

Secondary Distribution Switchgear



Power^{IT} Air Insulated Cubicle Uniswitch

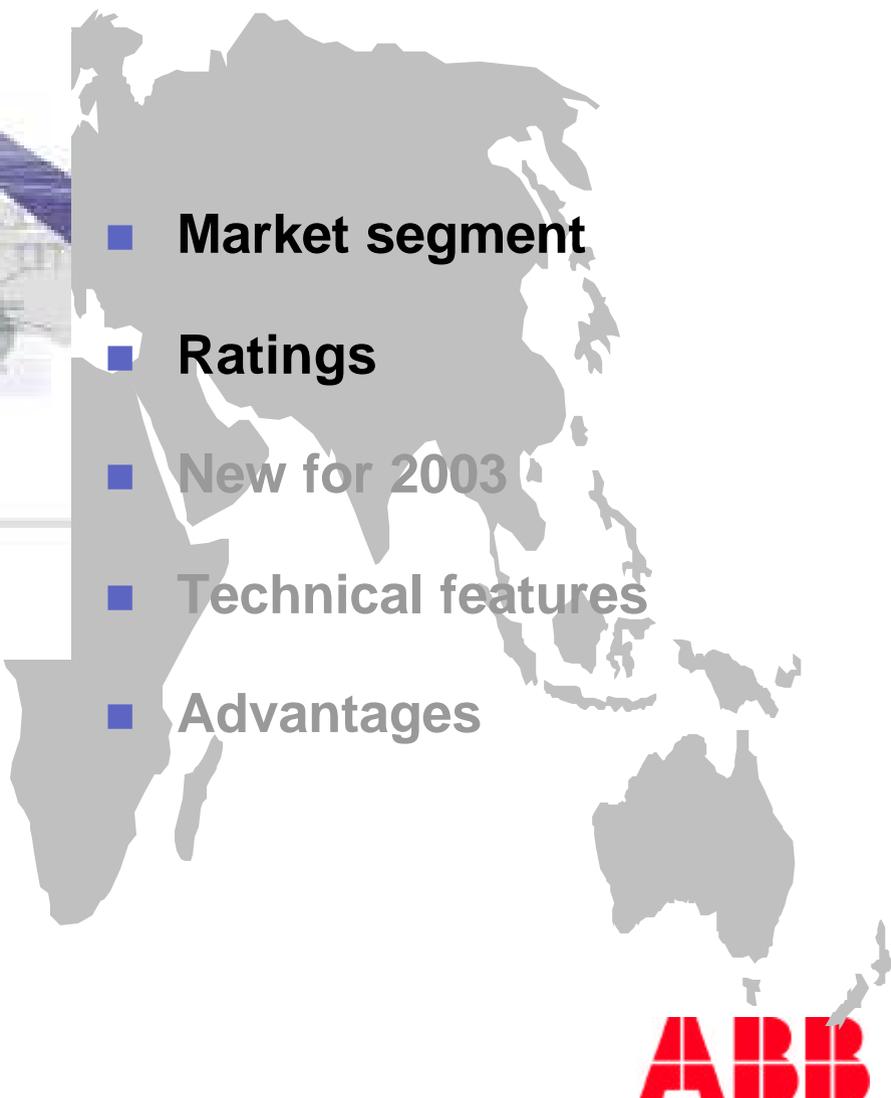


ABB



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- **Market segment**
 - **Ratings**
 - **New for 2003**
 - **Technical features**
 - **Advantages**



ABB

Market segment

Uniswitch



Switchgear for electricity distribution application such as:

**Secondary substations
Manufacturing industry
Shopping centres
Airports
Metro
Windmills
Etc.**



Ring main unit



Heavy switchgear



Main ratings

		12	17,5	24
Rated voltage	(kV)			
BIL	(kV)			
– common value		75	95	125
– across the isolating distance		85	110	145
AC withstand voltage	(kV)			
– common value		28	38	50
– across the isolating distance		32	45	60
Rated current	(A)			
– busbars		630/1250	630/1250	630/1250
– t-offs (load break switch)		630/800	630/800	630
– t-offs (circuit breaker)		630/1250	630/1250	630/1250
Rated short-time withstand current	(kA)			
– main circuit		25	20	20
– earthing circuit		25	20	20
Rated peak withstand current	(kA)	62,5	50	50
Rated duration of short circuit	(s)	2	3	3
Arc-fault current, 1 s	(kA)	20	20	20
Degree of protection, enclosure	(IP)	IP3X	IP3X	IP3X
Degree of protection, partitions	(IP)	IP2X	IP2X	IP2X

