

EXTERNAL VERSION



PRODUCT PRESENTATION, NOVEMBER 2017

# UniSec

## Medium Voltage Air Insulated Switchgear for Secondary Distribution

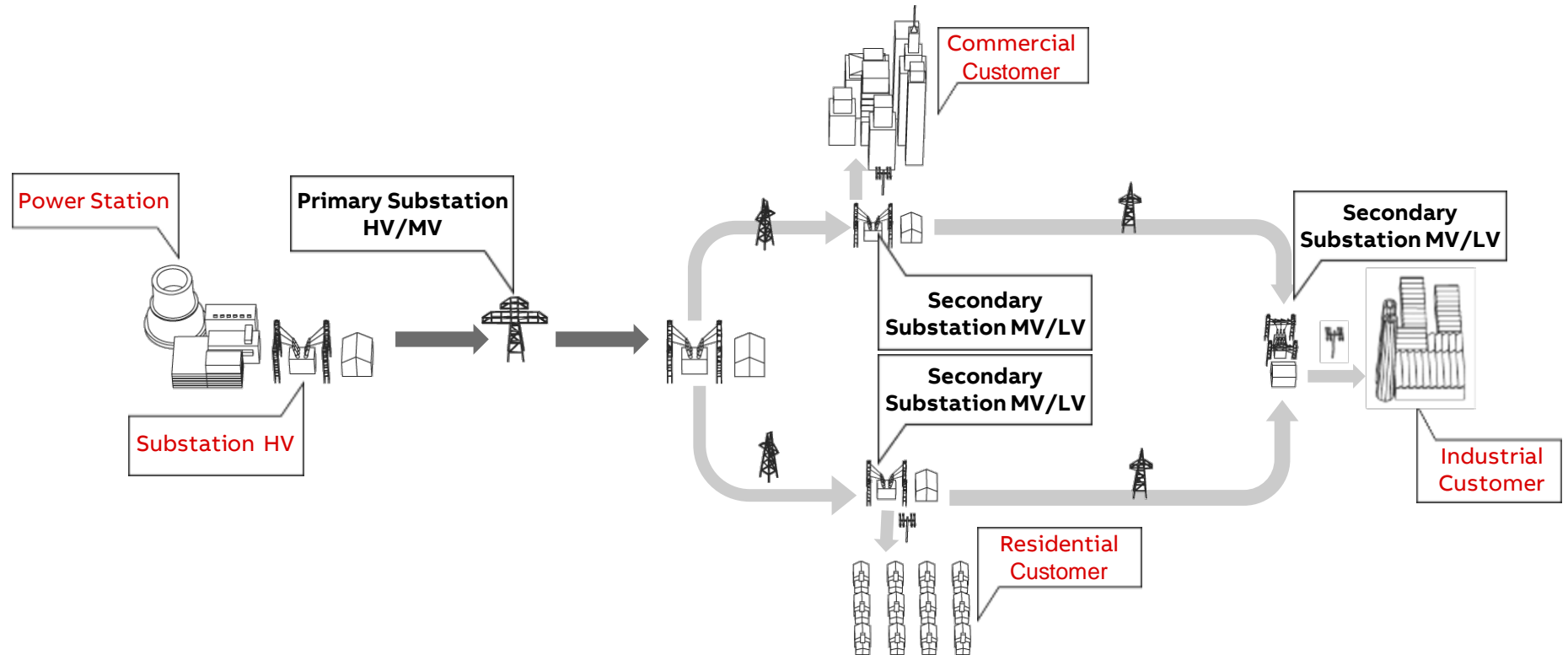
### Product overview



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Secondary Distribution

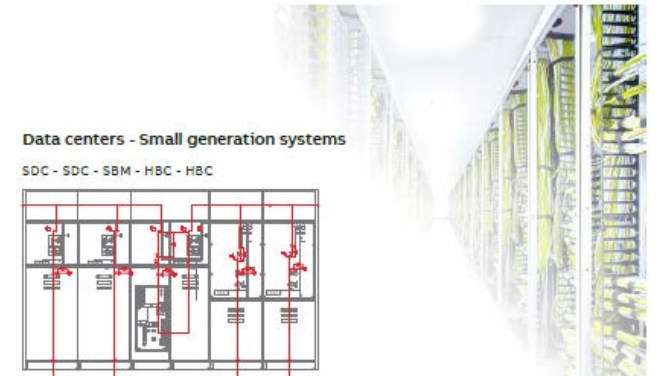
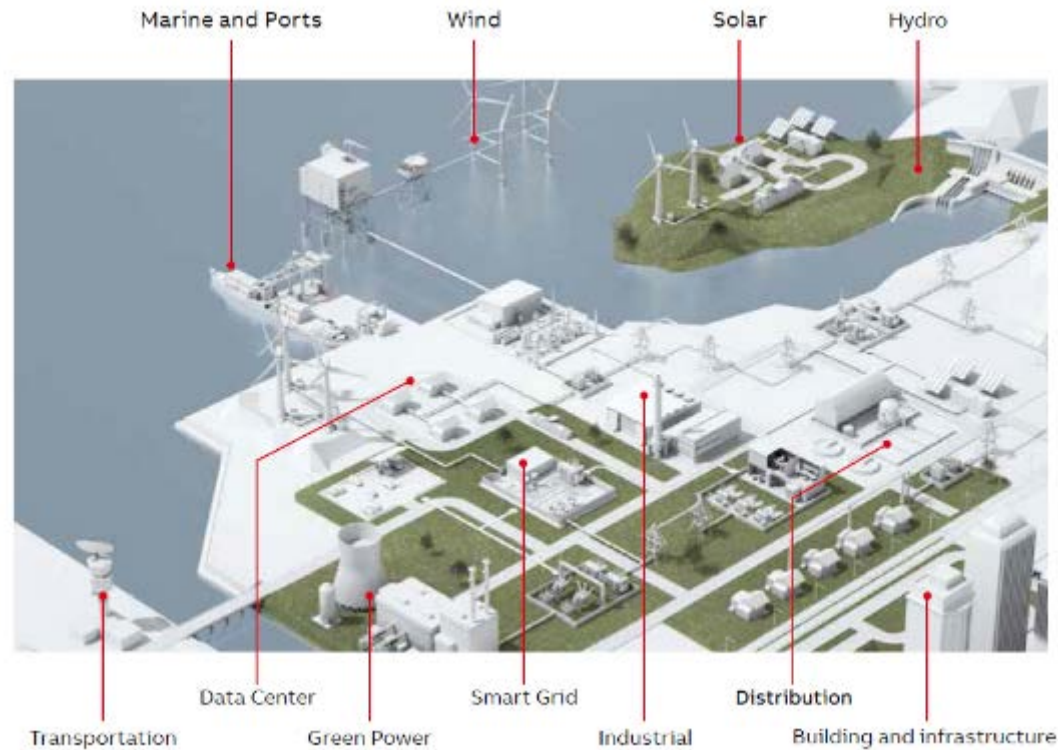
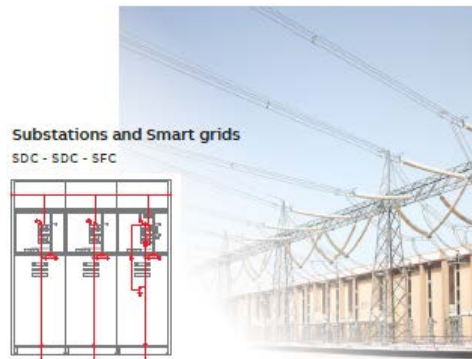
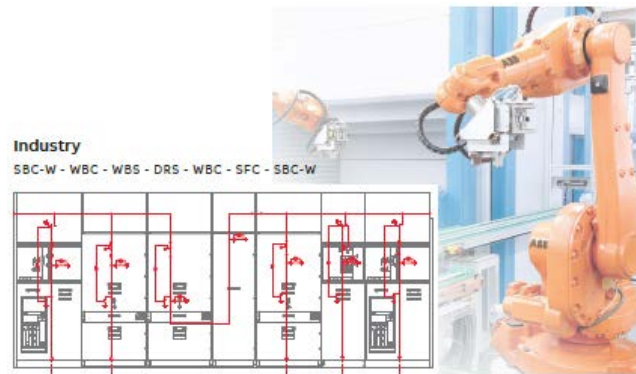
### General product positioning



