IEEE 693

Seismic Test

IEC 60529

Degrees of protection provided by enclosures

### Main Components

IEC 62271-102

MV AC current disconnectors and earthing switches

IEC 62271-100

MV AC circuit-breakers

IEC 60470

MV AC contactors, contactor-based controllers and motor-starters

IEC 60044-1

Current transformers

IEC 60044-2

Combined transformers

IEC 60044-7

Electronic voltage transformers

IEC 60044-8

Electronic current transformers

IEC 60255-6

Measuring and Protection Electrical relays

IEC 60099-4

MV AC Surge arresters

IEC 60282-1

MV AC Fuses

IEC 60376

Specification of technical grade sulphur hexafluoride (SF<sub>6</sub>) for use in electrical equipment



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## Product characteristics – IEC definitions

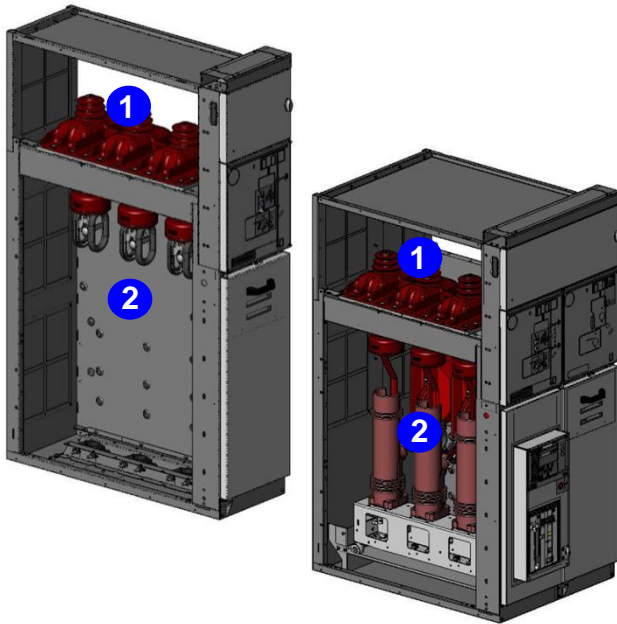


### IEC classifications

- Loss of Service Continuity:
  - LSC 1: 1 compartment.
  - LSC2A: 2 compartments, busbars & CB/cables
  - LSC2B: 3 compartments, busbars, CB and cables
- Partitioning class:
  - PM: metallic partition
  - PI: insulated partition
- Internal Arc (IAC A-FL & A-FLR)
  - A: Authorized personnel only.      FL: front & lateral
  - B: Unrestricted, general access.      FLR: front, lateral & rear
  - C: Not accesible

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## Product Characteristics – Loss of Service Continuity



- **LSC2A** for Switch Disconnect or Removable Circuit-Breakers units

2 main MV compartments (segregated by GSec):

1. Busbars
2. Circuit-Breakers and Cables

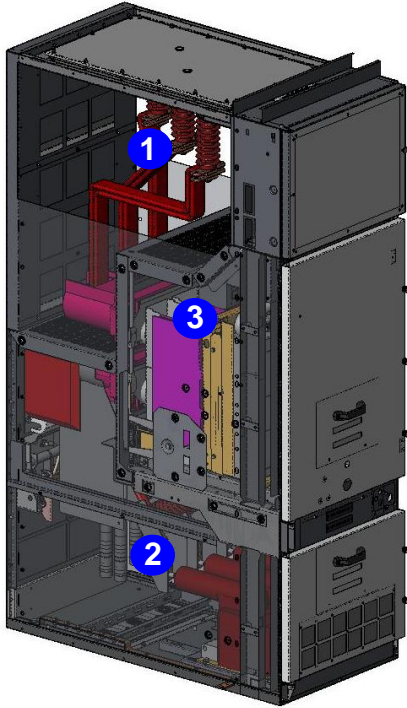
Accessibility to CB & Cables compartment with service continuity of Busbars compartment and adjacent panels.



- **PM** Metallic Partition between compartments

# UniSec

## Product Characteristics - Loss of Service Continuity



- **LSC2B** for Withdrawable Circuit-Breakers units  
3 main MV compartments (segregated by shutters):
  1. Busbars
  2. Cables
  3. Circuit-Breakers

Accessibility to CB compartment with service continuity of Busbars and Cables compartments and adjacent panels.



- **PM** Metallic Partition between compartments  
@ 12-17.5kV
- **PI** Insulated Partition between compartments  
@ 24kV

# UniSec

## Product Characteristics – Internal Arc Classifications



Internal arc classified IAC AFL or AFLR according to the IEC 62271-200 Annex A

UniSec fully complies with all five criteria:

1. The doors of the switchboard must remain closed and no opening of the cover panels must occur.
2. Any part of the switchboard which may be hazardous for personnel must not be ejected.
3. No holes must appear in the external housing of the switchboard in any parts accessible to personnel.
4. The vertically and horizontally arranged fabric indicators placed outside the switchboard must not get burnt.
5. All the switchboard earthing connections must remain effective

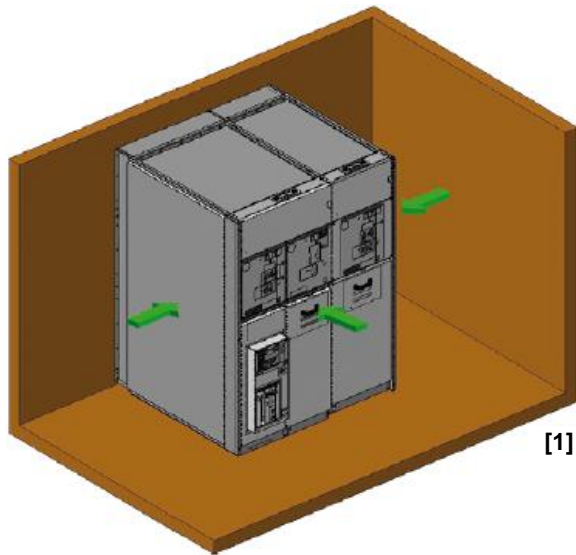


Front, rear and lateral arc resistance.



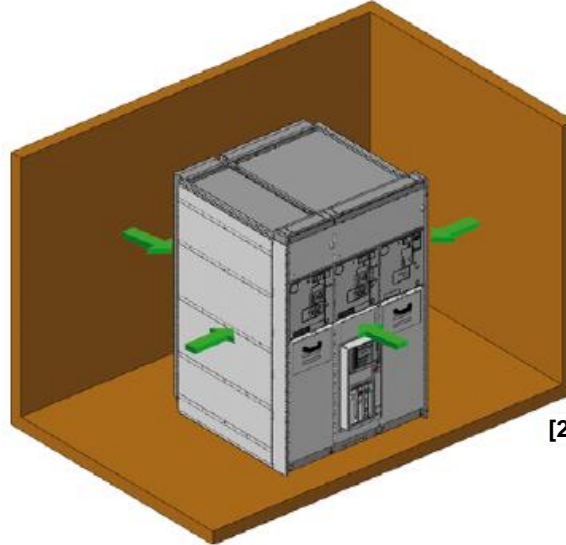
# UniSec

## Product Characteristics - Internal Arc Classifications



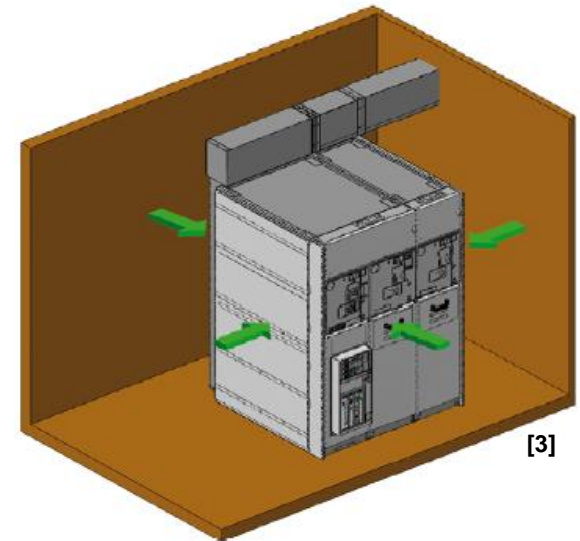
[1]

**Against the wall**



[2]

**Middle of the room**



[3]

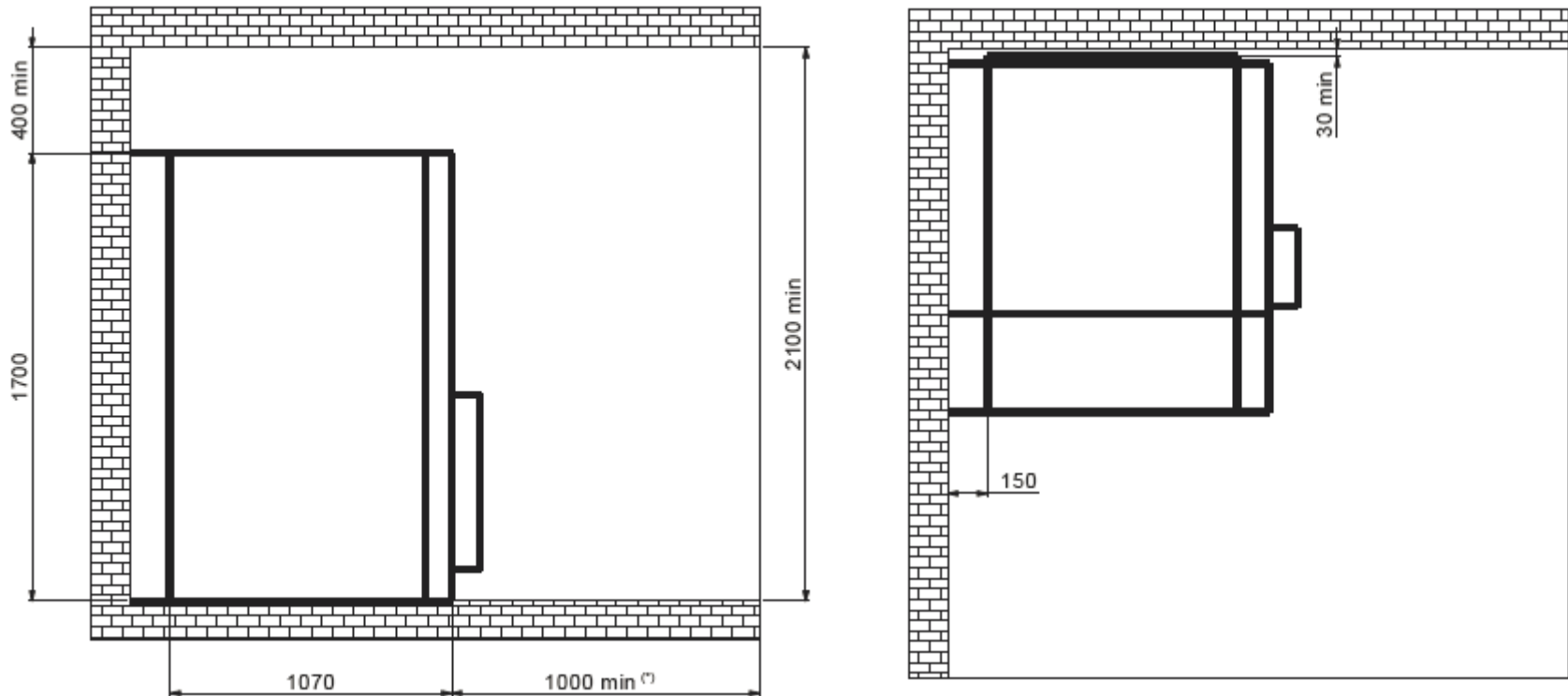
**Against the wall or Middle of the room**

- IAC AFL up to 12,5 kA 1s with arc gas absorbers and pressure relief inside the room [1]
- IAC AFLR up to 16 kA 1s with arc gas absorbers and pressure relief inside the room [1] [2]  
up to 25kA 1s for withdrawable CB panels 12-17.5kV
- IAC AFLR up to 21 kA 1s with arc gas duct and pressure relief outside the room [3]  
up to 25kA 1s for withdrawable CB panels 12-17.5kV