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Withdrawable circuit breaker cubicle

- CBW
 - Feeder cubicle with withdrawable circuit breaker
- SBW
 - Sectionalizing cubicle with withdrawable circuit breaker
- Full 1250 A switchgears possible!
- Extendable to left and right
- Easy to combine with full range of “normal” Uniswitch cubicles



Withdrawable circuit breaker cubicle

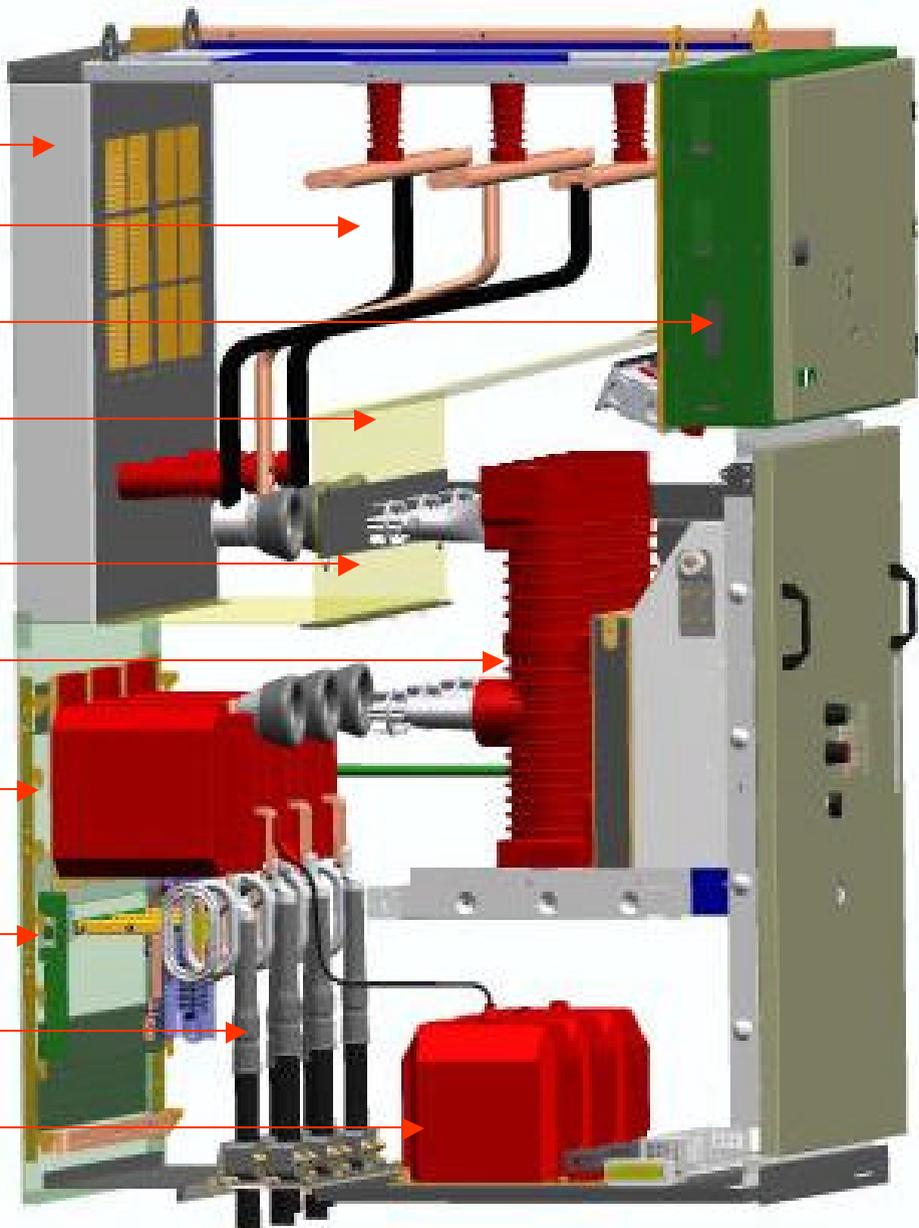
- Dimensions
 - Width: 800 mm
 - Height: 1885 mm
 - Depth: 1335 mm
- LV-box dimensions
 - Width: 800 mm
 - Height: 585 mm
 - Depth: 200 mm
 - additional box can be placed on top of the cubicle (WxHxD) 800 x 430 x 400 mm
- Mechanical and electrical interlockings available