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Secondary Distribution

### General product positioning - Applications



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Product Overview

### UniSec

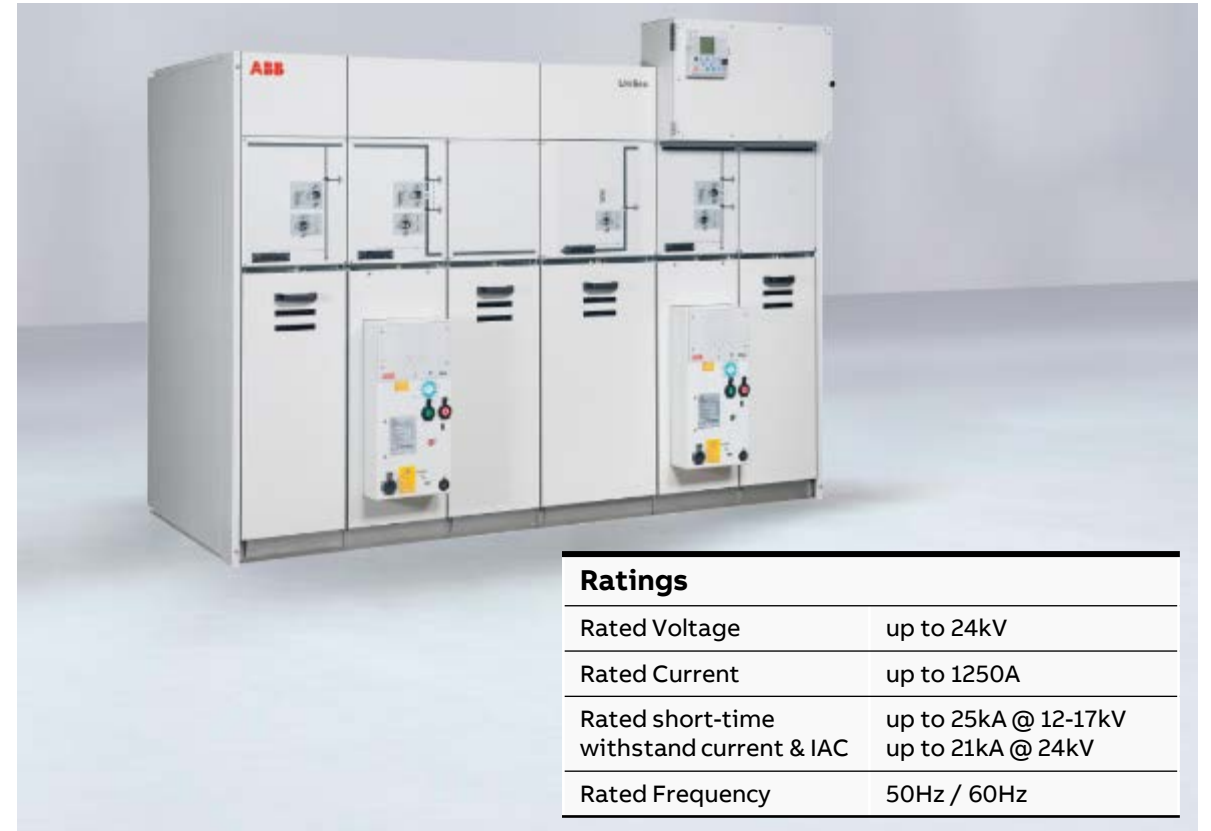
#### Description

UniSec air-insulated switchgear is based on a highly flexible, modular concept with fewer parts and standardized solutions that can be readily configured to meet the specific needs of each application.

#### Key features

- Designed & Tested acc. to latest IEC 62271-200, GOST (RU) & GB (CN) Stds
- Internal arc proof IAC AF/AFL/AFLR with different gas exhausting variants
- Loss of Service Continuity LSC2B/ LSC2A/LSC2 solutions available
- Partition Metallic PM Classification
- Load Break Switch, Vacuum Contactor, Vacuum and SF6 Circuit Breakers
- Anti-Seismic and Marine version available

**Safe conditions for all applications**



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Values

### Productivity and Flexibility

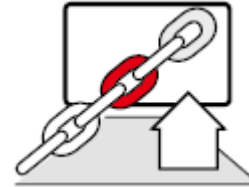
Maximizing your output



- Easy to Install
- Broad portfolio
- Speed up your projects

### Reliability and Safety

Protecting your assets



- Safety and Protection for the operator
- Reliable in harsh environment

### Sustainability and Efficiency

Optimizing your investments



- Footprint reduction
- Sustainable

**Its strengths, Your benefits**



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Easy to install

Modular design

Extension and upgrades always possible on both sides

Complete access from the front (installation against the wall)

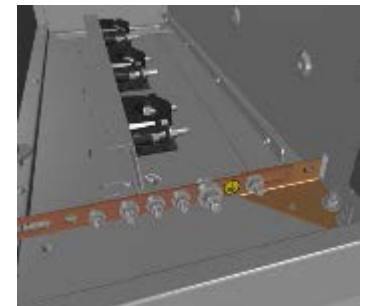
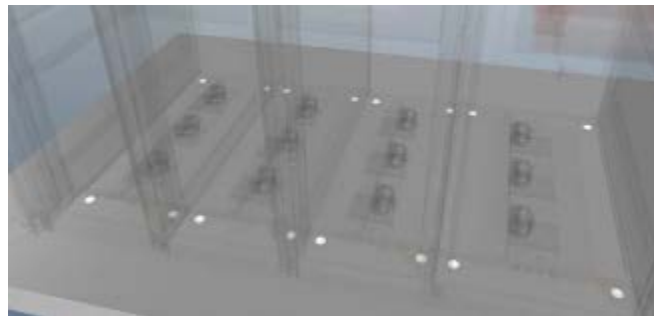
Frontal earthing busbar

Bottom and Top cable entry

Just 4 fixing point to save time

Lifting hooks for easy handling

Installation Videos available



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

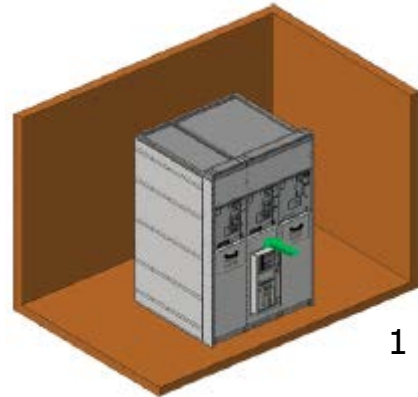
Values - Productivity and Flexibility



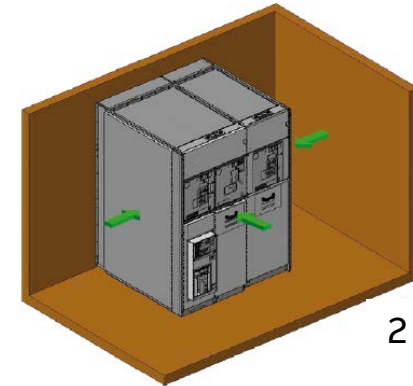
## Easy to install

Different Swg room layout to use different Internal Arc exhaust types:  
(only IAC versions available)

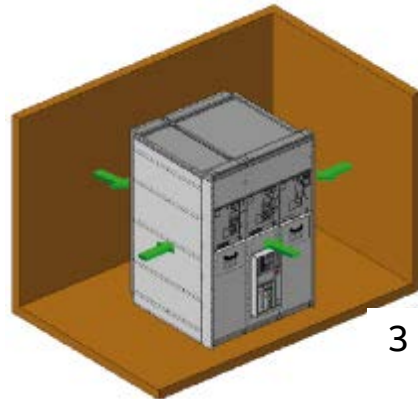
1. IAC AF up to 16kA 1s as base proposal and pressure relief inside the room
2. IAC AFL up to 12,5kA 1s with pressure relief into arc chamber built using wall on the rear of the Swg
3. IAC AFLR up to 21kA 1s with arc gas absorbers (filters) and pressure relief inside the Swg room or downward into cable trench. (25kA 1s for LSC2B panels 12-17.5kV)
4. IAC AFLR up to 21kA 1s with arc gas duct and pressure relief outside the Swg room (25kA 1s for LSC2A W750-H2.000mm panels 12kV and LSC2B panels 12-17.5kV)



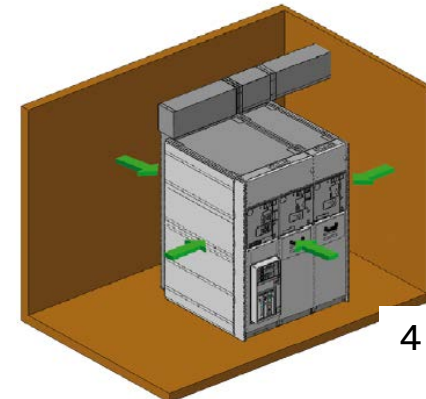
1



2



3



4

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



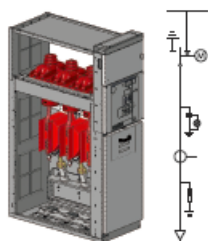
## Broad portfolio

Different projects line-up to be covered with more than 20 typical panels:

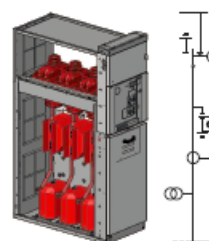
- Units with switch disconnectors
- Units with fused switch disconnectors
- Units with frontal withdrawable circuit breaker or contactor
- Metering units
- Units with switch disconnectors and fixed/removable/withdrawable circuit breaker