# UniSec

## Product Characteristics – SWG room layout

IAC A-FL up to 12.5kA 1s - Swb against the wall



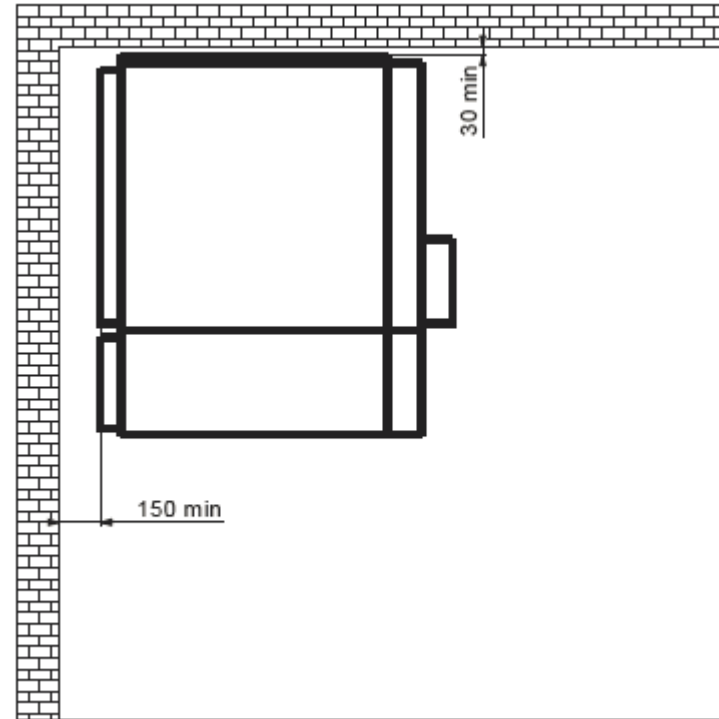
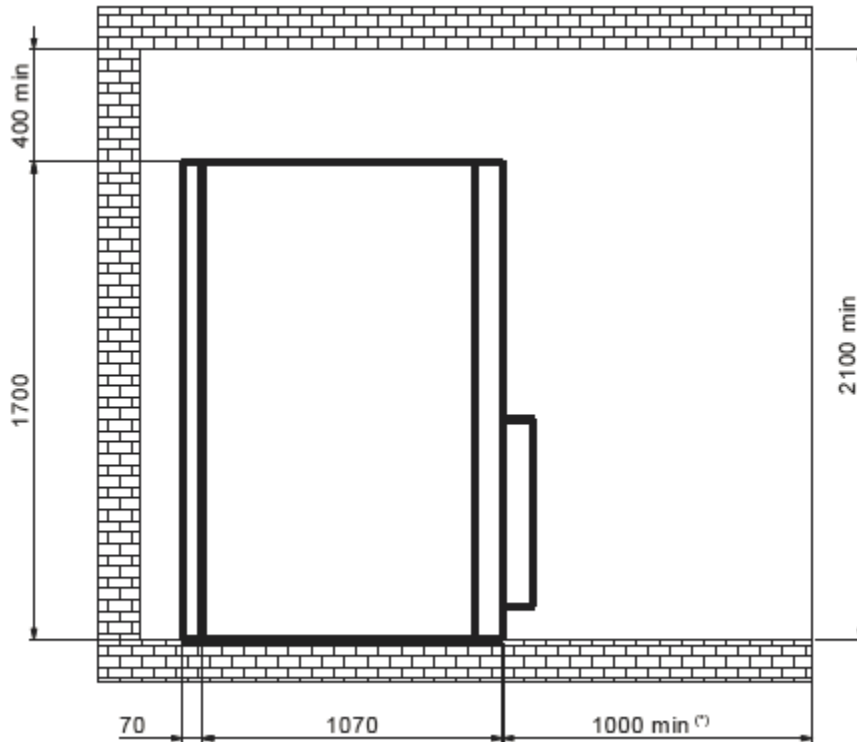
Minimum distances to the switchgear room walls with arc gas absorber

Removable CB panels LSC2A

# UniSec

## Product Characteristics – SWG room layout

IAC A-FL up to 12.5kA 1s



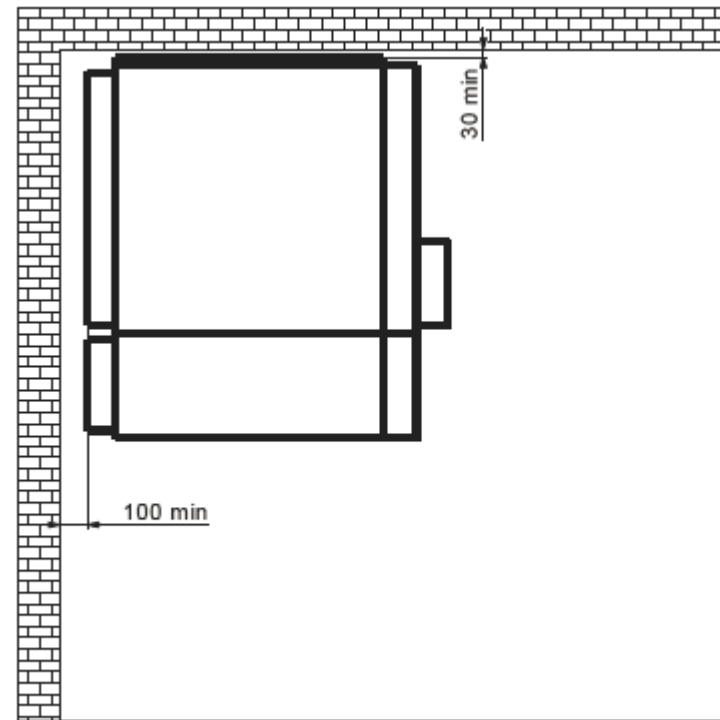
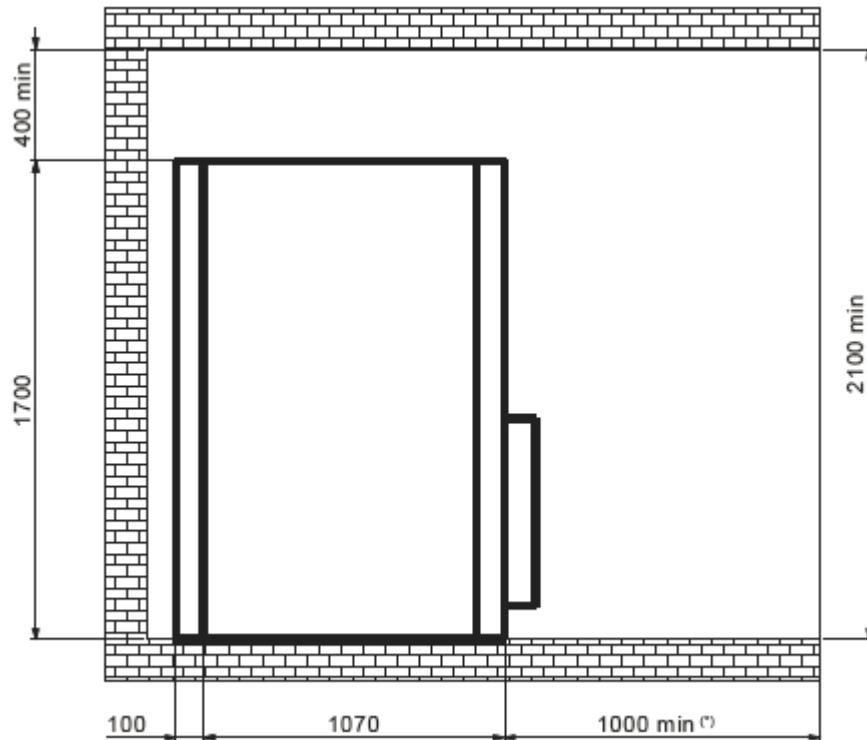
Minimum distances to the switchgear room walls with arc gas absorber

Removable CB panels LSC2A

# UniSec

## Product Characteristics – SWG room layout

IAC A-FLR up to 16kA 1s



Minimum distances to the switchgear room walls with arc gas absorber

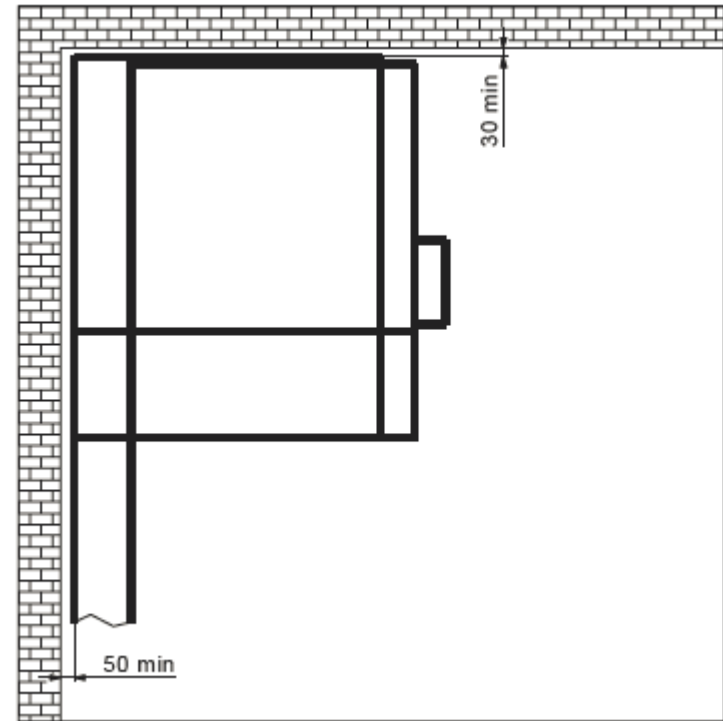
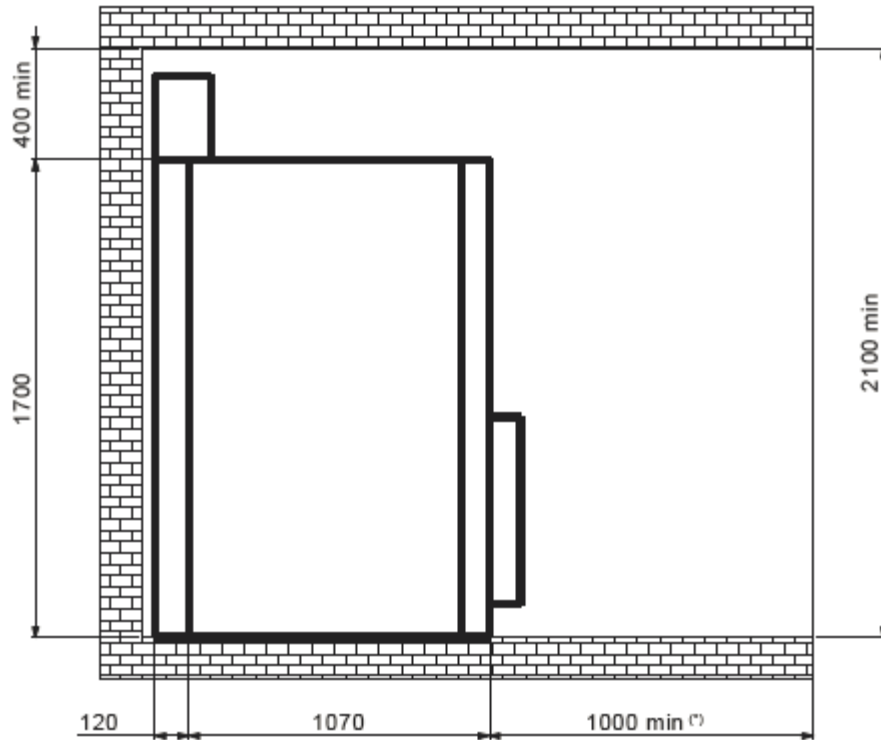
Removable CB panels LSC2A



# UniSec

## Product Characteristics – SWG room layout

IAC A-FLR up to 21kA 1s



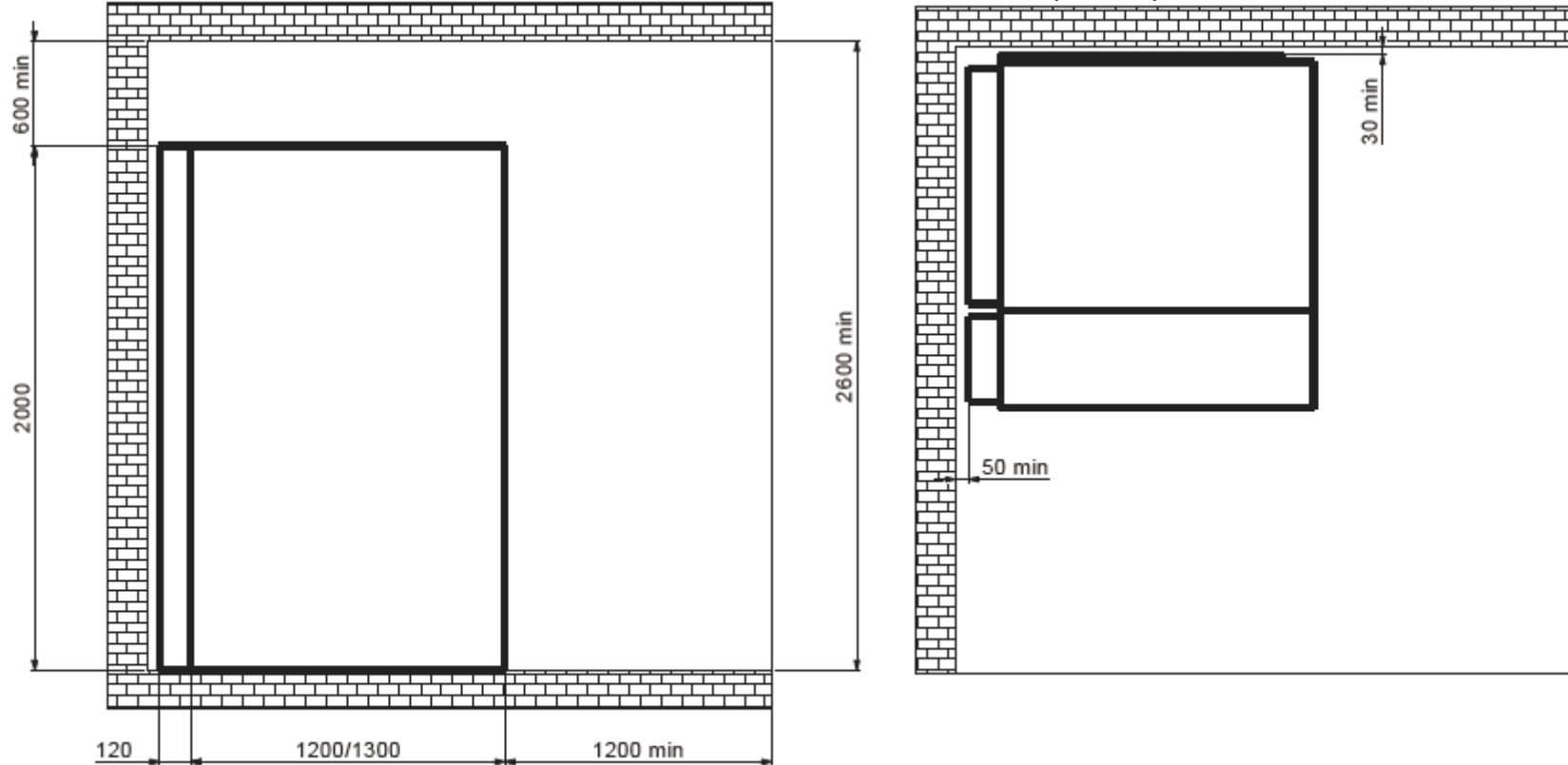
Minimum distances to the switchgear room walls with arc gas ducts