Construction, CBW

- Arc gas channel
- Busbars
- LV-Box
- Non-metallic partition
- Non-metallic shutter
- Circuit breaker
- Current transformers / Combi sensors
- Earthing switch
- Cable connections
- Voltage transformers



Uniswitch solutions for the Marine industry

Technical features

- Based upon the standard Uniswitch product range, but modified for the marine industry standards
- Approved by Lloyd's Register of Shipping
- Vibration tested at CKD Blansko in Czech Republic
- Currently fulfils IP22 degree of protection, higher classes are available on request
- References:
 - Queen Mary II, Cunard cruise line (8 switchgears)
 - Crystal Serenity, NYK cruise lines (6 switchgears)



Uniswitch solutions for the Marine industry

Working guidelines

- Prior to any offer to any Client, the technical feasibility shall be verified at FIPTMV in Vaasa, Finland
- Offers for the marine industry is handled through ABB Marine BA, on case by case basis other arrangements are also acceptable.
 - An offer can be handled through another sales channel in case BA Marine cannot approach the Customer. Any such offer shall be co-ordinated together with BA Marine.





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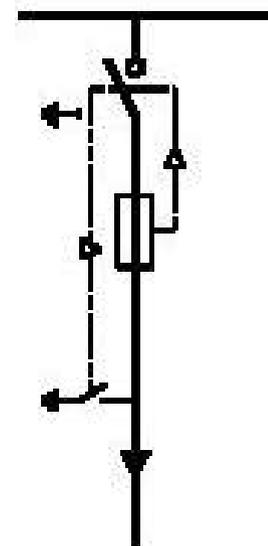
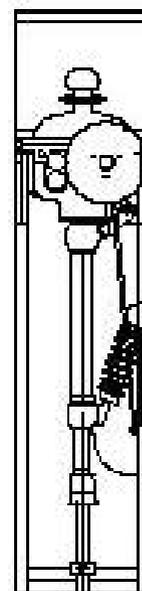
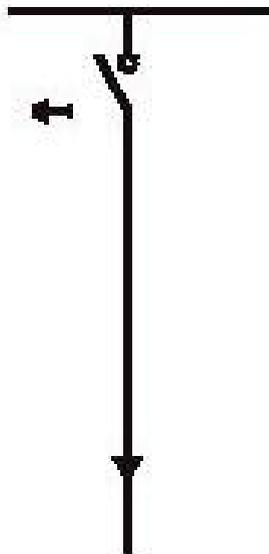
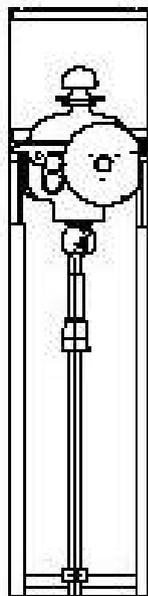
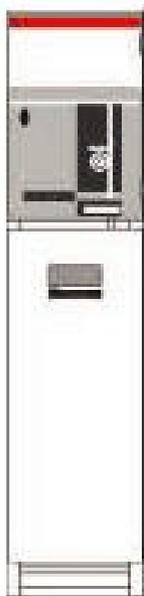


- Market segment
- Ratings
- New for 2003
- **Technical features**
- Advantages



ABB

Standard range of cubicles



SDC - Switch Disconnector Cubicle

Width: 375 & 500 mm

Height: 1635 & 1885 mm

- Cable entry with cable support
- Also available as a sectionaliser: **SEC**
- Wide range of accessories