### Units with switch-disconnector

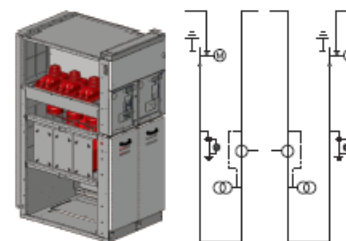
**SDC**  
Incoming/outgoing



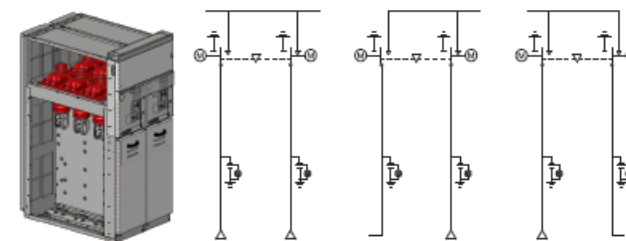
**SDS**  
Coupler



**SDM**  
Coupler with measure

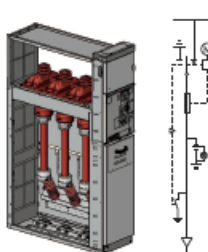


**SDD**  
Double switch-disconnector

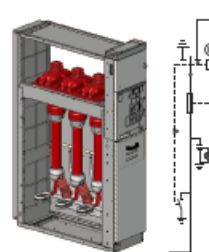


### Units with switch-disconnector and fuses

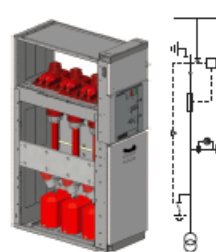
**SFC**  
Outgoing



**SFS**  
Coupler

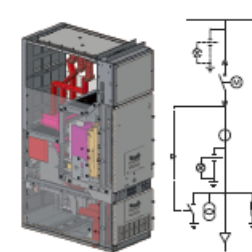


**SFV**  
Measure

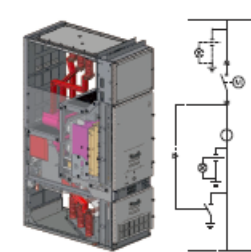


### Units with withdrawable circuit-breaker or contactor

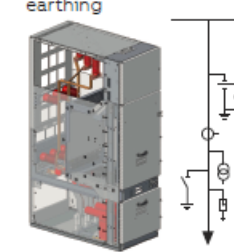
**WBC**  
Incoming/outgoing



**WBS**  
Coupler



**BME**  
Busbars metering & earthing





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

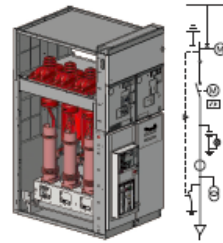
Values - Productivity and Flexibility



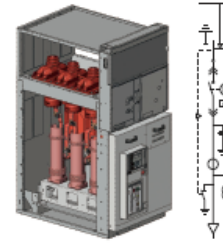
## Broad portfolio

Units with switch-disconnector and removable or withdrawable circuit-breaker

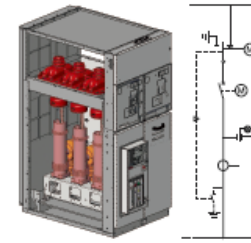
**SBC**  
Incoming/outgoing



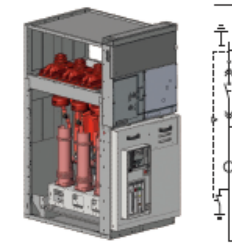
**SBC-W**  
Incoming/outgoing



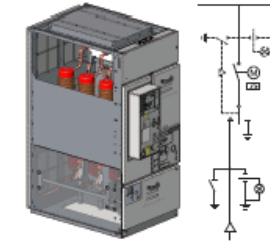
**SBS**  
Coupler



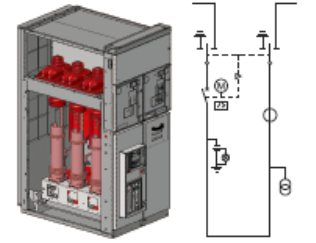
**SBS-W**  
Coupler



**SBR**  
Reversed feeder

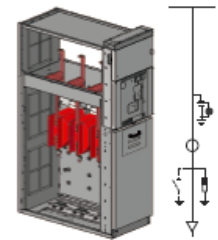


**SBM**  
Coupler with measure

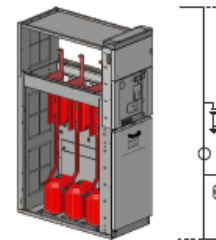


Other Units

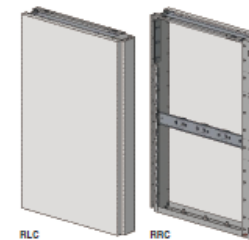
**DRC**  
Direct incoming/outgoing



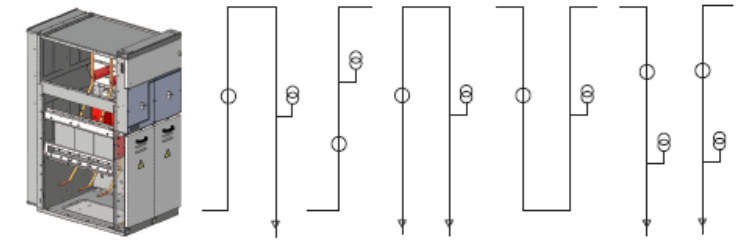
**DRS**  
Busbar riser



**RLC/RRC**  
Cable riser

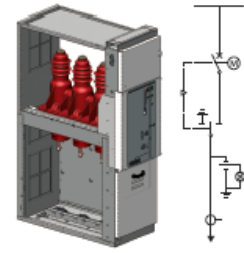


**UMP**  
Universal metering



Unit with circuit-breaker  
and disconnector integrated

**HBC**  
Incoming/outgoing



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

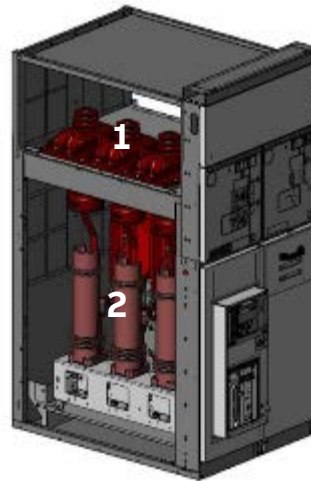
Values - Productivity and Flexibility



## Broad portfolio

Different accessibility to the plant assured by:

- Different Loss of Service Continuity  
LSC2A/LSC2B
- Partition Metallic
- Withdrawable Circuit Breaker
- Different breaking technologies



### LSC2A

for Switch Disconnecter units with Fixed, Removable or Withdrawable Circuit-Breakers

2 main MV compartments (segregated by Switch Disconnecter):

1. Busbars
2. Circuit-Breakers, Fuses, etc...

Accessibility to Apparatus compartment with service continuity of Busbars compartment and adjacent panels.

### PM

Metallic Partition between compartments given by Apparatus (GSec or HySec)

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Broad portfolio

Different accessibility to the plant assured by:

- Different Loss of Service Continuity LSC2A/LSC2B
- Partition Metallic
- Withdrawable Circuit Breaker
- Different breaking technologies

### LSC2A panel type can fit

- Switch Disconnecter type GSec (SF6)
- Removable or Withdrawable Circuit-Breaker type HD4/R-Sec (SF6)
- Removable or Withdrawable Circuit-Breaker type VD4/R-Sec\* (Vacuum)  
\* also VD4/L-Sec for SBS panel Coupler type
- Fixed Multifunctional apparatus type HySec (Vacuum CB & SF6 Disconnecter)



GSec



HD4/R-Sec



VD4/R-Sec

(\*) picture with on board relay



HySec

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



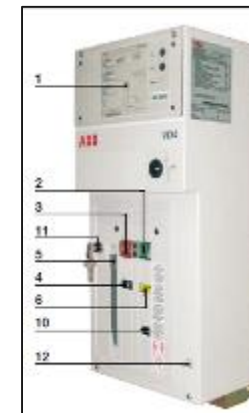
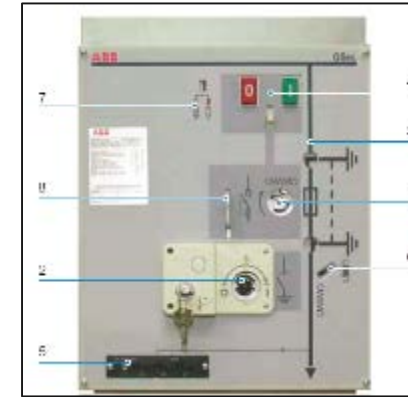
## Broad portfolio

Different accessibility to the plant assured by:

- Different Loss of Service Continuity LSC2A/LSC2B
- Partition Metallic
- Withdrawable Circuit Breaker
- Different breaking technologies

1. Lever seat, line operating
2. Lever seat, earth operating with keys
3. Mimic diagram (dynamic)
4. Operating mechanism push-buttons (only 2S versions)
5. Voltage signalling device
6. Spring status indication (only 2S versions)
7. Blown fuses indicator (only fused version)
8. Lock for Padlocks

1. Relay on board
2. Closing pushbutton
3. Opening pushbutton
4. Open/closed indicator
5. Built-in charging lever
6. Spring status indication
10. Operation counter
11. Key lock
12. UR mechanical override



Click for Operating sequence Video

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

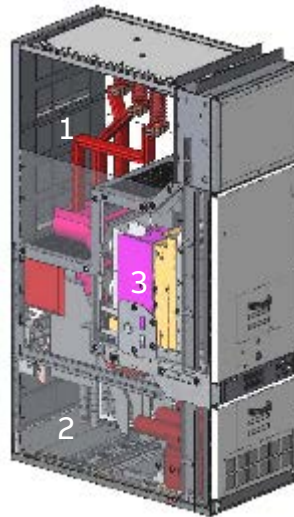
Values - Productivity and Flexibility



## Broad portfolio

Different accessibility to the plant assured by:

- Different Loss of Service Continuity  
LSC2A/LSC2B
- Partition Metallic
- Withdrawable Circuit Breaker
- Different breaking technologies



### LSC2B

for frontal Withdrawable Circuit-Breakers and Contactors 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 **where is required high service continuity and high ratings**

**PM** Metallic Partition between compartments @ 12-17.5kV

**PI** Insulated Partition between compartments @ 24kV



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Broad portfolio

Different accessibility to the plant assured by:

- Different Loss of Service Continuity LSC2A/LSC2B
- Partition Metallic
- Withdrawable Circuit Breaker
- Different breaking technologies

## LSC2B panel type can fit

- Withdrawable Circuit-Breaker type VD4/P 12-17.5kV and VD4/Sec 24kV
- Withdrawable Circuit-Breaker type HD4/Sec
- Withdrawable Contactor type VSC/P 7.2-12kV

VD4/Sec



VSC/P



HD4/Sec



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



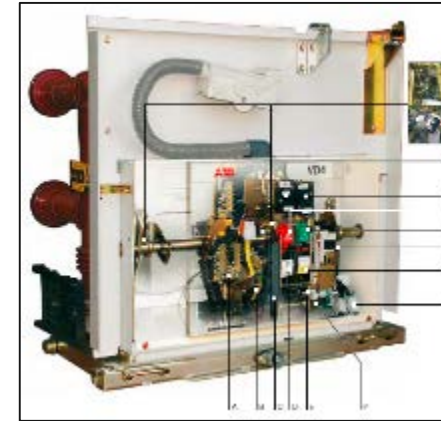
## Broad portfolio

Different accessibility to the plant assured by:

- Different Loss of Service Continuity LSC2A/LSC2B
- Partition Metallic
- Withdrawable Circuit Breaker
- Different breaking technologies

- A. Aux. contacts
- B. Motor charging
- C. Built-in charging lever
- D. Open/closed indicator
- E. Operation counter
- F. Plug-socket connectors
- G. Spring status indication
- H. Service release
- I. Closing pushbutton
- L. Opening pushbutton

- 1. Key free with ES open
- 2. Key free with truck in service
- 3. Key free with ES closed
- 4. ES position indicator



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

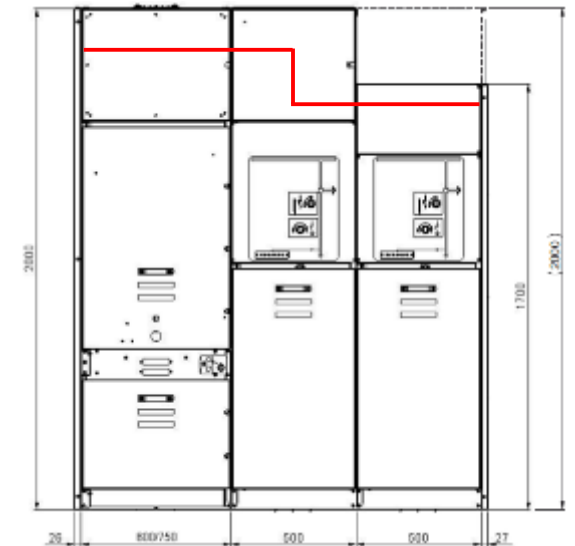
Values - Productivity and Flexibility



## Broad portfolio

LSC2B and LSC2A panels can be mixed in the same Swg line-up

- All panel types (LSC2A and LSC2B) in the same Swg line-up
- Adaptor panel (H2.000mm) needed to adjust busbars height
- Adaptor panels can be used as Incoming/Outgoing
- Both Filters and Gas Duct are available when mixing different LSC panel type



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Broad CB panel portfolio

HBC

630A LSC2A PM

Fixed Apparatus HySec

SBC (SBS)

630/800A LSC2A PM

Removable CB VD4/HD4, GSec

SBC-W (SBS-W)

630A LSC2A PM

Single Insulation Withdrawable CB

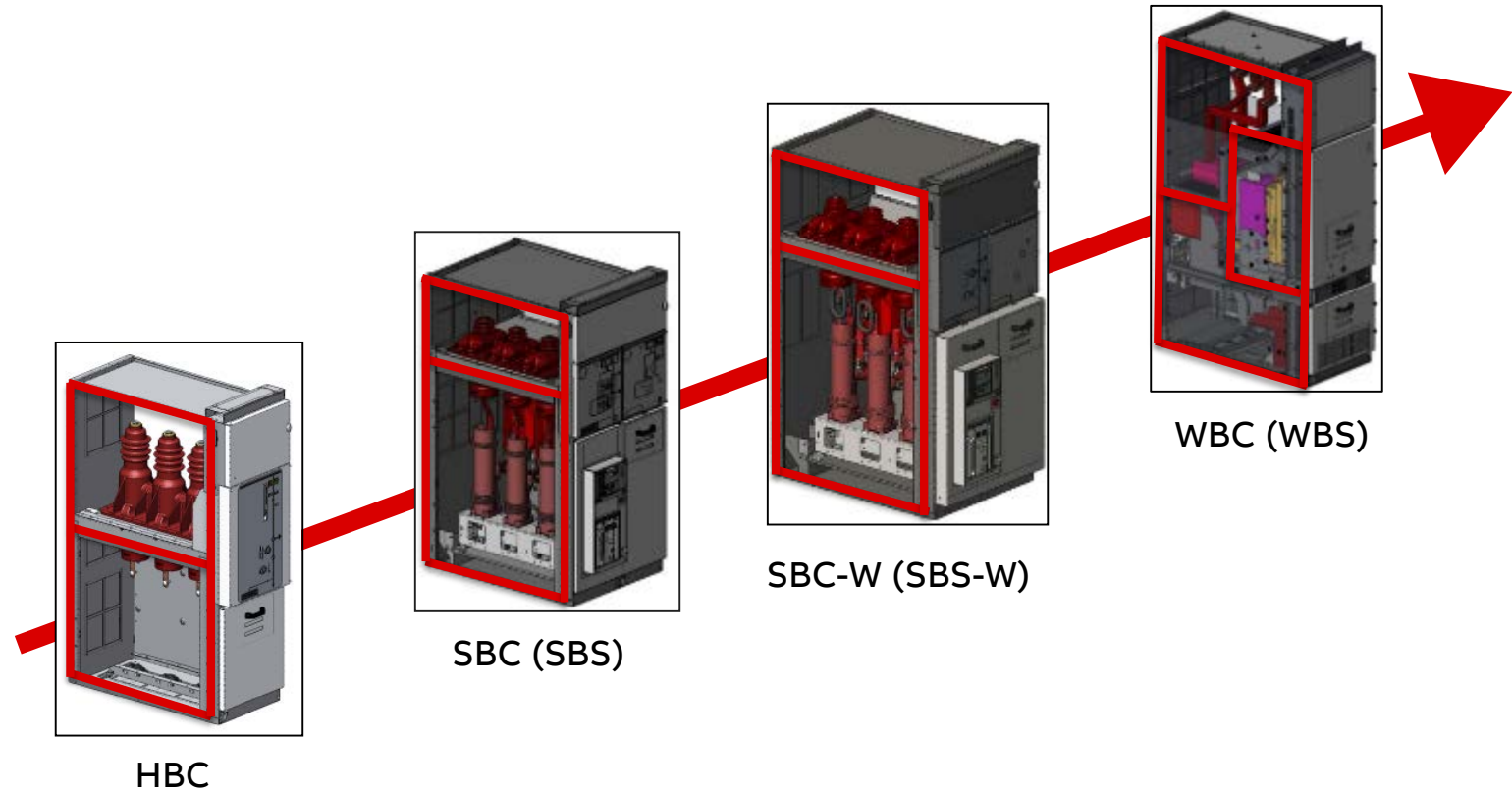
VD4/HD4, GSec

WBC (WBS)

1.250A LSC2B PM-PI

Double Insulation Withdrawable CB

VD4/HD4/VSC, ES



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## HBC details

Only 500mm wide

Direct Earthing of the cables with HySec

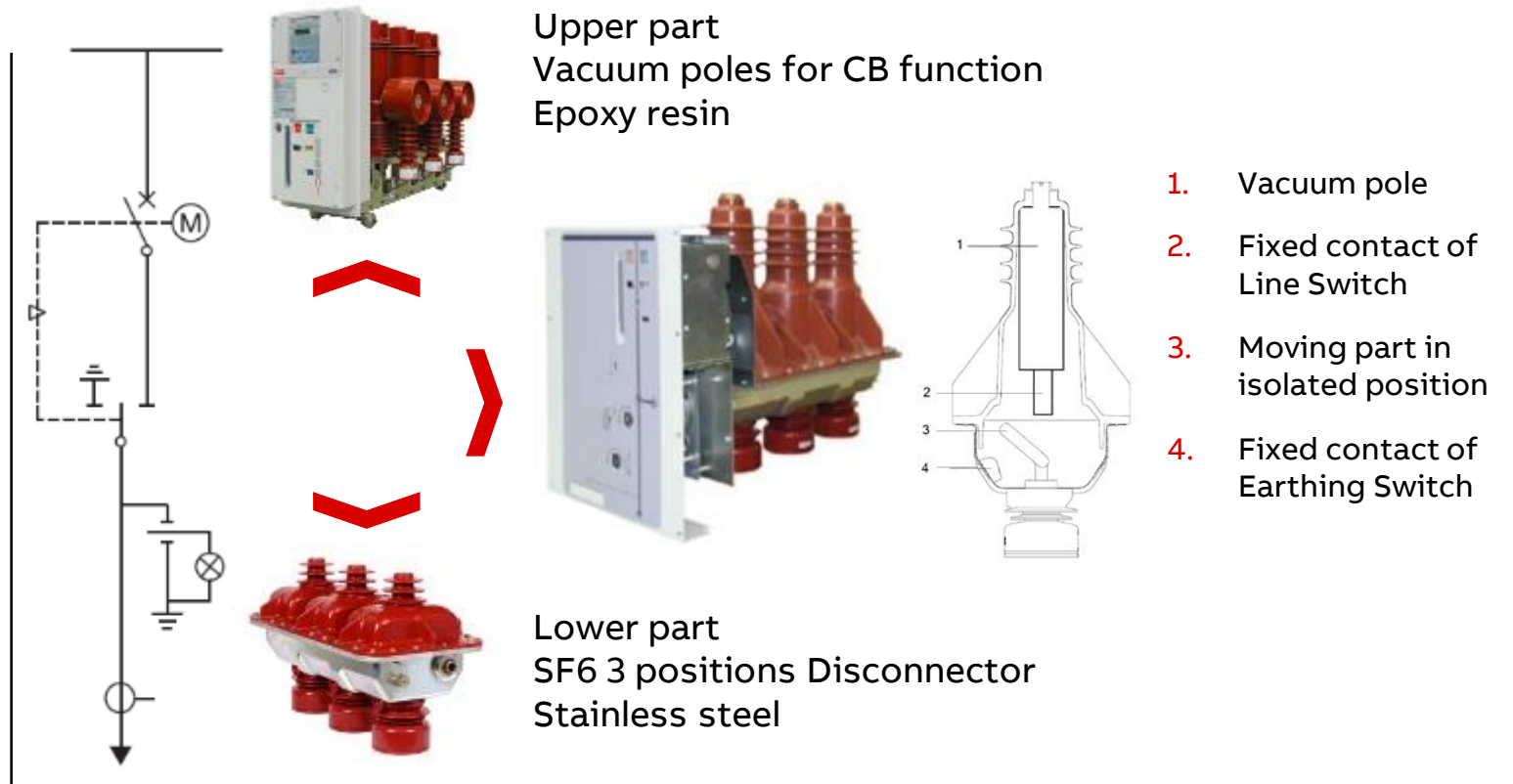
Flexible, used as Incoming and Outgoing

600mm Cables connection height:

- 1 cable 630mm<sup>2</sup>
- 2 cables 300mm<sup>2</sup>



Click for brochure





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## SBC-W details

Single cover without screws and mechanically interlocked with GSec Earth position

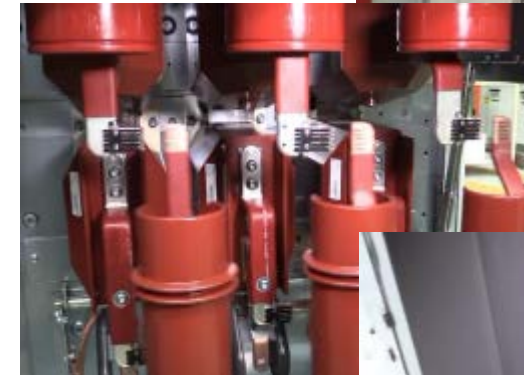
From bolt connection to n°6 sliding contacts  
Safety truck lock/unlock with a lever

Fast CB withdraw in 1 minute:

- where technical specification asks for withdrawn feature
- to quickly replace CB in case of need
- to have a complete access to the cables compartment for quick and easy cables connections



Click for brochure



Click to play video



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



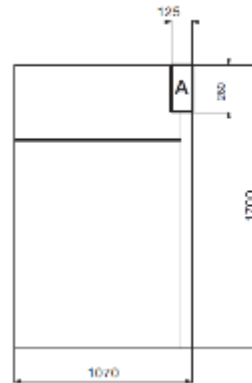
## Scalable LV compartments

According to requests and different engineering content are available scalable LV compartments

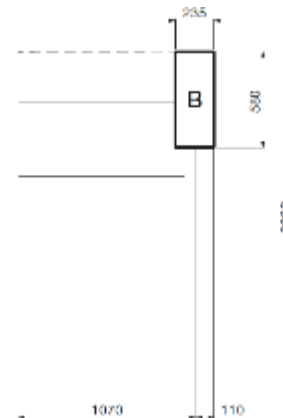
Can be integrated in standard design, IEC61850 communication with GOOSE messaging and Interlocks

### LSC2A Panels

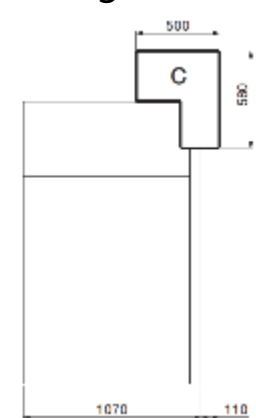
Standard



Wide

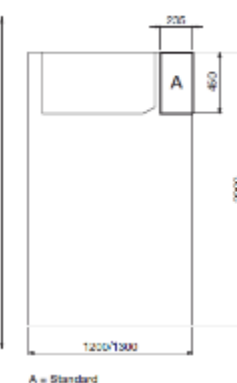


Big

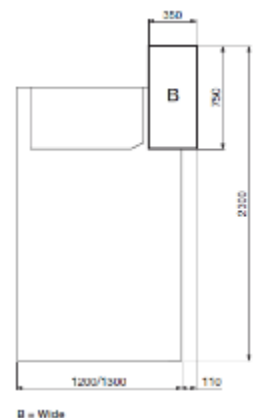


### LSC2B Panels

Standard



Wide



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility

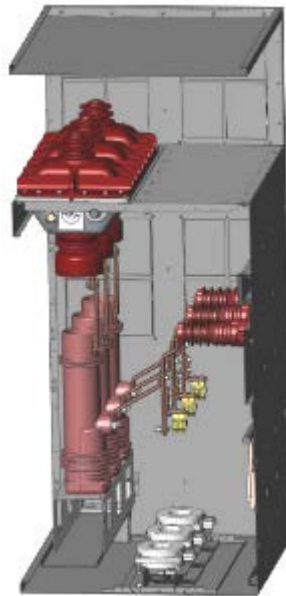


## ITs for measuring

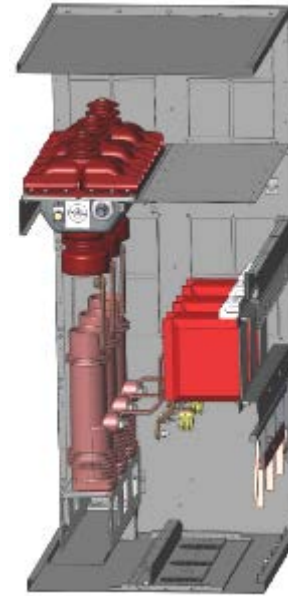
Measuring request satisfied with CTs and VTs available in every panel type and position including busbars compartment

Current Transformer basic proposal must be with Ring CTs fitted in the bottom of the unit

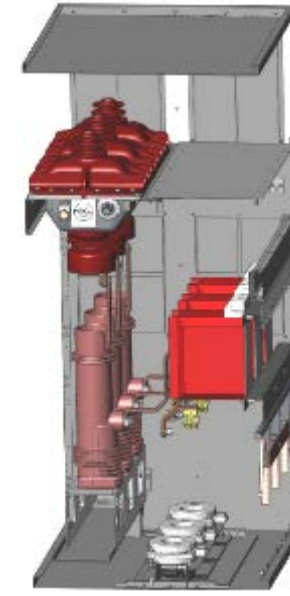
Other proposal/combinations with DIN CTs are possible



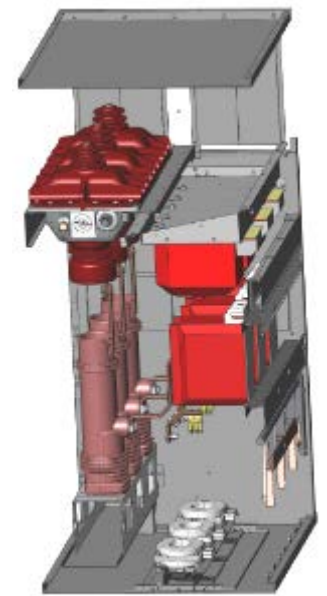
Ring\* CTs



DIN CTs



Ring\* CTs  
DIN CTs



Ring\* CTs  
DIN CTs  
DIN VTs

\* According to cable dimension; alternative with mounting in cable trench is available

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



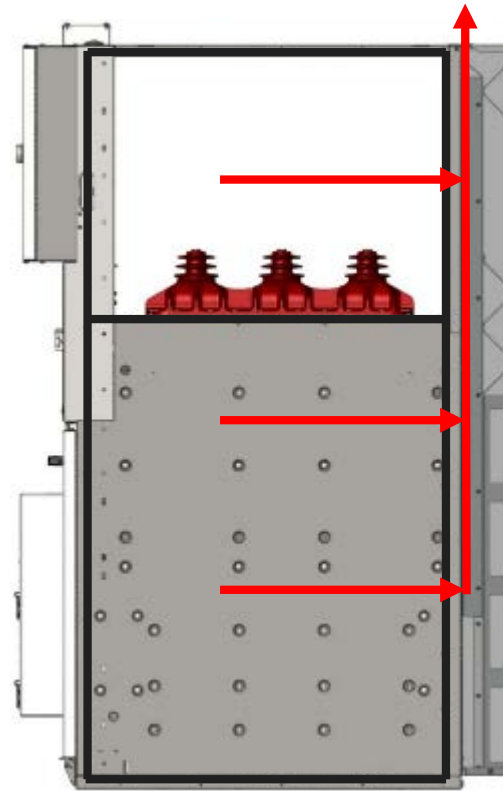
## Speed up your projects

### Filters

NO civil works required with gas evacuation inside the switchgear room

### Skid

Reduce drastically the commissioning activity with a complete Switchgear delivery thanks to the Skid



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Digital to Speed up your projects

Reduced Engineering activity and component lead time with Digital version:

IEC61850 communication and GOOSE messaging (ie. ATS)  
Reduce hard wiring improving reliability and decreasing engineering and on-site activities

Sensors  
wide dynamic operating field, shorting engineering activities and always with linear response

Toroidal current transformer  
perfectly working with ABB Relion IEDs; few type to cover the range shorting engineering activities