Removable CB panels LSC2A

# UniSec

## Product Characteristics - Swbroom layout

IAC A-FLR up to 25kA 1s (12-17.5kV) or up to 16kA 1s (24kV)



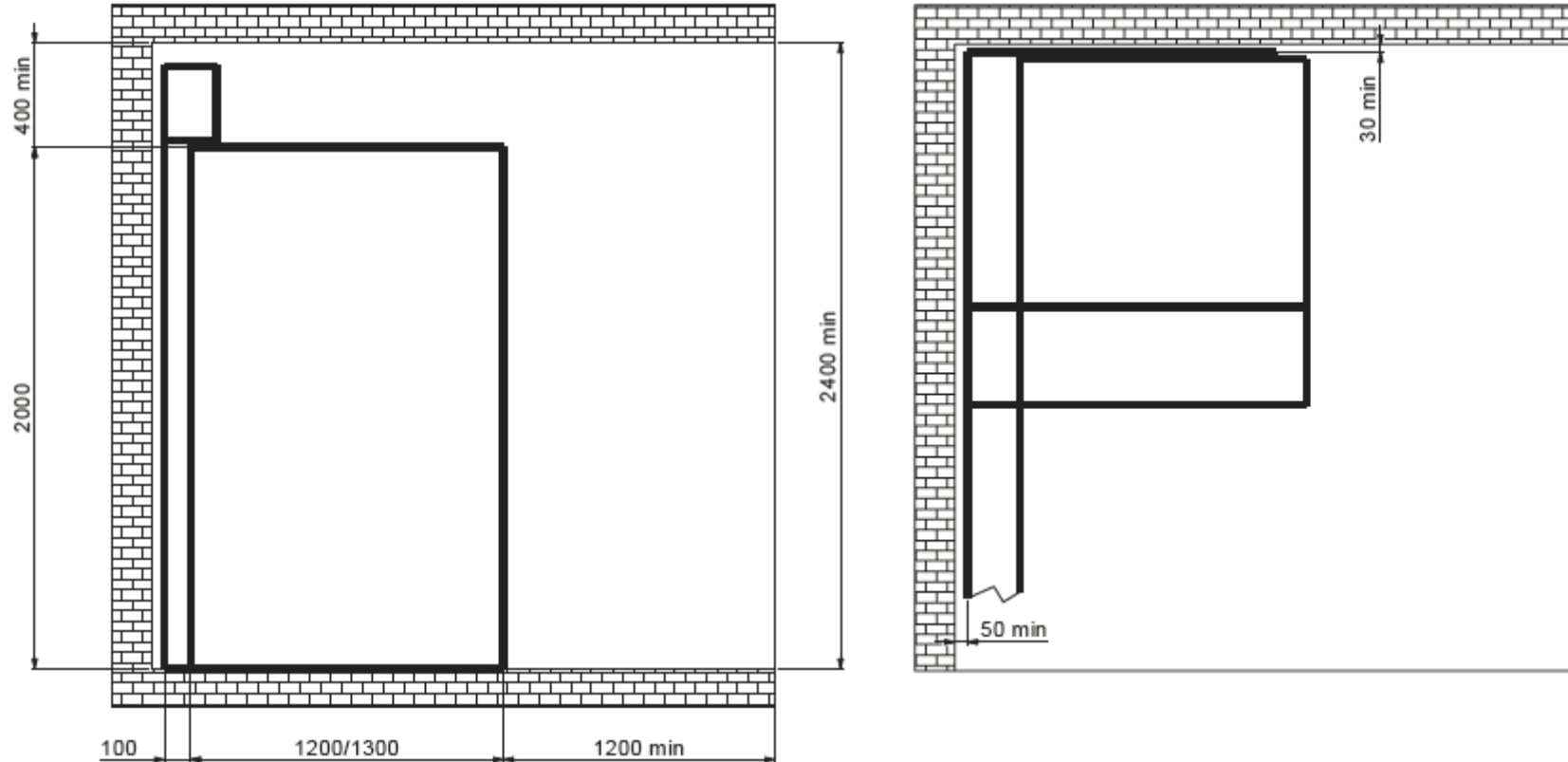
Minimum distances to the switchgear room walls with arc gas absorber

Withdrawable CB panels LSC2B

# UniSec

## Product Characteristics - Swbroom layout

IAC A-FLR up to 25kA 1s (12-17.5kV) or up to 21kA 1s (24kV)



Minimum distances to the switchgear room walls with arc gas ducts

Withdrawable CB panels LSC2B

# UniSec

## Product Characteristics – Marine & Anti-Seismic



**X axis**



**Y axis**



**Z axis**

### Rigorous Vibration Type Test PASSED

- Withdrawable CB 12KV Marine version is available (IP42 available)
- Full UniSec family Anti-Seismic version is available



# UniSec

## Electrical characteristics & typical units

# UniSec

## Electrical characteristics

Rated Voltage	kV	12	17.5	24
Test voltage (50-60 Hz x 1 min)	kV	28	38	50
Impulse withstand voltage	kV	75	95	125
Rated frequency	Hz	50-60	50-60	50-60
Rated main busbars current	A	630/800/1250(*)	630/800/1250(*)	630/1250(*)
Rated normal current of apparatus				
- VD4-HD4 removable circuit-breaker	A	630/800	630/800	630
- GSec gas switch-disconnector	A	630/800	630/800	630
- Vmax withdrawable (*)	A	630/1250	630/1250	
- VD4 withdrawable (*)	A			630/1250
- VSC withdrawable (*)	A	400		
Rated short time withstand current	kA (3s)	16/21/25 <sup>(1)(2)</sup>	16/21/25 <sup>(2)</sup>	16/21
Peak current	kA	40/52.5/63	40/52.5/63	40/52.5/63
Internal arc withstand current (IAC AFL-AFLR)	kA (1s)	12,5/16/21/25 <sup>(3)</sup>	12,5/16/21/25 <sup>(3)</sup>	12,5/16/21

(1) 2 s

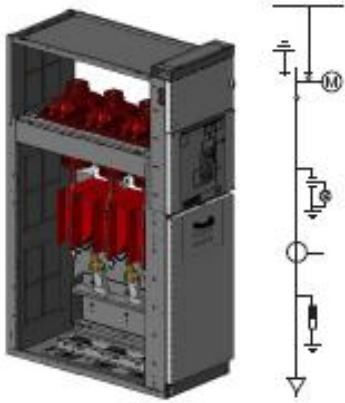
(2) 3 s for withdrawable CB panels (\*)

(3) for 12-17,5kV withdrawable CB panels (\*)

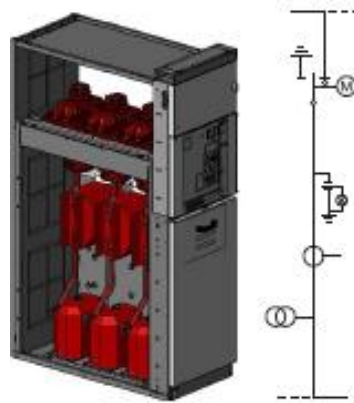
# UniSec

## Typical Units Overview – Switch Disconnecter units

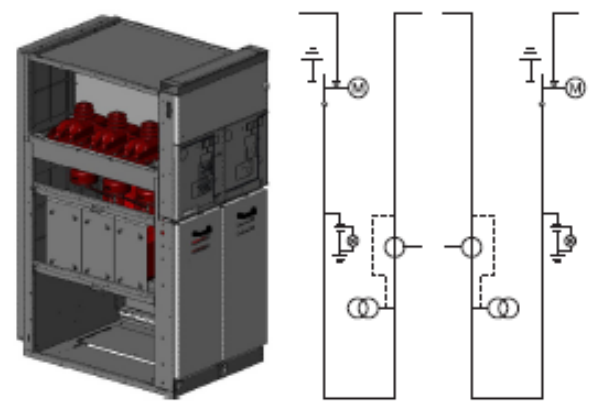
SDC = Incoming/Outgoing



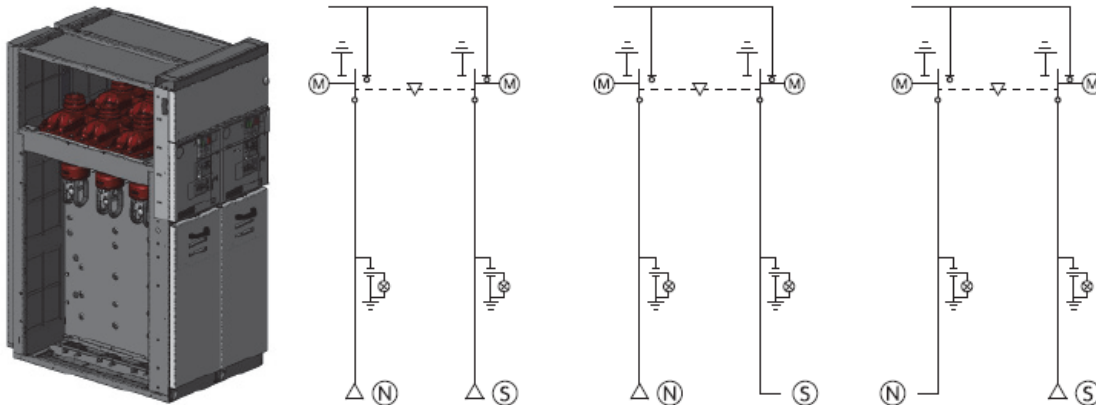
SDS = Coupler



SDM = Coupler with measure



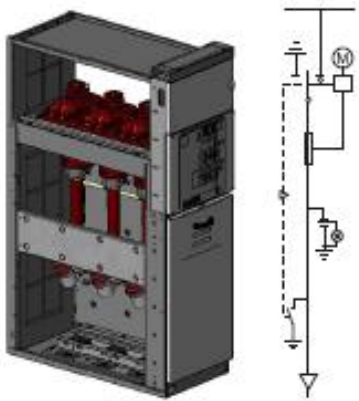
SDD = Double interlocked Incomer



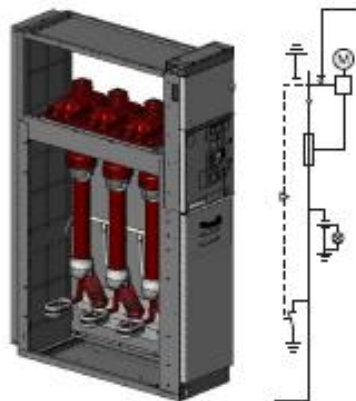
# UniSec

## Typical Units Overview – Fused and Measure units

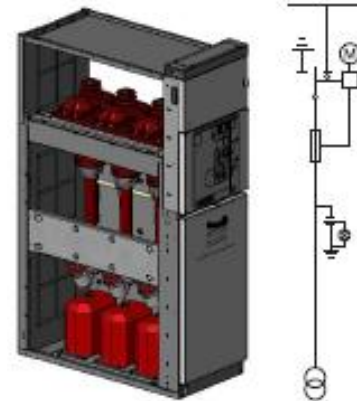
SFC = Outgoing



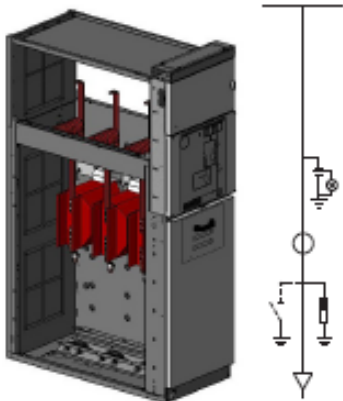
SFS = Coupler



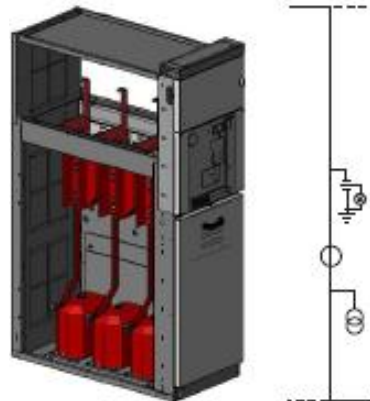
SFV = Measure



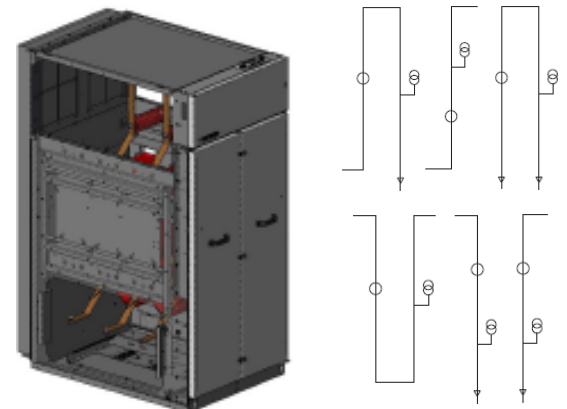
DRC = Direct feeder  
Busbars Measuring & Earthing