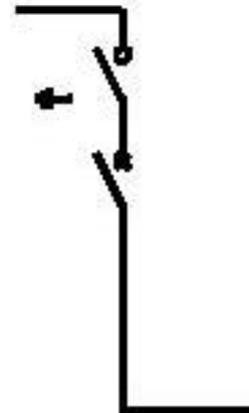
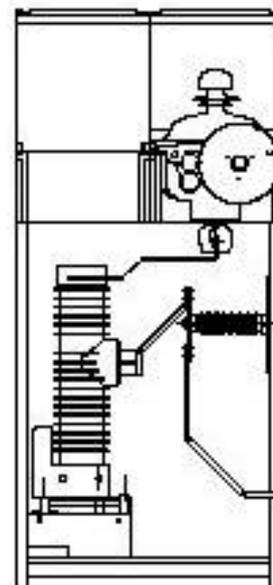
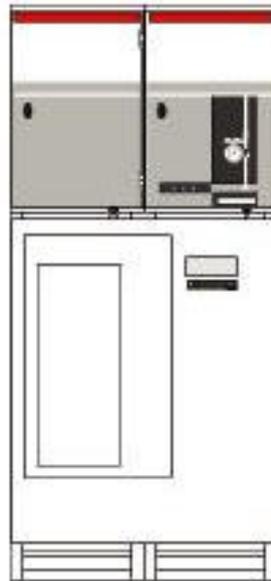
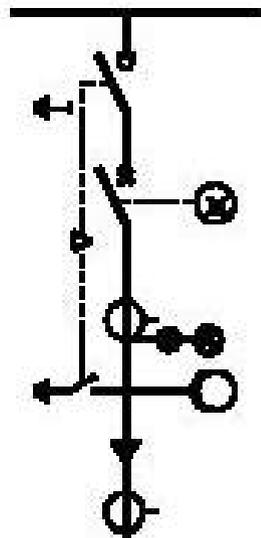
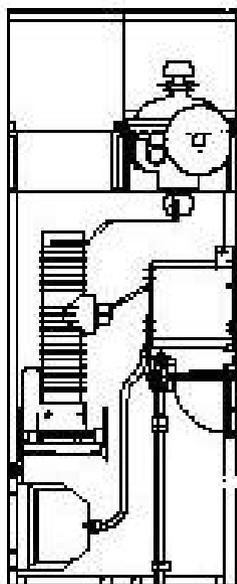
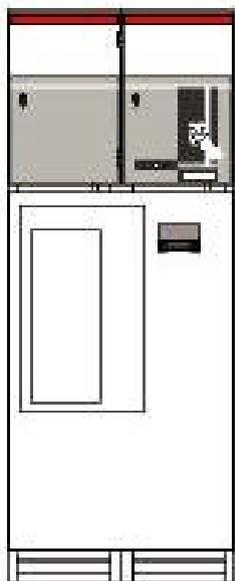
SDF - Switch Disconnector cubicle with Fuse

Width: 375 & 500 mm

Height: 1635 & 1885 mm

- Cable entry with cable support
- Also available as a sectionaliser: **SEF**
- Wide range of accessories

Standard range of cubicles



CBC - Circuit Breaker Cubicle

Width: 750 mm

Height: 1635 & 1885 mm

- Circuit breaker, vacuum or SF6
- Earthing switch EM
- Cable entry with cable support
- Wide range of accessories