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Speed up your projects

### Smart Grid

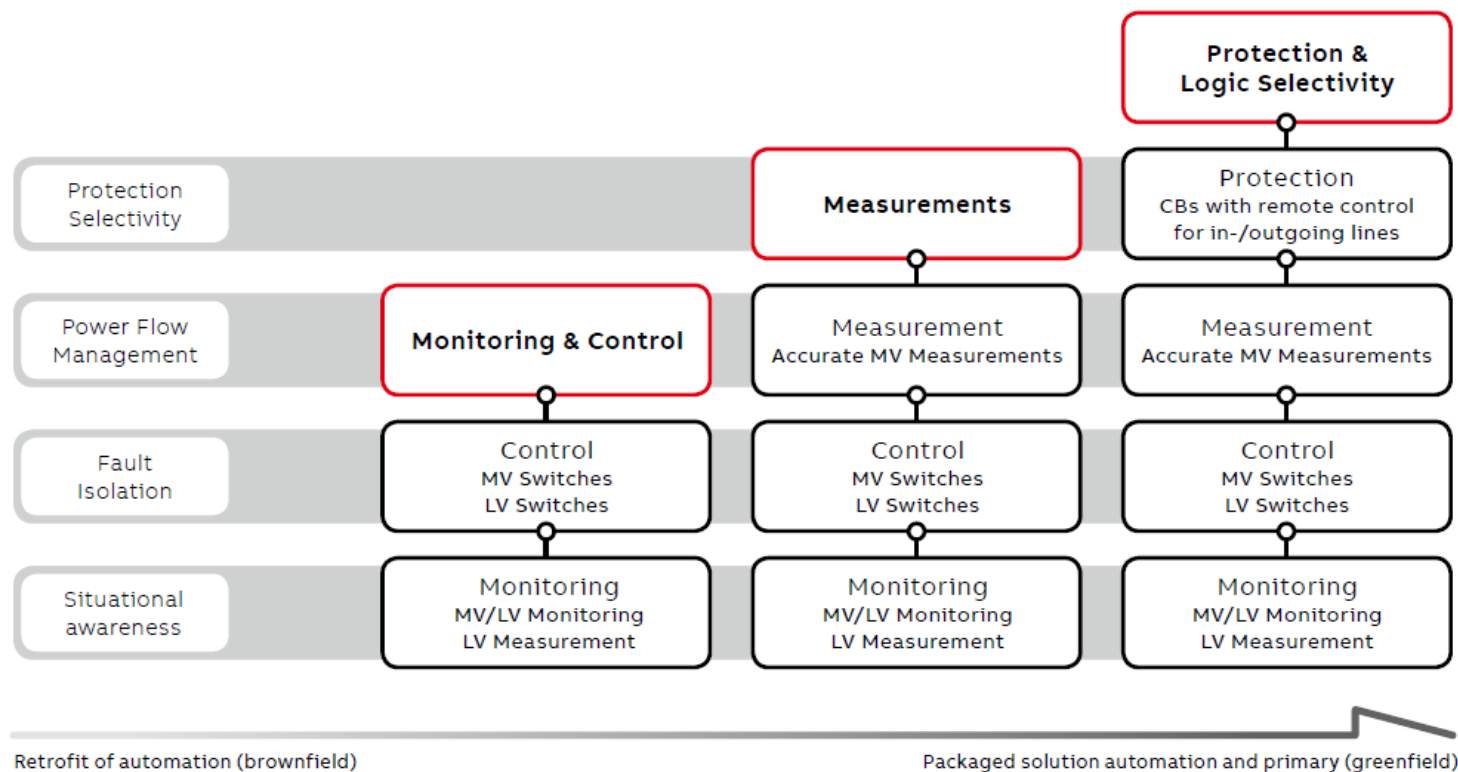
Requests are:

- Manage faults reducing duration and frequency
- Improve power quality
- Manage power flow due to distributed generation (DG)

Solution is:

- Introduce automation and communication concept into MV Switchgear
- UniSec gives flexibility, measurement, compactness

UniSec Smart Grid concept provides preconfig. packages depending on network complexity and different network's automation degree



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Productivity and Flexibility



## Speed up your projects

Smart Grid



Click for Video

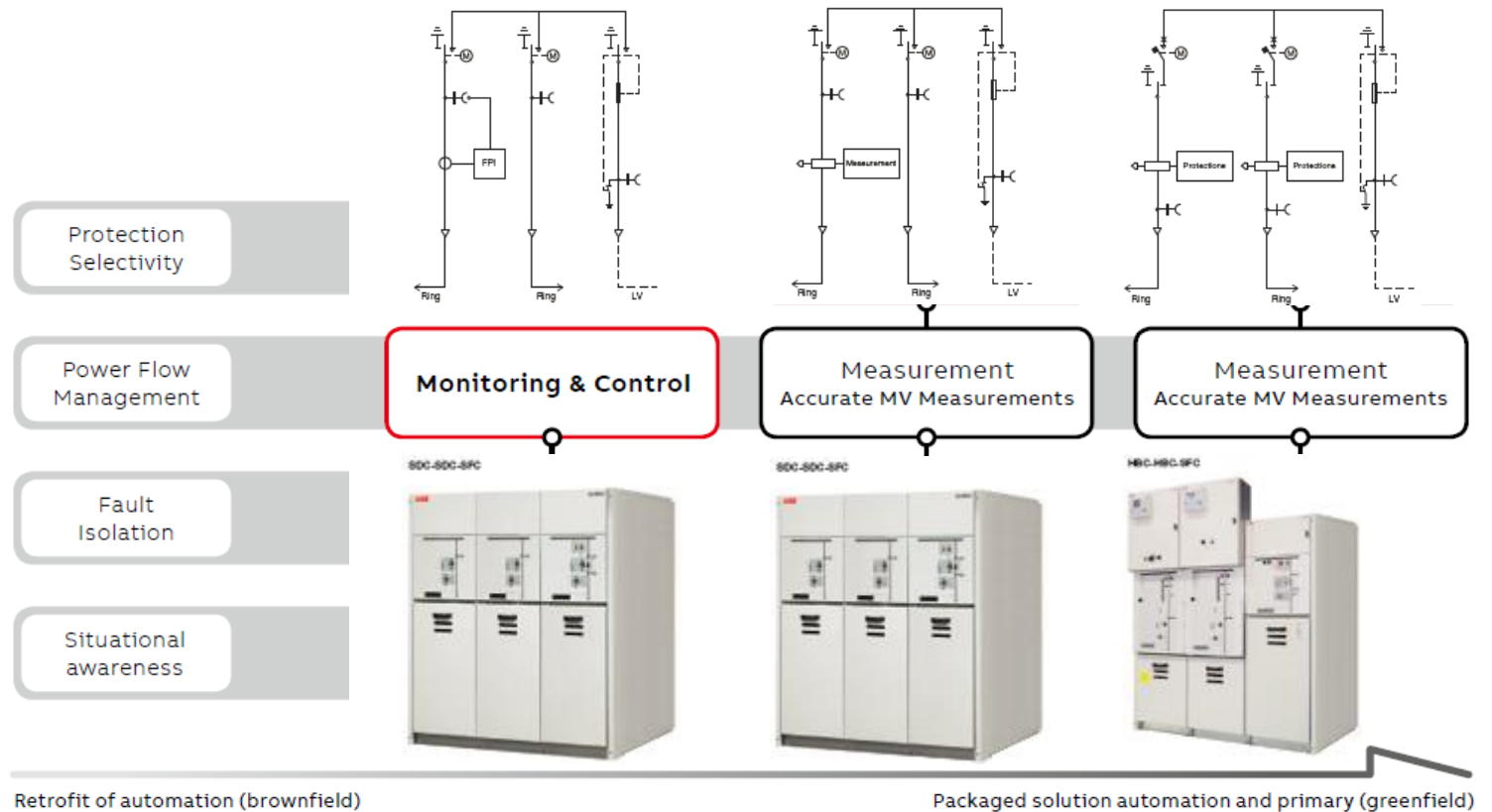
Requests are:

- Manage faults reducing duration and frequency
- Improve power quality
- Manage power flow due to distributed generation (DG)

Solution is:

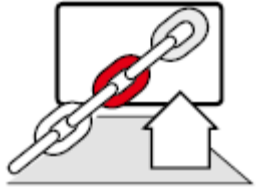
- Introduce automation and communication concept into MV Switchgear
- UniSec gives flexibility, measurement, compactness

UniSec Smart Grid concept provides preconfig. packages depending on network complexity and different network's automation degree



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Safety and Protection for the operator

Higher level to avoid blackouts and injuries UniSec is «Native» acc. to latest IEC62271-200

From Constructive criteria/ Maker point of view Metal Clad/ Metal Enclosed (Old 60298)

To Operator related criteria/ User point of view

Loss of Service Continuity

... with higher safety given by more sever Type Tests rules

*Norma Italiana*

### CEI EN 62271-200

La seguente Norma è identica a: EN 62271-200:2004-02.

<i>Data Pubblicazione</i>	<i>Edizione</i>
<b>2005-11</b>	<b>Sesta</b>
<i>Classificazione</i>	<i>Fascicolo</i>
<b>17-6</b>	<b>7980</b>

*Titolo*

**Apparecchiatura ad alta tensione**

**Parte 200: Apparecchiatura prefabbricata con involucro metallico per tensioni da 1 kV a 52 kV**

*Titolo*

High-voltage switchgear and controlgear

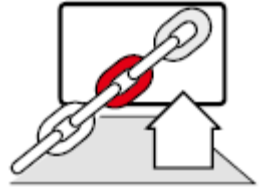
Part 200: A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV



APPARECCHIATURE ELETTRICHE PER SISTEMI DI ENERGIA E PER TRAZIONE

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Safety and Protection for the operator

Higher level to avoid blackouts and injuries

UniSec is «Native» acc. to latest IEC62271-200

Internal Arc Test must be repeated

some acceptance criteria have been aggravated:  
arrangement of indicators, position of the ignition wire,  
FLR classification, allowed deformations, etc...