DRS = Busbars riser



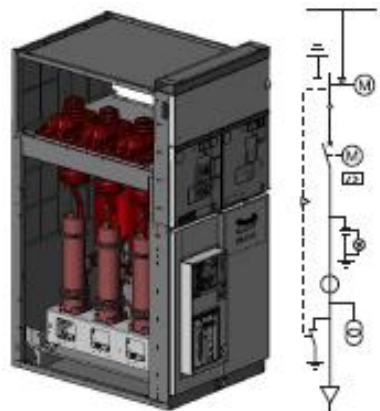
UMP = Universal Metering



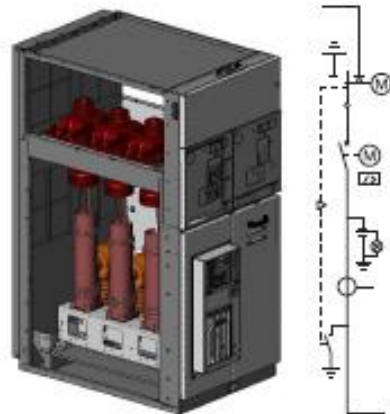
# UniSec

## Typical Units Overview – Circuit Breaker units

SBC = Incoming/Outgoing



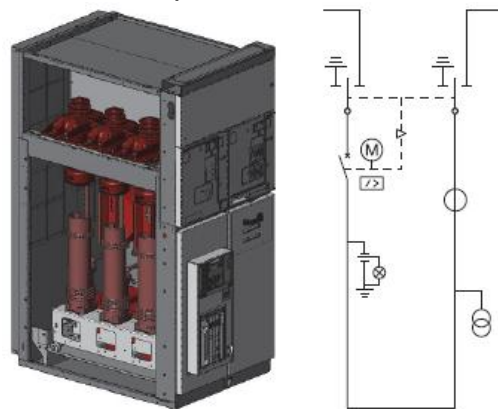
SBS = Coupler



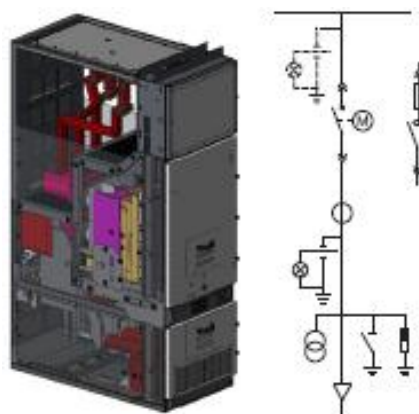
RRL – RLC Cables riser



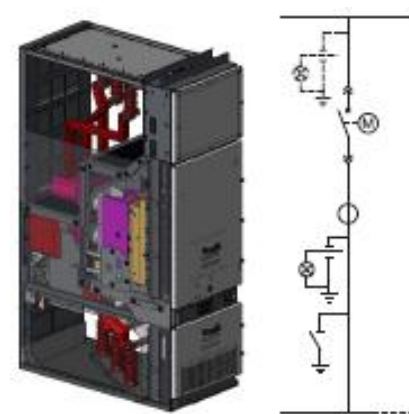
SBM = Coupler with measure



WBC = Withdrawable Incoming/Outgoing



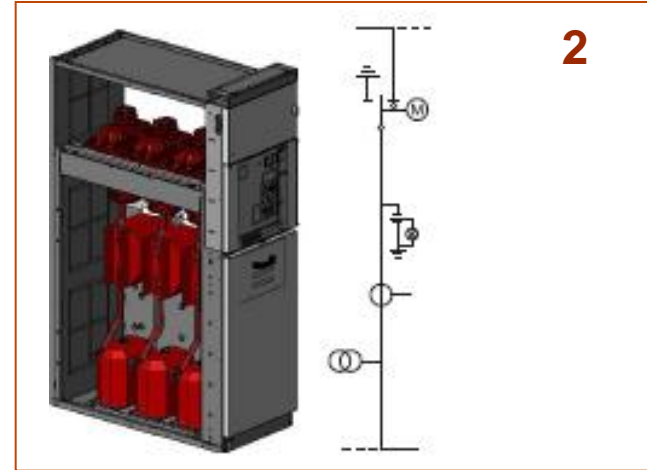
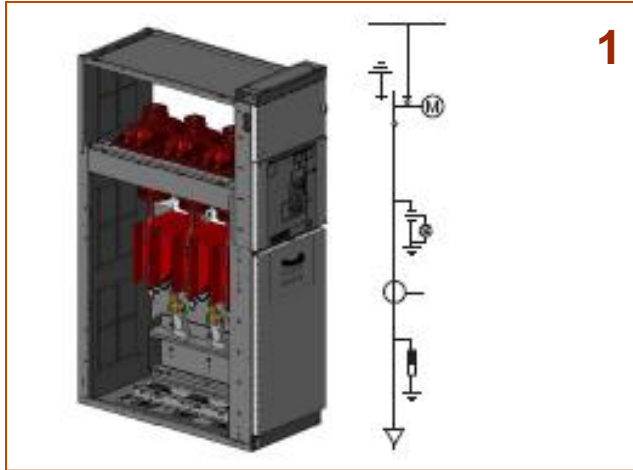
WBS = Withdrawable Coupler



# UniSec

## SDC & SDS – Panel with Switch Disconnecter

1. SDC = switch disconnecter cable
2. SDS = switch disconnecter sectionalizer



### Standard accessories

- Voltage indicators

### Available width

375 – 500 – 750mm

### Optional accessories

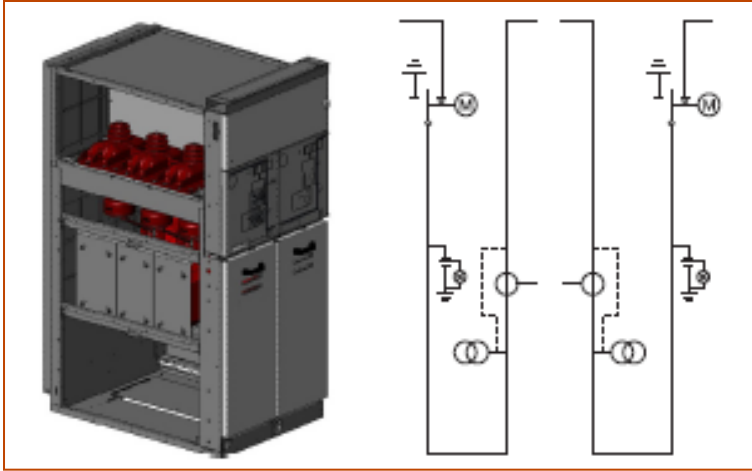
- Operating motor
- Open & Close pushbuttons
- Opening, closing and undervoltage coils for double spring operating mechanism up to 16kA
- DIN CTs or Ring for 500mm wide panel
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters



# UniSec

## SDM – Measure panel with Switch Disconnecter

SDM =  
switch  
disconnecter  
with  
measure



### Standard accessories

- Voltage indicators

### Available width

750mm

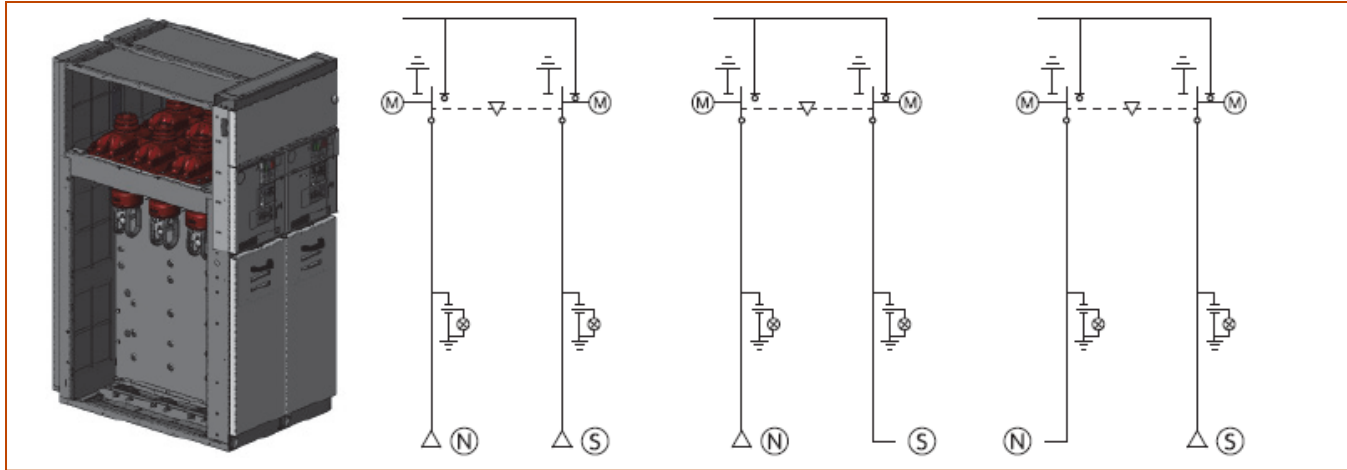
### Optional accessories

- Operating motor
- DIN CTs & DIN VTs
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters

# UniSec

## SDD – Double Switch Disconnecter panel

SDD =  
switch  
disconnecter  
double



### Standard accessories

- Voltage indicators
- Open & Close pushbuttons

**Available width**  
750mm

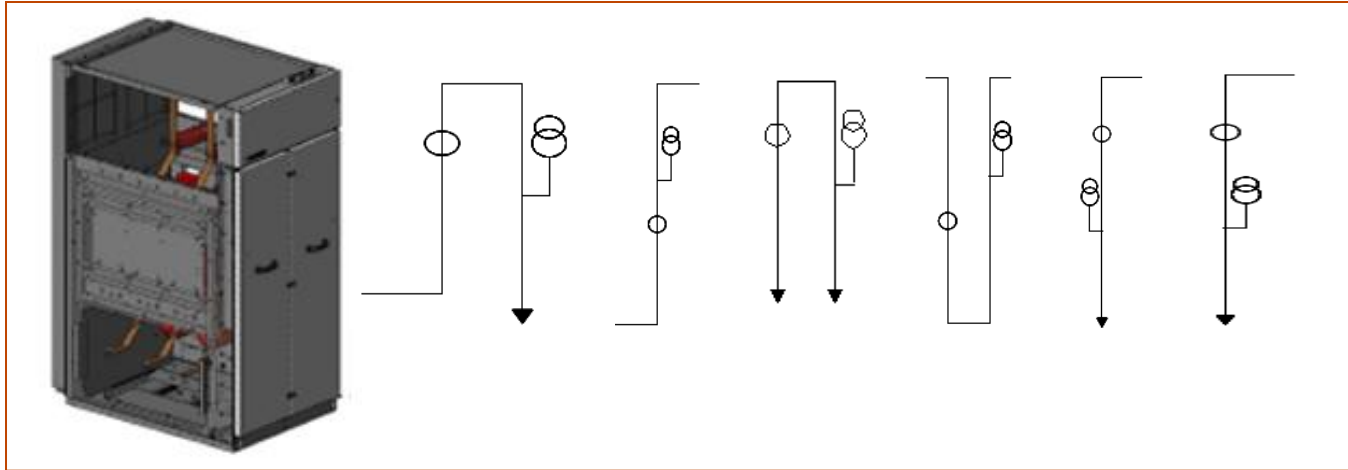
### Optional accessories

- Operating motor
- Opening, closing and undervoltage coils
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters

# UniSec

## UMP – Universal Metering Panel

UMP =  
universal  
metering  
panel

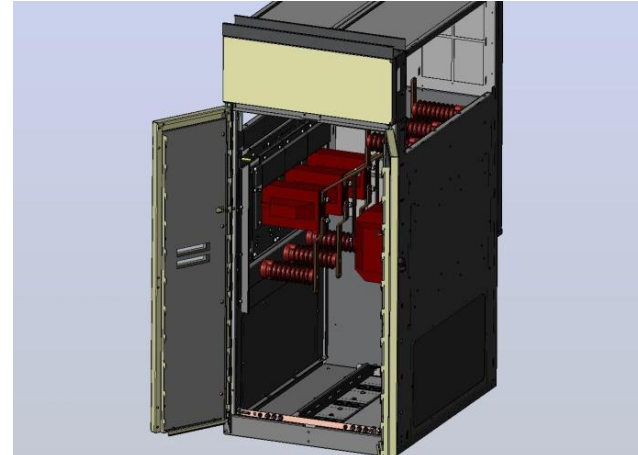
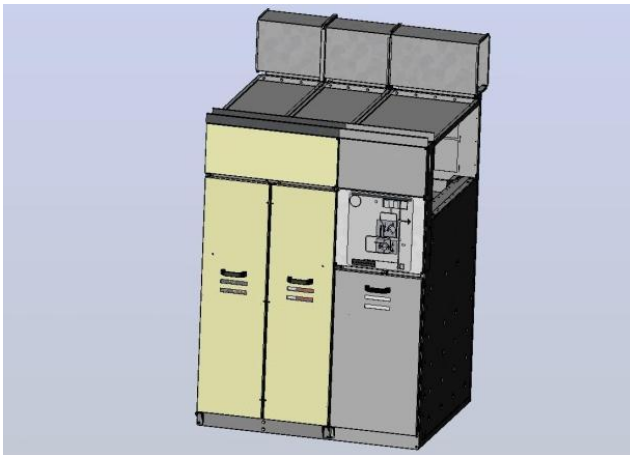


### Standard accessories

- N°6 available configurations with DIN CTs and VTs

### Available width

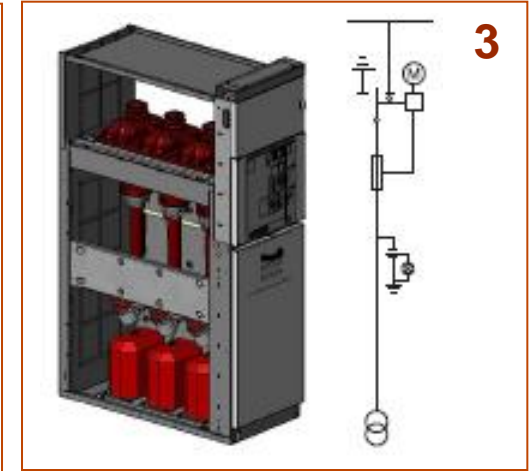
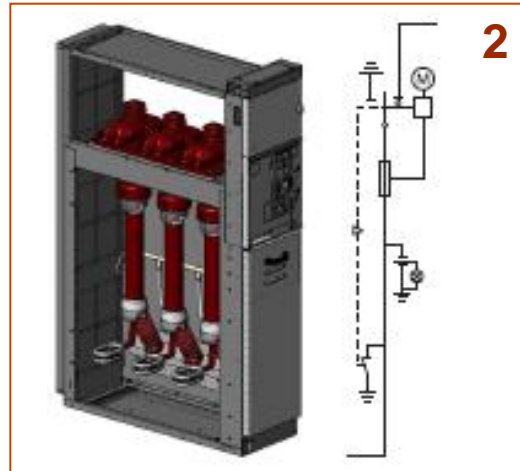
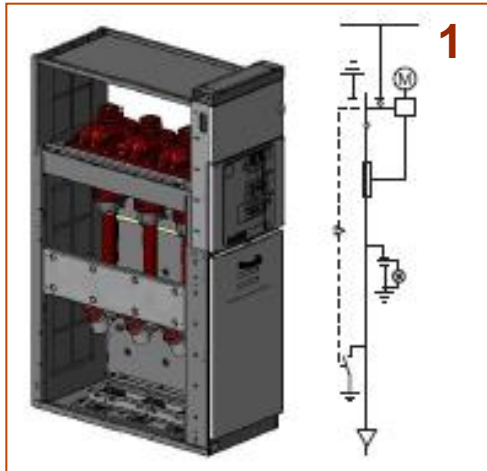
750mm



# UniSec

## SFC, SFS, SFV – Panels with Switch Disc. with Fuses

- 1. SFC = switch fuse cable
- 2. SFS = switch fuse sectionalizer
- 2. SFV = switch fuse voltage measure



### Standard accessories

- Voltage indicators
- Open & Close pushbuttons

### Available width

375 - 500mm

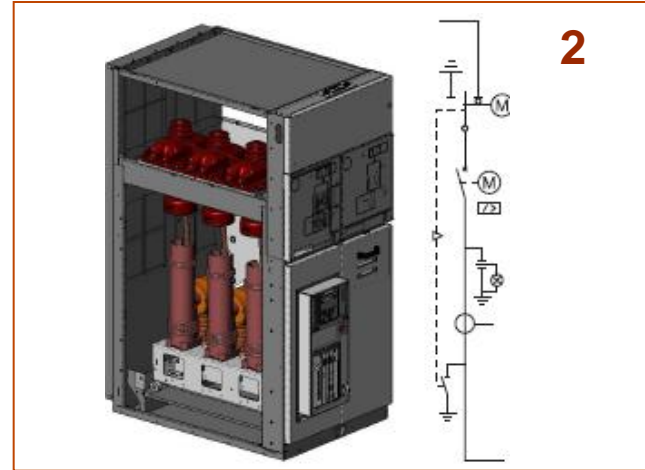
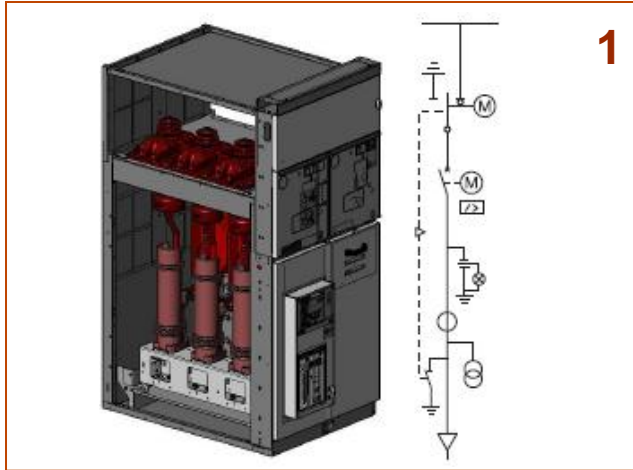
### Optional accessories

- Operating motor
- Opening, closing and undervoltage coils
- 4+4 auxiliary contacts
- Fuses up to 125A@12kV & 80A@24kV
- Pressure indications

# UniSec

## SBC, SBS – Panels with Removable CB

1. SBC =  
switch  
breaker  
cable
2. SBS =  
switch  
breaker  
sectionalizer



### Standard accessories

- Voltage indicators

### Optional accessories

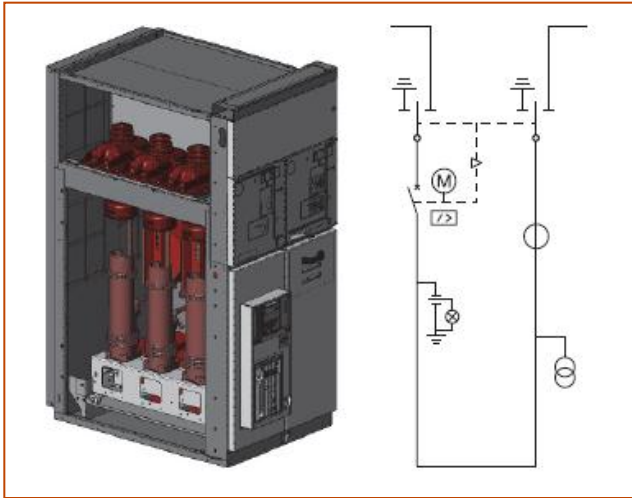
- Operating motor
- Wide relays availability
- DIN CTs & DIN VTs (for SBC)
- 4+4 auxiliary contacts
- Pressure indications
- Surge arresters (alternative to VTs)

**Available width**  
750mm

# UniSec

## SBM – Measure panel with Switch Disconnectors & CB

SBM =  
switch  
breaker  
with  
measure



### Standard accessories

- Voltage indicators

### Available width

750mm

### Optional accessories

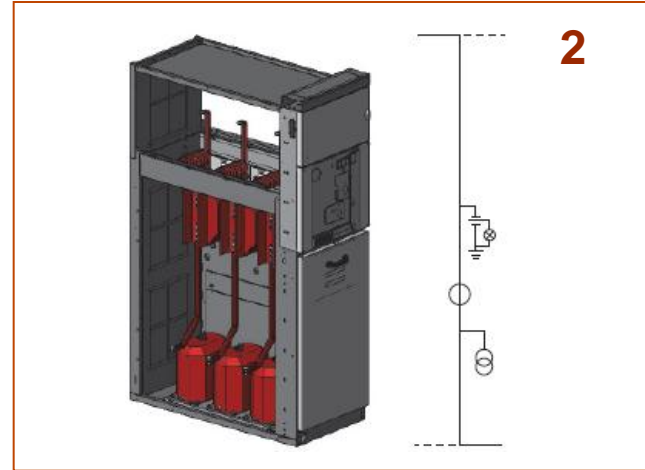
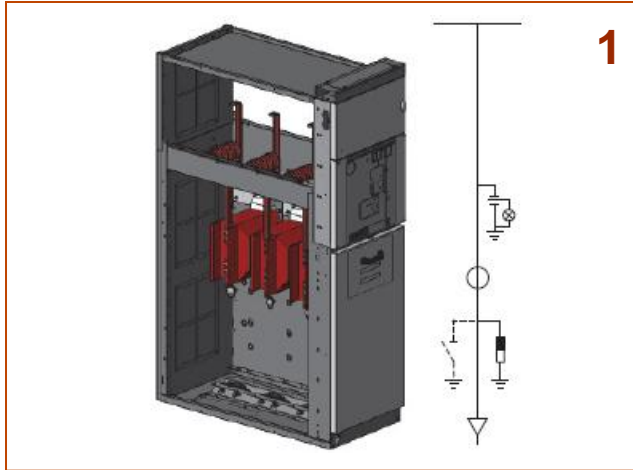
- Wide relays availability
- DIN CTs & DIN VTs
- 4+4 auxiliary contacts
- Pressure indications



# UniSec

## DRC, DRS – Direct Incoming and Riser panels

1. DRC = direct riser cable
2. DRS = direct riser sectionalizer



### Standard accessories

- Voltage indicators

### Available width

375-500mm

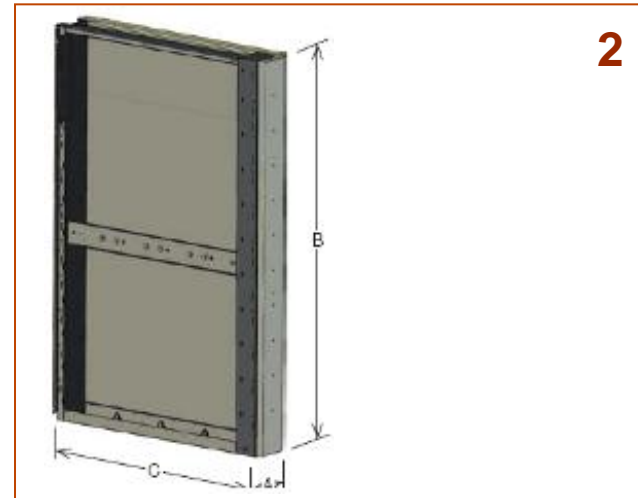
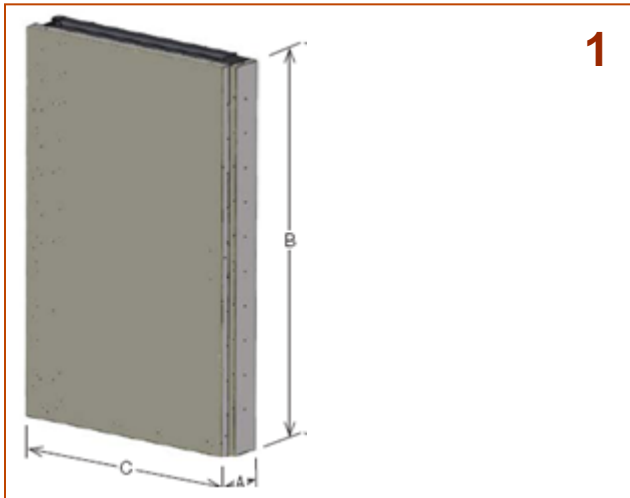
### Optional accessories

- DIN CTs & DIN VTs (DRS 500mm wide)
- DIN CTs or Toroidal (DRC 500mm wide)
- DIN VTs (DRC 500mm wide)
- Earthing Switch (DRC 500mm wide)
- Surge arresters

# UniSec

## RRL, RLC – Right & Left Cables riser

1. RLC =  
riser  
left  
cable
2. RRC =  
riser  
right  
cable



### Dimensions

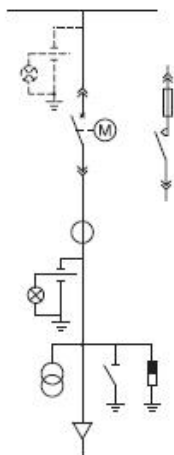
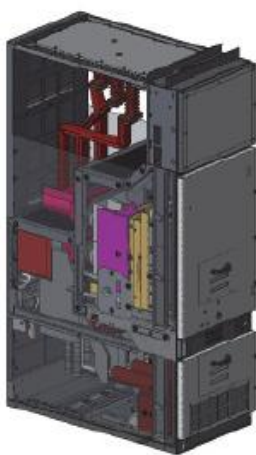
A 190 mm

B 1700 mm

C 1070 mm

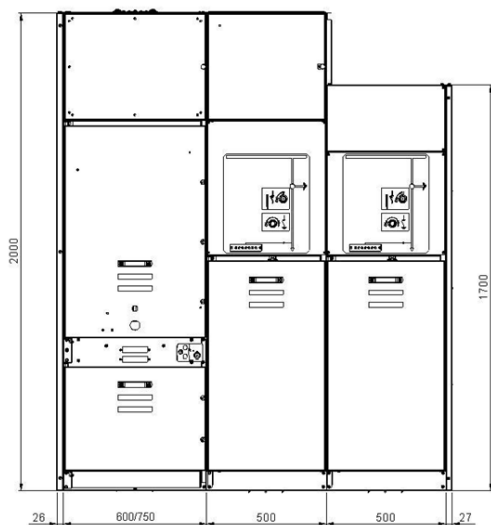
# UniSec

## WBC, WBS – Panels with Withdrawable CB



### High electrical characteristics

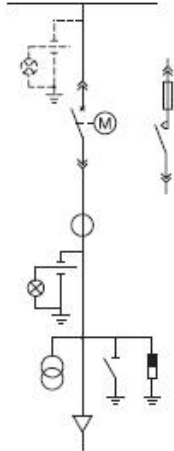
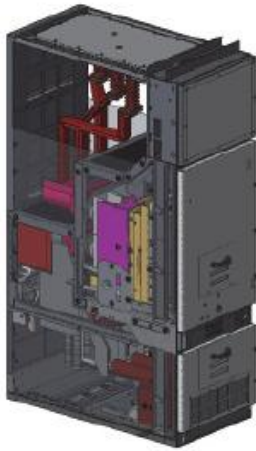
- Rated current up to 1250A
- Short Circuit Current up to 25kA 3sec
- Internal Arc Current up to 25kA 1s @ 12-17.5kV  
up to 21kA 1s @ 24kV
- Panel width 600mm @ 12-17.5kV  
750mm @ 24kV
- Possibility to connect withdrawable CB panels to other units