Making and Breaking Test must be repeated

Circuit Breaker, load switching and earthing devices must  
be tested into the panel in which they will be installed

Dielectric Test must be verified/ repeated

2 breakdowns out of 15 impulses are allowed but not  
during the last 5

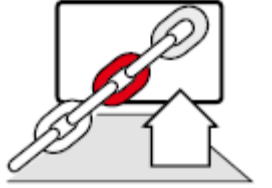


**New IEC 62271-200**

**A great margin for  
your safety!**

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Safety and Protection for the operator

Higher level to avoid blackouts and injuries

Protection Against Internal Arc:

### Passive safety

1. Thanks to Internal Arc resistant switchgear

### Active safety

2. Possible with systems to reduce Internal Arc duration and damages
3. TruckMaster CS available for remote raking in/out

### Preventive Maintenance by using:

4. My Site Care  
Predictive CBs monitoring system with Central unit, RFID identification sensor and current sensor
5. InfraRed inspection window

1



2



3



4



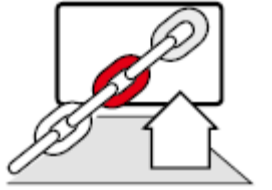
5





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety

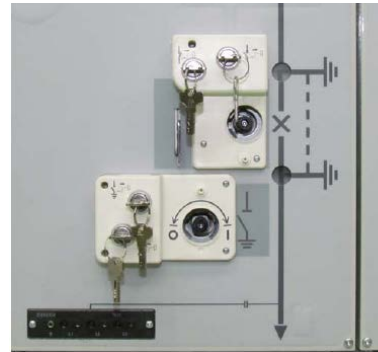


## Safety and Protection for the operator

Higher level to avoid blackouts and injuries

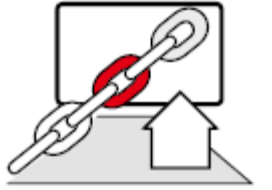
Safe access grant:

- Voltage check  
Voltage Presence Indication as compulsory equipment
- Earth applied  
Earthing Switch always with Making Capacity
- Safe Operations  
Mechanical Interlocks to avoid wrong operations (standard)
- Correct Operations  
Padlocks, Keys, Electrical lock available to apply the right procedures (optional)



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Reliable in harsh environment

Additional tests

Anti-Seismic according to IEEE 693

Based on the seismic test performed according to the IEEE 693 Standard UniSec panels are in compliance with the requirements of UBC Zone 4 up to 1g of acceleration

**CESI** TEST REPORT APPROVED REVISED

**Client:** ABB Research & Development  
**Address of the client:** Via Friuli 4, 20044 - Carimate (BG)  
**Manufacturer:** ABB Research & Development  
**Tested sample(s):** ABB UniSec Switchgear 17.5 kV

**Tests carried out:** SEISMIC TESTS

**Standard/Specifications:** IEEE 693 (2005)

**Tests date:** from 30<sup>th</sup> May 2011 to 07<sup>th</sup> June 2011

The results reported in this document relate only to the tested sample(s).  
Partial reproduction of this document is permitted only with the written permission from CESI.

**No. of pages:** 36 **No. of pages annexed:** 45

**Issue date:** 10/13/2011

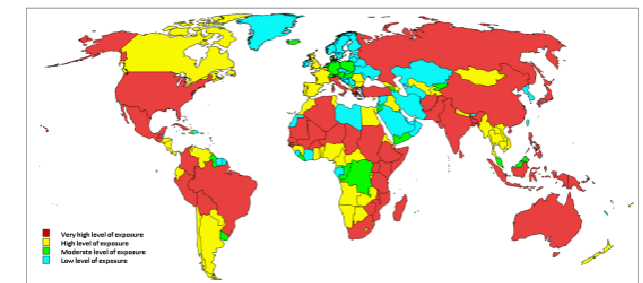
**Prepared:** GGG Bygone/Riviere

**Verified:** PPM Piero Ono PPM Yvon Mauro

**Approved:** PM The Manager Antonio Lorenza

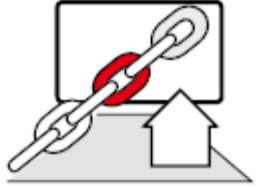
**CESI S.p.A.**  
Training & Certification Division  
Piazzale Leonardo da Vinci, 1  
20133 Milano, Italy  
Tel. +39 02 232011  
Fax +39 02 23201110  
www.cesi.it

**Page 3/4**



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Reliable in harsh environment

Additional tests

Ageing according to IEC 62271-304

Based on the ageing test performed according to the IEC 62271-304 Standard (49 days in climatic chamber) UniSec panels is declared Level2

**ABB**

TEST REPORT no. 22141 Page 1 of 11

Test Object: 1 Air Insulated Switchgear for secondary distribution type UniSec, rated voltage 17.5 kV, 50 Hz, 500 A, SF6 503.

Manufacturer: 1 ABB S.p.A. Power Products Division - Switch Operation SACO-MV - Calcinato (Italy)  
(owner: Società ASD Technology Unicity)

Results assigned by the Manufacturer:

Rated voltage	17.5 kV
Rated frequency	50 Hz
Rated normal current (Breakers)	630 A
Rated normal current (Circuit)	630 A
Rated short time withstand current for 1 s of the main circuit	21 kA
of the earthing circuit	— kA
Rated short time withstand current of the main circuit	50.5 kA peak
of the earthing circuit	— kA
For other ratings see page	3

Test performed: 1 Ageing test IEC 62271-304 - Diagnostic procedure for Ageing test and filled in test report (see procedure)

Test specification: 1 Customer request based on IEC 62271-304 (version 1.6-2004-03)

Test date: 1 From 22/02/2013 to 29/06/2013

Test required by: 1 ABB S.p.A. Power Products Division - Switch Operation SACO-MV - Calcinato (Italy)

Date of issue: 1 05/08/2013

Inspector (company name): 1 Romano Vigorelli

Notified (company name) (company name): 1 Andros Calcinato

Witnessing (company name) (company name): 1 Florio Barba

The test report shall not be made available to the customer if the test results are not satisfactory. The validity of the test results shall be confirmed by the customer. In case of complaint, reference shall be made to the original report, which is the only valid one.

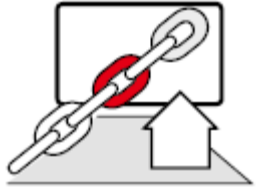
ABB S.p.A. Power Products Division - Switch Operation SACO-MV - Calcinato (Italy)  
End of page

ABB S.p.A. Power Products Division - Switch Operation SACO-MV - Calcinato (Italy)  
End of page



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Reliable in harsh environment

Additional tests

GOST certified

At -25°C operation and -40°C storage for Vacuum CBs and GSec

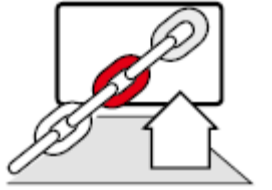
At -5°C operation and -5°C storage for SF6 CBs and Contactors





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Reliable in harsh environment

Additional tests

Type tested Protection class increase

- Standard IP2X internal and IP3X external (excluded GSec operating seats)
- Available options for external protection up to IP42

Installation altitude up to 3.000m

Tested both 50Hz and 60Hz without de-rating

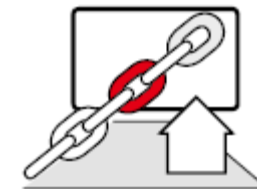
Minimum life of 30 years according to IEC 62271-1





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Reliability and Safety



## Reliable in harsh environment

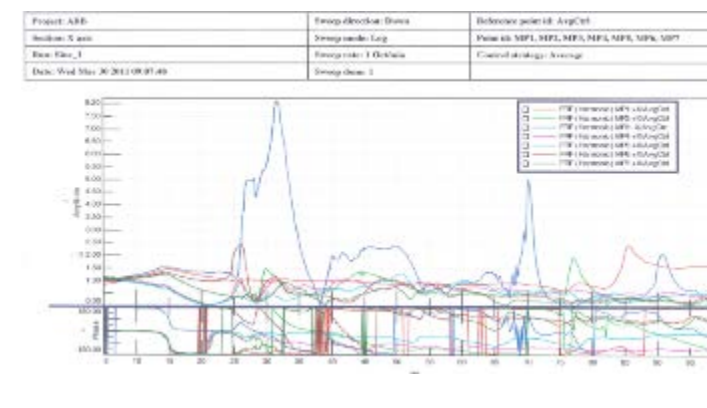
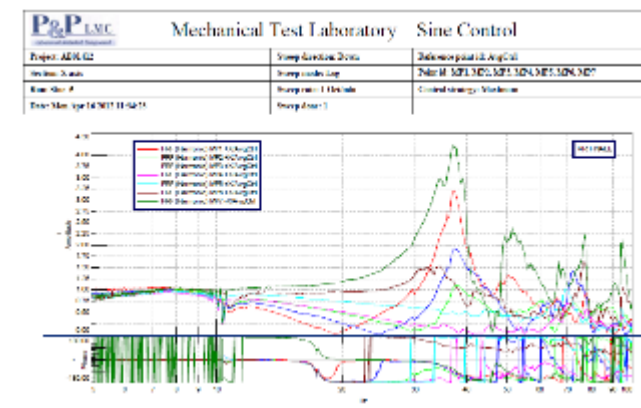
Additional tests

Vibration for Marine version

3 frequencies scanned for every axis

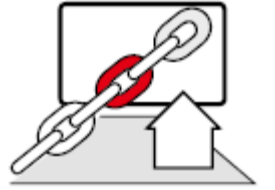
Total vibration test time 15 hours

No structural problem to the frame



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

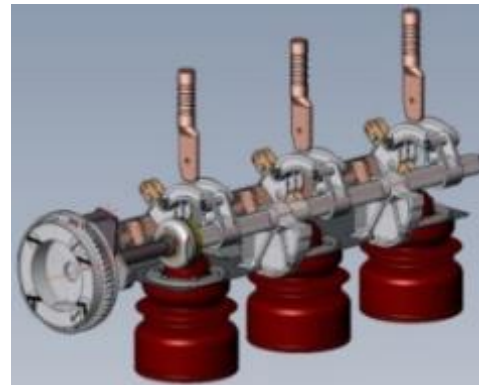
Values - Reliability and Safety



## Reliable in harsh environment

High mechanical and electrical performances

- Housing made of two materials:
  - bottom part in stainless steel to guarantee PM
  - top part in epoxy resin to guarantee compactness
- 3 positions Load Break Switch (making capacity)
- Internal arc test performed inside the housing of GSec
- Motorized in both directions: Line and Earth (if 1S)
- High performance: Line M2/ E3 and Earth M0/ E2
- Line M2 (5000 operations) E3 (5 makings)
- Earth M0 (1000 operations) E2 (5 makings)
- Min. temperature up to -25°C operating -40°C storage
- Maximum Altitude of 3000 m
- Mechanical indication directly from the main shaft
- Blocking magnets on both Line and Earth position
- Modular solution of accessories with front access
- Operating mechanisms independent from operator:
  - Single Spring: Line closing/ opening takes place by charging the spring until dead centre is exceeded
  - Double Spring: Line closing/ opening takes place, when springs charged, with buttons or coils