# UniSec

## WBC – Feeder with Withdrawable CB

WBC =  
withdrawable  
breaker  
cable



### Available width

600mm @ 12-17KV

750mm @ 24KV

### Standard accessories

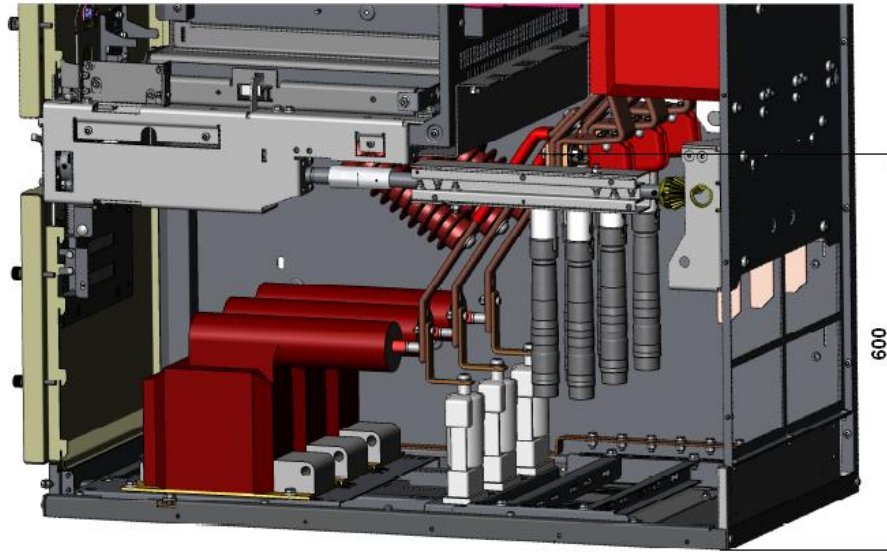
- Voltage indicators cables side

### Optional accessories

- Voltage indicators busbars side
- Wide relays availability
- DIN CTs or Ring (@ 12-17.5kV)
- DIN VTs fixed with or without fuses
- Cables connections:
  - Height: 600mm
  - n° 2 cables each phase up to 400mm<sup>2</sup>
  - n° 1 cable each phase up to 630mm<sup>2</sup>  
@ 12-17.5kV
- Earthing Switch with making capacity
- Internal lighting
- Anticondensation heaters
- Surge arresters

# UniSec

## WBC – Detailed configuration cable compartment



- DIN CTs
- Fused DIN VTs
- Surge Arresters
- Cables connections height 600mm

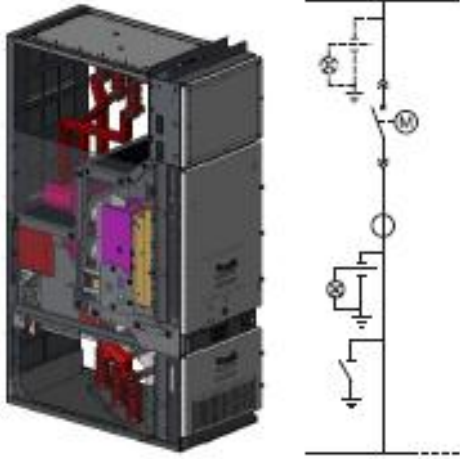
n° 2 cables/phase up to 400mm<sup>2</sup>

n° 1 cable/phase up to 630mm<sup>2</sup> @ 12-17.5kV

# UniSec

## WBS – Coupler with Withdrawable CB

WBS =  
withdrawable  
breaker  
sectionalizer



### Available width

600mm @ 12-17KV

750mm @ 24KV

### Standard accessories

- Voltage indicators lower busbars side

### Optional accessories

- Voltage indicators upper busbars side
- Wide relays availability
- DIN CTs or Ring (@ 12-17.5kV)
- Earthing Switch with making capacity
- Internal lighting
- Anticondensation heaters



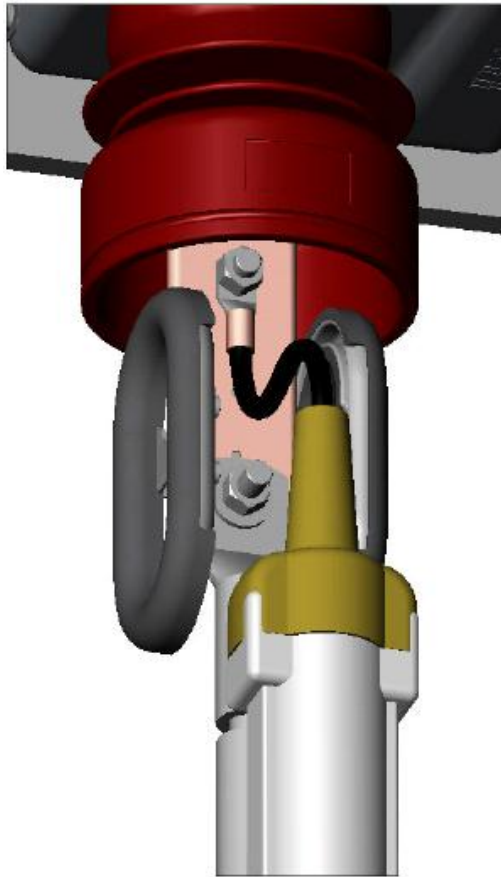
# UniSec

## Typical Units – Cables connections and Section

Typical unit	Width	N. Max of cables each phase	Max section (mm <sup>2</sup> )
SDC	375	1	300
	500	2	300
		1	630
	750	2	300
SFC	375	1	95
	500	1	95
SBC	750	2	300
		1	630
SBR	750	1	300
DRC	375	1	300
	500	2	300
	500	1	630
WBC	600	2	400
		1	630
	750	2	400

# UniSec

## Typical Units – Surge Arresters



Solution available for:

- SBC
- SDC (375,500,750mm)
- DRC (375, 500mm)
- SDM
- WBC

Surge arrester ABB MWD type  
according to IEC 60099-4

# UniSec Interlocks

# UniSec

## Interlocks – Switch Disconnecter panels

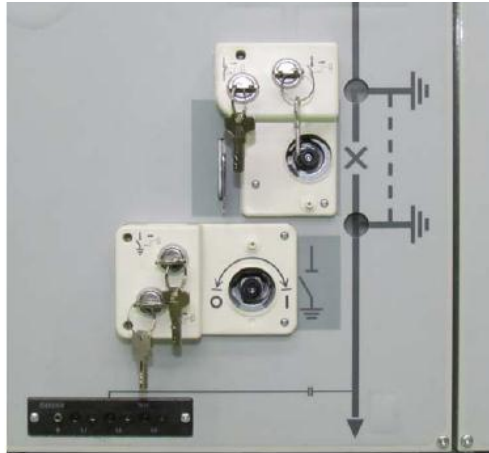


### Standard safety interlocks

- Prevent cable door opening in case Switch Disconnecter is not Earthing position
- Prevent the working motor when the lever is in the line of Switch-Disconnecter seat (by means of microswitch)
- Mechanical interlock between switch disconnecter and earthing switch downstream fuses and circuit breaker

# UniSec

## Interlocks – Switch Disconnecter panels



### Key & Padlock interlocks (on request)

- N° 1 or 2 keys on both Line or Earth operating mechanism insertion hole (Standard, Ronis or Profalux)
- Blocking magnet on switch disconnector position both Line and Earth
- N° 3 Padlocks on both Line and Earth operating mechanism insertion hole



# UniSec

## Interlocks – Withdrawable circuit breaker panels

- Standard safety interlocks
- Key interlocks (on request)
- Padlocks (on request)
- Blocking magnet (on request)
- Fail Safe on shutters (on request)



# UniSec

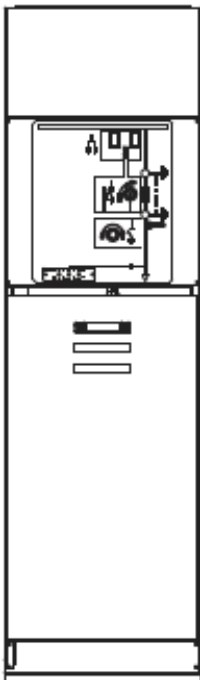
## Typical units dimensions

# UniSec

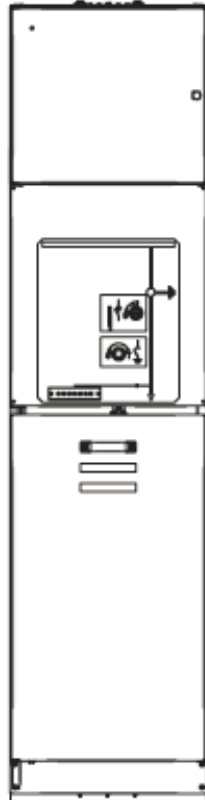
## Dimensions – Width



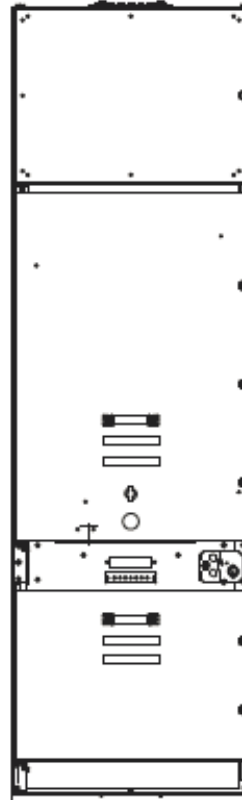
375mm



500mm



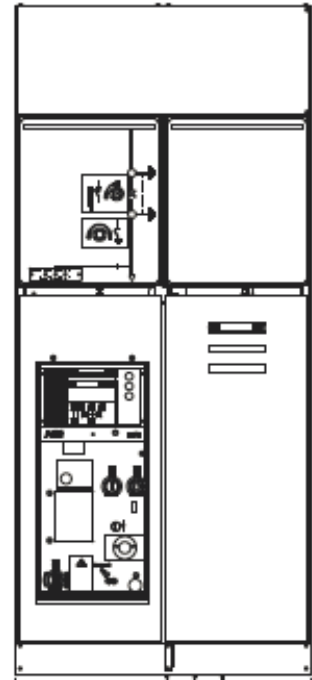
500mm



600mm



750mm



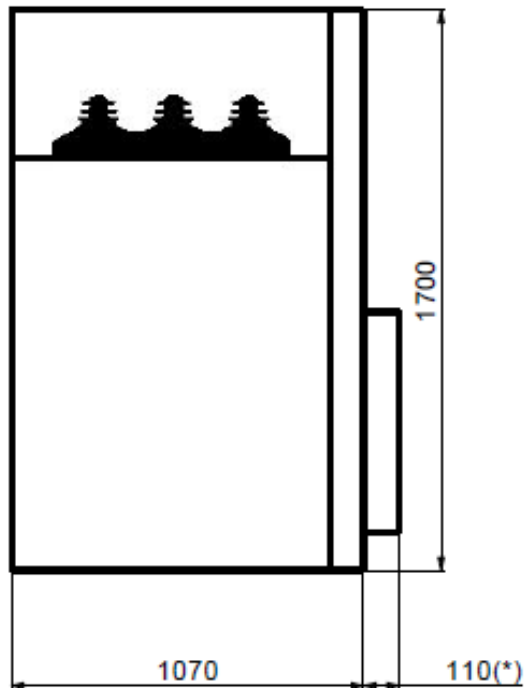
750mm

# UniSec

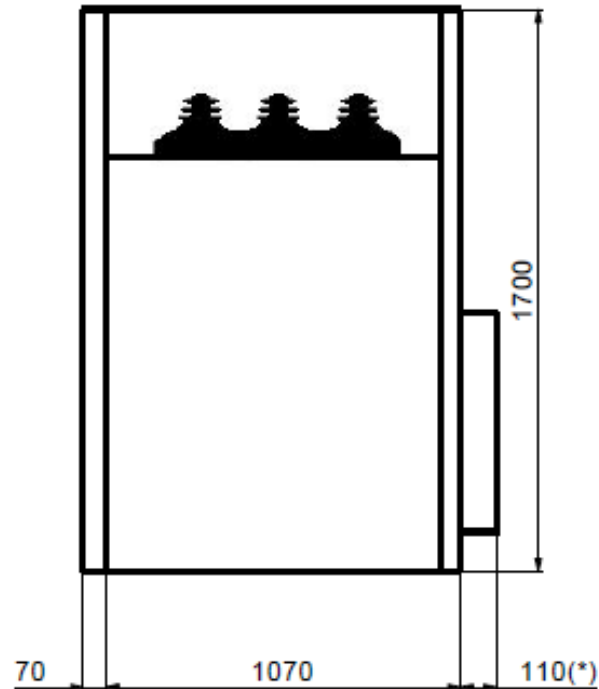
## Dimensions – LSC2A panels

No IAC

A-FL12.5kA 1s against the wall



A-FL 12.5kA 1s with filter

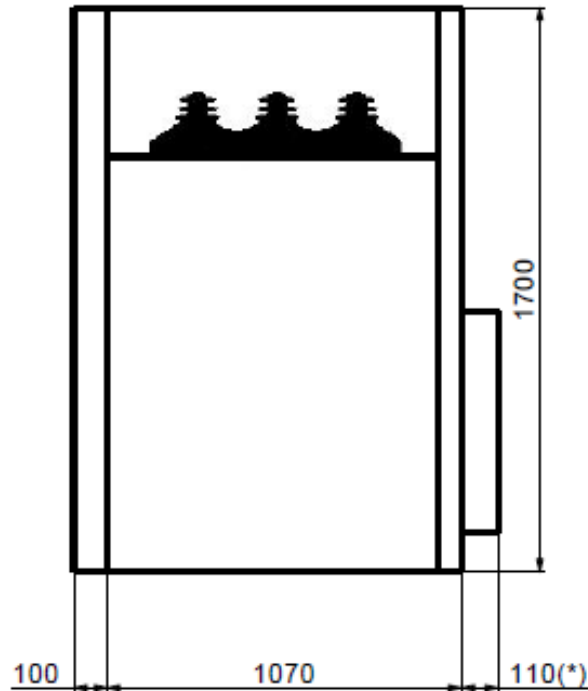


(\*) if unit with circuit breaker

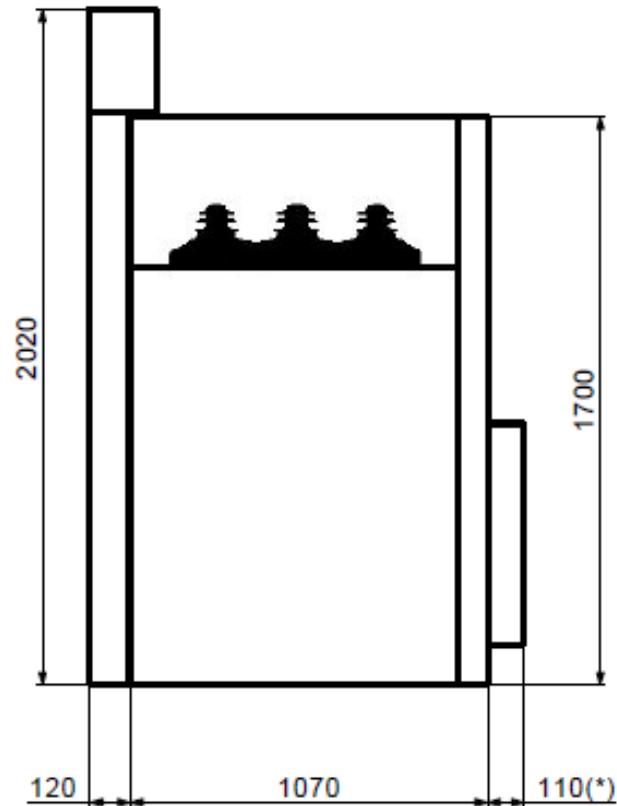
# UniSec

## Dimensions – LSC2A panels

A-FLR 16kA 1s with filter



A-FLR 21kA 1s with gas duct

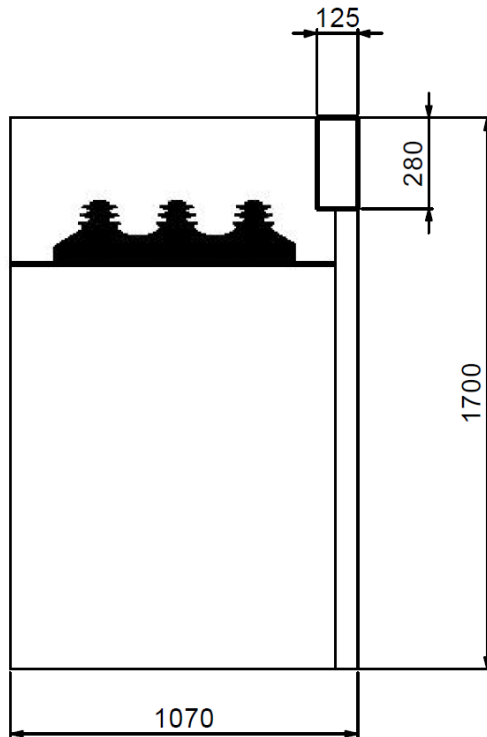


(\*) if unit with circuit breaker

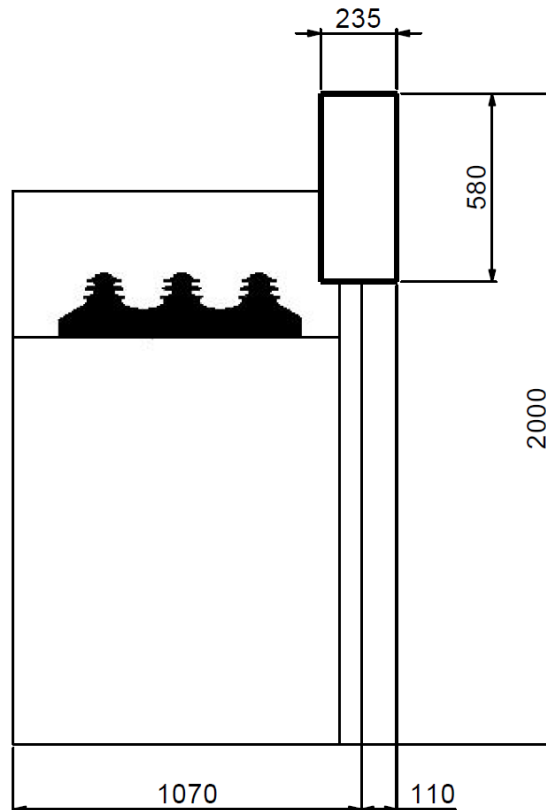
# UniSec

## Dimensions – LSC2A panels, LV compartments

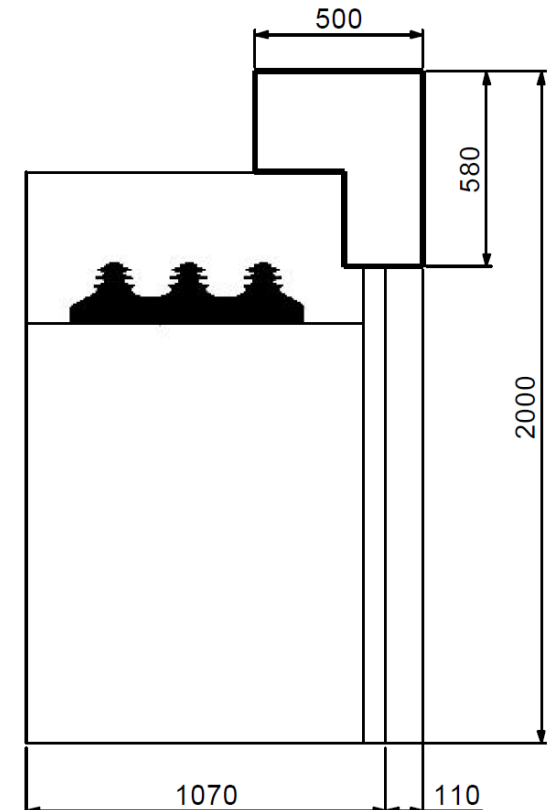
Standard



Wide



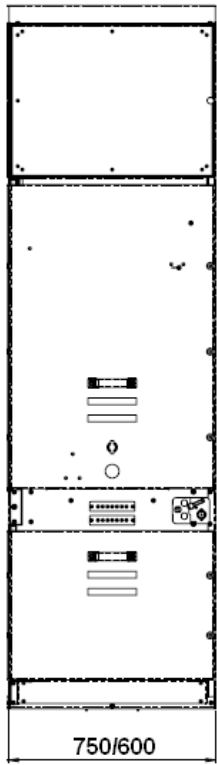
Big



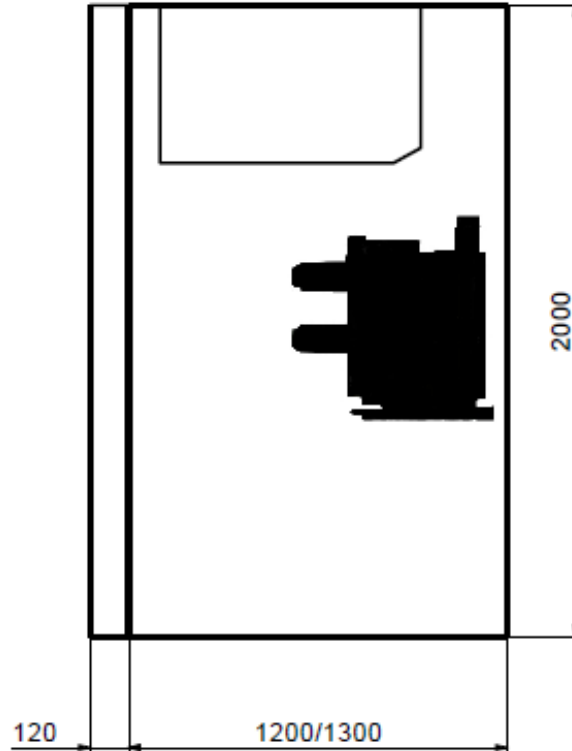
# UniSec

## Dimensions – LSC2B panels

A-FLR 25(21)kA 1s  
with filter

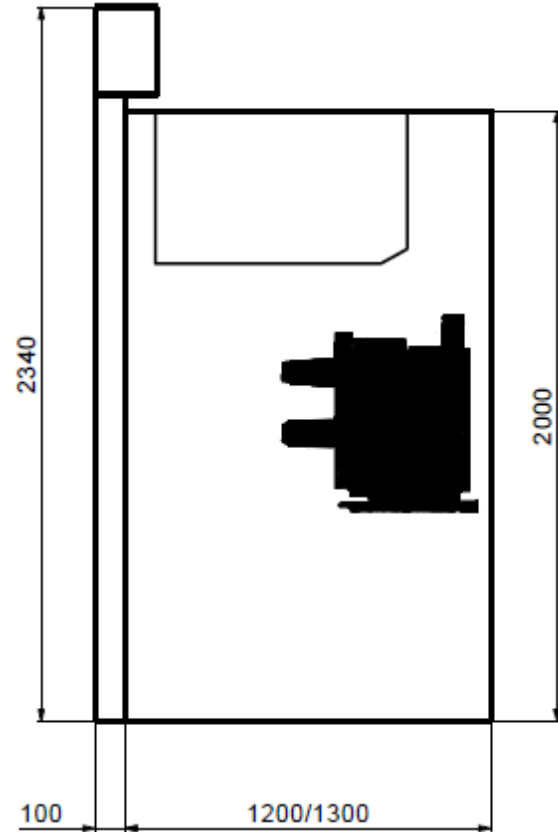


24/12-17KV



12-17/24KV

A-FLR 25(16)kA 1s  
with gas duct

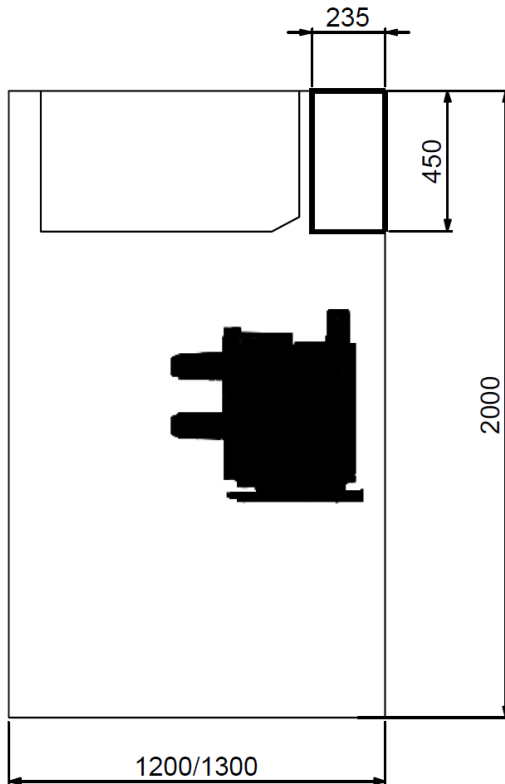


12-17/24KV

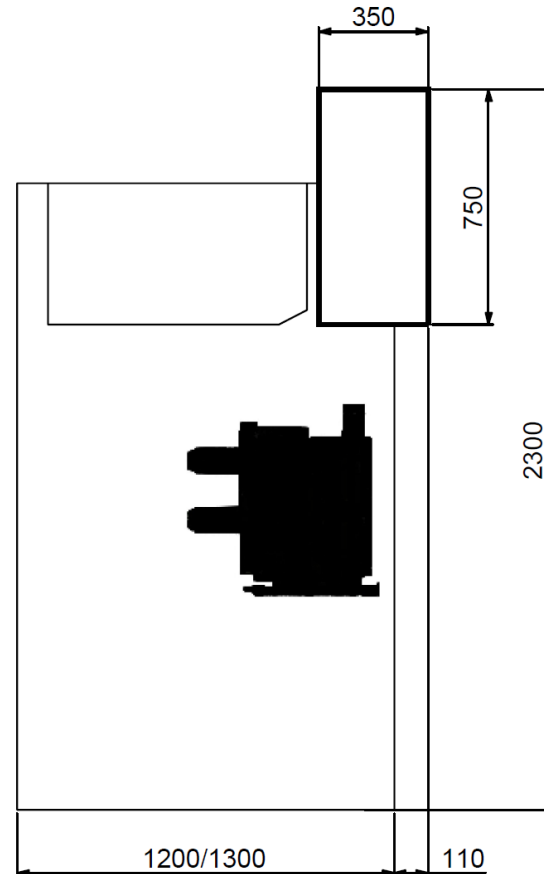
# UniSec

## Dimensions – LSC2B panels, LV compartments

Standard



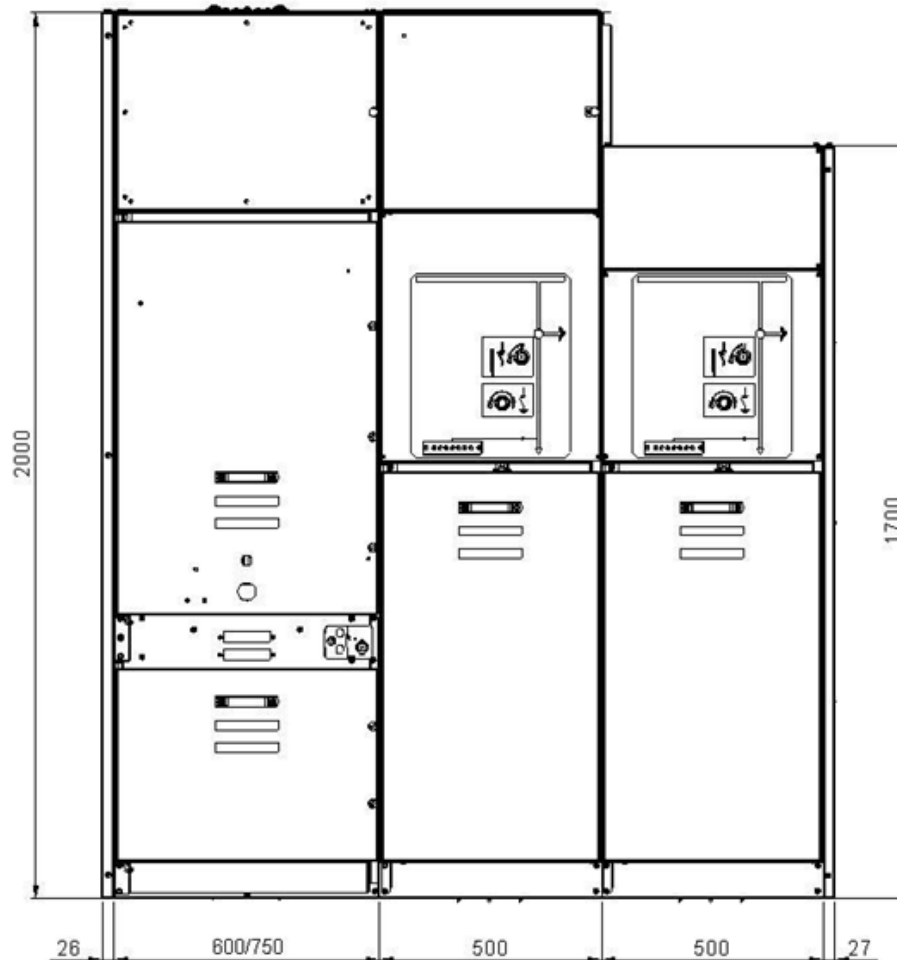
Big





# UniSec

## Coupling LSC2B panels with LSC2A in same Swb



### Adaptor panels

- SDC
- SFC
- SFV
- (SBC)
- (DRC)

Only Filter solution available  
due different panel height

# UniSec

## Main components

# UniSec

## Main Component – GSec Switch Disconnecter



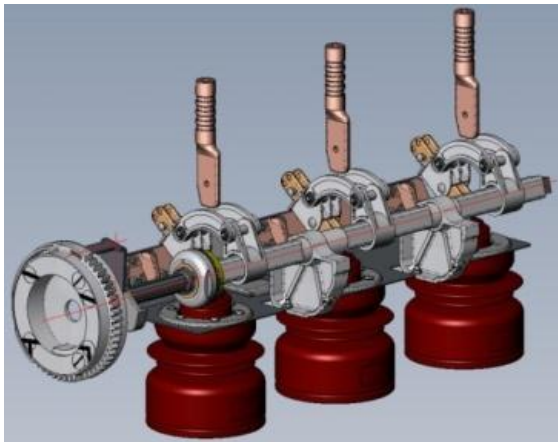
- Three-position: Line – Open – Earth
- Separate operating seats for isolation and earthing operations
- Load Breaking switch (always)
- Housing made of two materials:
  - top part in epoxy resin
  - bottom part in stainless steel
- Can be used in combination with fuses
- Front access to the actuator
- Easy installation and replacement of accessories

# UniSec

## Main Component – GSec Switch Disconnecter



- PM: bottom part in stainless steel increasing personnel safety
- Mechanical indication directly from the main shaft of the Switch-Disconnecter
- Spring charging contact for remote control
- Rated current up to 800A @ 12-17,5kV or up to 630A @ 24kV
- Switch Disconnecter with motor for remote use
- High electric and mechanical life performance:
  - Line: M2 (5000 operations) SD E3 (5 makings)  
M1 (1000 operations) DD
  - Earth: M0 (1000 operations) E2 (5 makings)
- Min. Temperature of -25°C for single spring
- Altitude up to 3000m applying insultation de-rating (IEC)
- 3 padlocks
- Keys interlocking



# UniSec

## Main Component – GSec Switch Disconnecter



- **Single Spring Actuator - Type 1 (SS)**  
Closing and Opening operations with Single Spring Actuator,  
Manually (lever) and Motor (remote) operated
- **Double Spring Actuator - Type 2 (DS)**  
Closing and Opening operations with Double Spring Actuator,  
Spring charging Manual (lever) and Motorized (remote):  
Closing by pushbuttons or coils  
Opening by pushbuttons, coils or fuses in case of fault

Typical Units	Actuator	
	Type 1 (SS)	Type 2 (DS)
SDC, SDS	X	X
SFC,SFS	--	X
SFV	--	X
SDD	--	X
SDM	X	--
SBC, SBS	X	--
SBM	X	--

# UniSec

## Main Component – GSec Switch Disconnecter

Auxiliary contacts  
(4 line + 4 earth)



Opening coil



Closing coil



Undervoltage coil



Motor device



Voltage presence  
indication



Fuse blown  
signalling contact



Digital manometer  
selfpowered with  