1S - Single spring



2S - Double spring



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

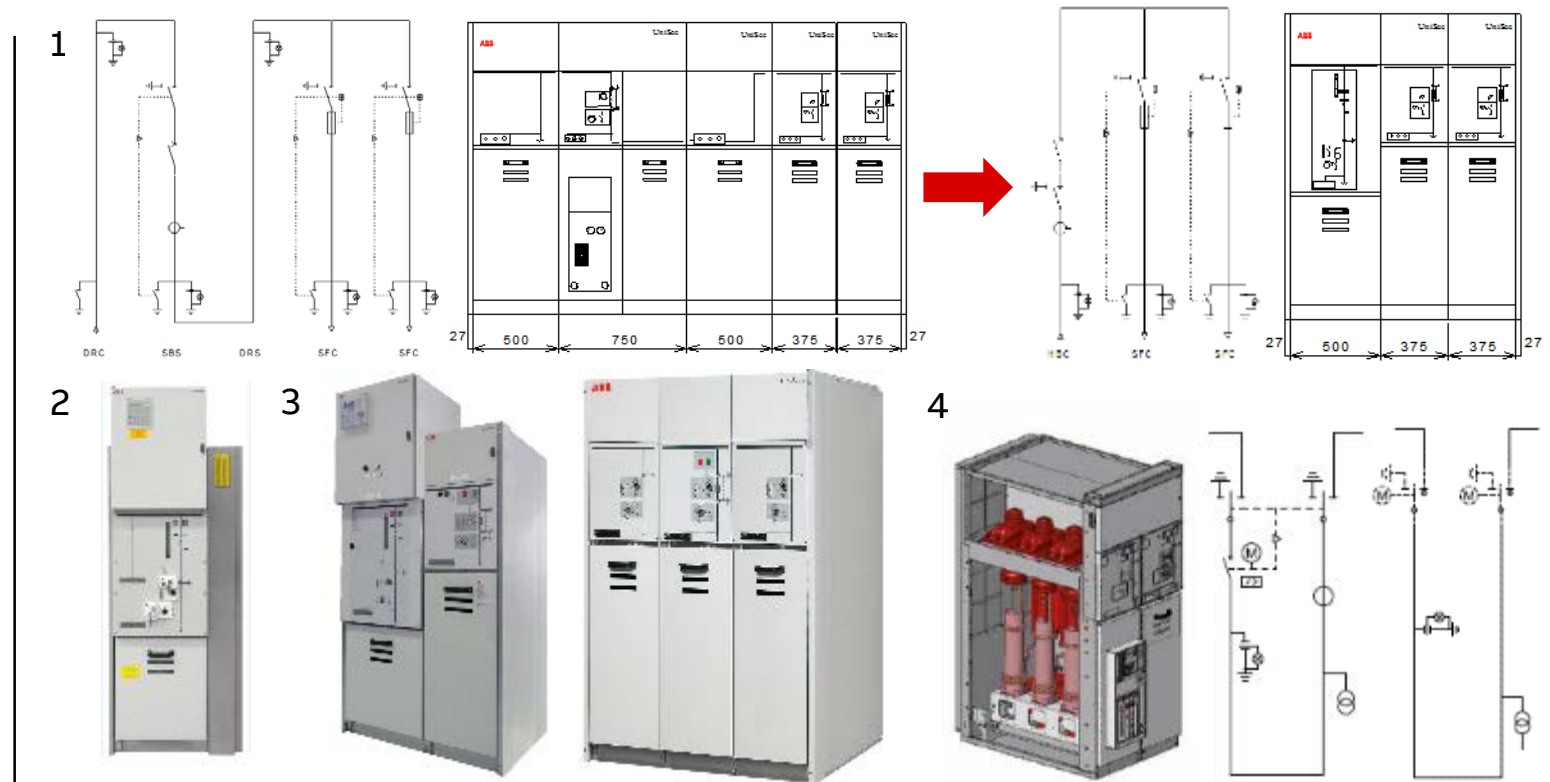
Values - Sustainability and Efficiency



## Footprint reduction

Panels variant/options for Swg line-up reduction:

1. CB panel type HBC/SBR with direct cable earthing (example with -1.250mm saving)
2. Lateral cable riser of 190mm for compact In/Out solution
3. CB panel type HBC only 500mm wide. Switch Disconnector panel type SDC/SFC only 375mm wide
4. Metering Coupler and Riser integrated in 1 panel with SBM/SDM panel type



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Sustainability and Efficiency



## Footprint reduction

Panels variant/option for line-up reduction:

Equipment fitted in busbars compartment to save 1 panel each Swg:

1. Busbars Voltage transformer
2. Busbars Earthing switch
3. Busbars Current transformer
4. Direct cable connection to busbars

Height 2.000mm panel variant needed; busbars chamber is increased while bottom unit is unchanged.

(UniSec Std is H1700mm and both Height can be mixed in the same Swg line-up)

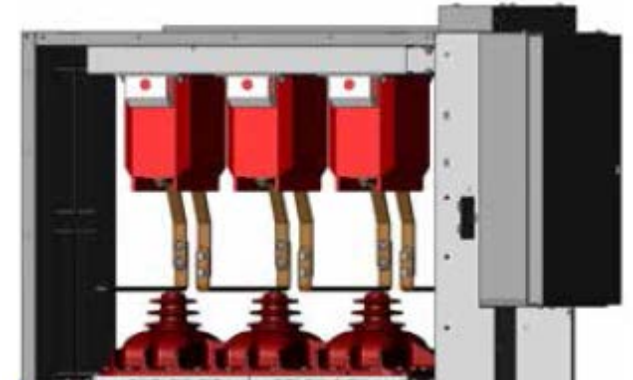
1



2



3



4





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

Values - Sustainability and Efficiency



## Footprint reduction

Suitable for containerization

IAC according to IEC 62271-202 ed. 2

Downwards gas evacuation Tested

UniSec provides a tested level of safety inside a walk-in ABB UniPack CSS increasing the safety for operators and the general public. Two tests:

- Accessibility A  
Protection of the operating personnel in the substation. CSS doors are open and indicators are placed on Swg front
- Accessibility B  
Protection of the general public to all sides of the substation. CSS doors are closed and indicators are placed all around

Generally a container installation is always possible with all types of gas evacuation acc. to IEC 62271-200 respecting installation distances



[Click for brochure](#)



EXTERNAL VERSION



PRODUCT PRESENTATION, NOVEMBER 2017

# UniSec

Medium Voltage Air Insulated Switchgear for Secondary Distribution

Interlocks details



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Interlocks details

### Interlocks for LSC2A panels

### Standard safety interlocks



Prevent cable door opening in case Switch Disconnecter is not in Earth position

### Door - ES

Mechanical interlock between Switch Disconnecter, earthing switch downstream fuses

### ES - LBS

Prevent motor operation when the lever is in Switch Disconnecter line seat (by means of microswitch)

### Motor - Lever

No mechanical interlock is present (keys or padlocks as option) between CB and LBS. This is an Advantage  
Except Interlock in HBC since HySec has a Disconnecter

### CB - LBS

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Interlocks details

### Interlocks for LSC2A panels

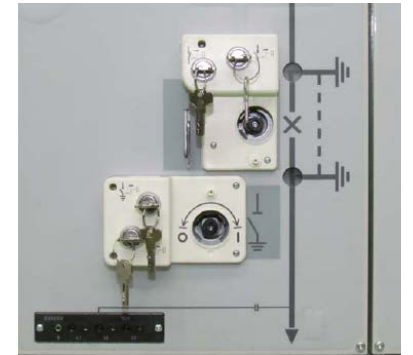
#### Optional Interlocks to apply a procedure

- Key interlocks: Giussani (Std), Ronis or Profalux (alternative)
- Padlocks facility always present  
Padlocks as option at customer care
- Procedure can be applied also using blocking magnet  
Available on switch disconnecter position both Line and Earth



#### Keys

N° 1 or 2 keys on both Line or Earth operating mechanism lever seats



#### Padlocks

N° 3 Padlocks on both Line and Earth operating mechanism lever seats



---

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Interlocks details

### Interlocks for LSC2B panels

#### Standard safety interlocks

Prevent CB racking-in in case of door open



Prevent door opening in case of truck in service or intermediate position



Prevent CB racking-in in case of multi pole connector disconnected.

Prevent the disconnection of multi-pole connector in case CB truck in service or intermediate position



# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Interlocks details

### Interlocks for LSC2B panels

#### Standard safety interlocks

Prevent cable compartment door opening in case of ES open.

Prevent ES opening in case of cable compartment door open



Status of Earthing Switch  
Open position



Status of Earthing Switch  
Earth position





# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Interlocks details

### Interlocks for LSC2B panels

### Optional Interlocks to apply a procedure

Key interlocks (Arel, Ronis, Profalux) for

- Open Earthing Switch lock
- CB racking-in lock
- Closed Earthing Switch lock



Metallic shutters between CB, busbars and cables compartments can be locked by means of padlocks in both the open and closed positions:

N° 2 padlocks for panel @ 12-17.5kV



Insulated shutters between CB, busbars and cables compartments can be locked by means of padlocks in both the open and closed positions:

N° 1 padlock for panel @ 24kV



---

# UniSec - MV Air Insulated Switchgear for Secondary Distribution

## Interlocks details

### Interlocks for LSC2B panels

### Optional Interlocks to apply a procedure

The operations for apparatus racking-in/out can be prevented by applying a padlock to the operating lever seat



Fails Safe interlock  
(Std for ABB increasing safety)  
Device that lock the shutters when the apparatus is removed from the compartment



Electromechanical interlocks  
To enable automatic interlocking logic without human intervention:

- Opening of CB compartment door
- Earthing Switch position



**ABB**