contact for remote  
indication



Analogic manometer  
with contact for  
remote indication



key locks  
padlocks in  
closed/open  
position



# UniSec

## Main Component – CEF fuses for transformer protection

Standard IEC 60282-1 / DIN 43625



Selection of fuses for transformer protection

Transformer rated voltage [kV]	Transformer power [kVA]																Fuse rated voltage [kV]
	25	50	75	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	
	CEF Fuse In [A]																
3	16	25	25	40	40	50	63	80	100	125	–	–	–	–	–	–	3.6/7.2
5	10	16	25	25	25	40	40	50	63	80	100	125	–	–	–	–	
6	6	16	16	25	25	25	40	40	50	63	80	100	125	–	–	–	
10	6	10	16	16	16	20	20	25	31.5	40	50	63	80	100	125	–	12
12	6	6	10	16	16	16	20	20	25	40	40	50	63	80	100	125	
15	6	6	10	10	16	16	16	20	20	25	40	40	50	63	80	80	17.5
20	6	6	6	10	10	16	16	16	20	20	25	31.5	40	50	63	80	
24	6	6	6	6	10	10	16	16	16	20	20	25	40	40	50	63	24



# UniSec

## Main Component – Removable circuit breaker



VD4/R-SEC



HD4/R-SEC



# UniSec

## Main Component - Withdrawable apparatus



**Vmax/Sec**  
@ 12-17,5kV



**VD4/Sec**  
@ 24kV



**Contactor**  
VSC7/P  
VSC12/P

# UniSec

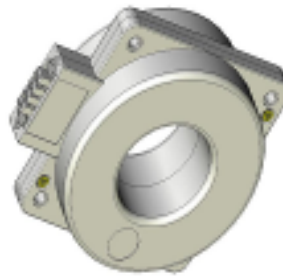
## Main Component – Instrument Transformers

### TRADITIONAL

DIN CTs



Ring CTs



DIN VTs



### SENSORS

DIN Current



Ring Current KECA



Combined  
Current and Voltage



# UniSec

## Main Component – Protection Relays

REF 601



REF 610



REF 615



REF 542plus



REF 630



# UniSec Regional Factory in Argentina



# UniSec

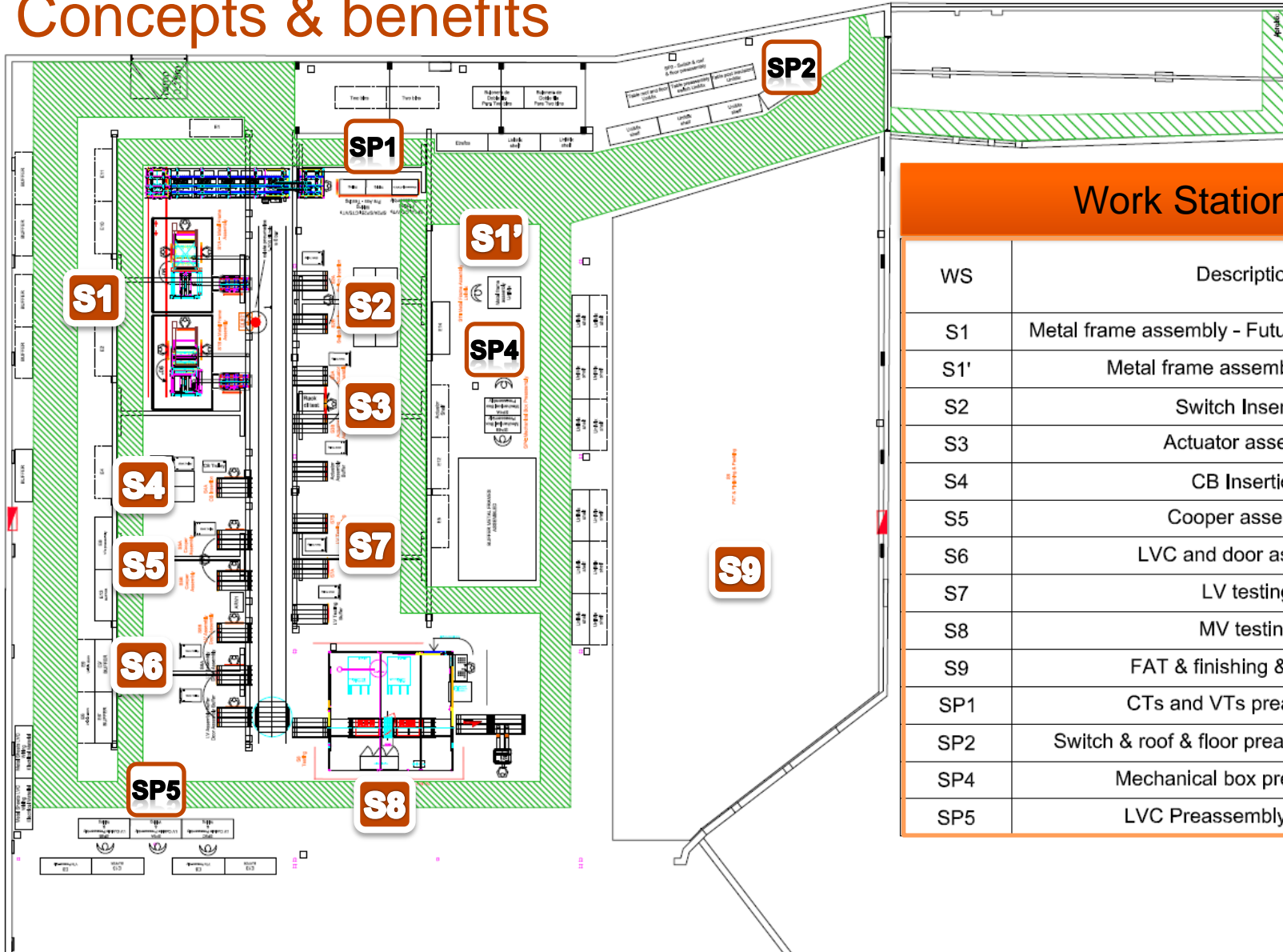
## Concepts & benefits

**Regional Focused Feeder Factory**



# UniSec

## Concepts & benefits



## Work Stations

WS	Description
S1	Metal frame assembly - Future UniMix & UniSec
S1'	Metal frame assembly - UniMix
S2	Switch Insertion
S3	Actuator assembly
S4	CB Insertion
S5	Cooper assembly
S6	LVC and door assembly
S7	LV testing
S8	MV testing
S9	FAT & finishing & packing
SP1	CTs and VTs preassembly
SP2	Switch & roof & floor preassembly - UniMix
SP4	Mechanical box preassembly
SP5	LVC Preassembly & Wiring



# UniSec

## Concepts & benefits

### AIS Secondary Switchgear Factory:

- Productive area: 1400 m<sup>2</sup>
- Production capacity: 120 panels / month
- More than 70% of the production is destined to Export Market.



# UniSec

## Concepts & Benefits

# UniSec

## Concepts & benefits



### Global solutions

- Argentina Regional Focus Feeder Factory
  - 1400m2 productive area
  - 120 panels per month
- America customized panels
- FAT with customer (on request)
- Regional support to customer with commissioning, maintenance and training
- Regional Service

# UniSec

## Concepts & benefits



### Wide range of solutions

- A wide range of functional units easy to upgrade
- New functional units: SDD, SBM, SDM...
- Market adaptations are implemented to match local requirements
- Modular solution for Switch Disconnectors accessories
- Standard Removable Circuit-breaker (< 2h for replacing)
- Surge arresters for 375mm wide panels
- Both DIN CTs and VTs in Removable CB panel
- Installation altitude up to 3000m

# UniSec

## Concepts & benefits



### Safety and reliability

- IEC 62271-200 Native
- Designed and tested to have a min life of 30 years according IEC 62271-1
- Anti-Seismic version according to IEEE 693
- GOST homologation available soon (-25°C and -40°C for storage)
- Available in Marine version (Vibration & IP42)
- Safe: IAC AFLR, PM/PI, LSC2A/2B, Interlocks

# Contact information

If you have further questions , please contact me at:

PRESENTER

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