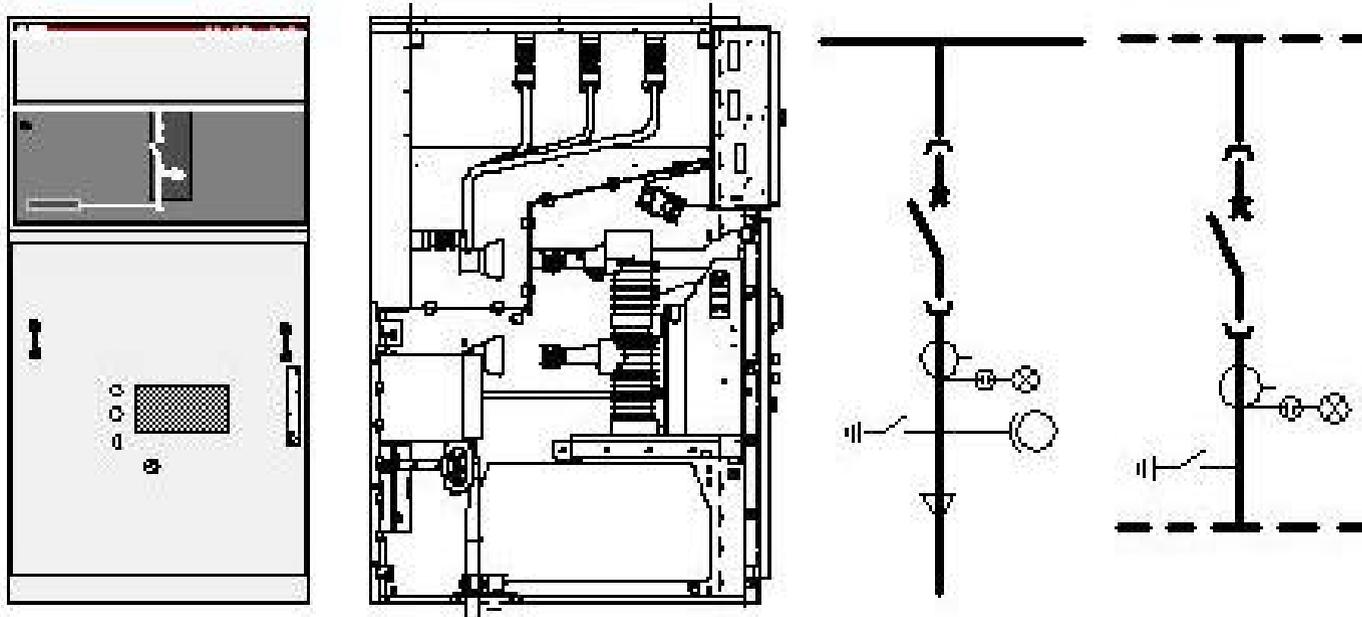
SBC - Sectionalising Breaker Cubicle

Width: 750 mm

Height: 1635 & 1885 mm

- Circuit breaker, vacuum or SF6
- Busbars to right side
- Wide range of accessories

Standard range of cubicles



CBW - Circuit Breaker cubicle with Withdrawable CB

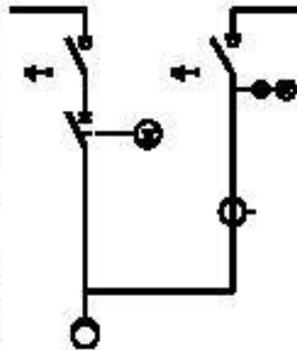
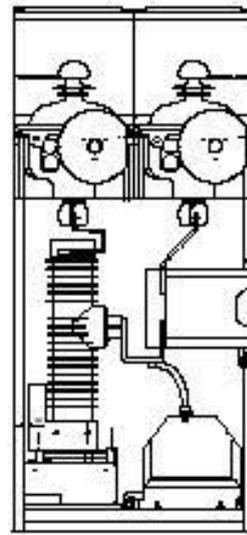
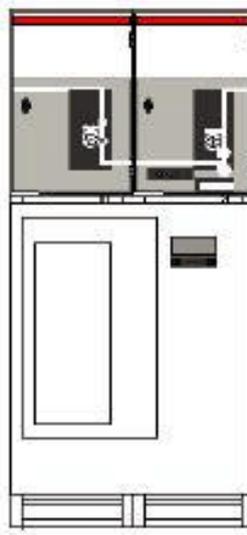
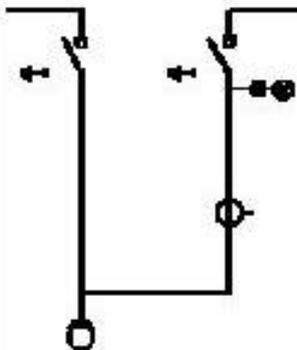
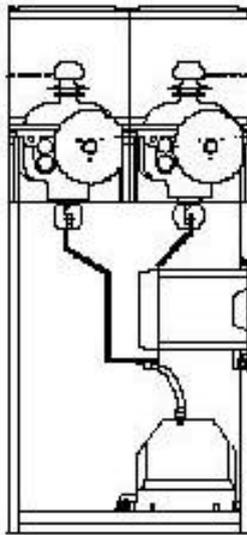
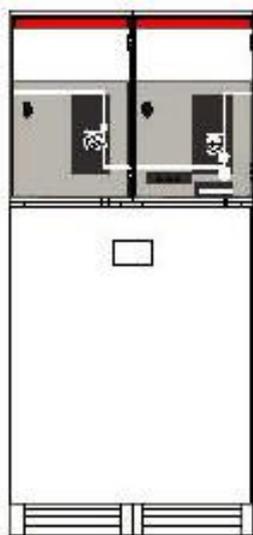
SBW - Sectionalizing Breaker cubicle with Withdrawable CB

Width: 800 mm

Height: 1885 mm

- Withdrawable circuit breaker, vacuum or SF6
- Earthing switch EM
- Cable entry with cable support, or busbars to left or right
- Wide range of accessories (CTs, VTs, sensors & CCTs, different protection relays, motor operation, electrical & mechanical interlocking etc)

Standard range of cubicles



SMD - Sectionalising Metering cubicle with switch Disconnecter

Width: 750 mm

Height: 1635 & 1885 mm

- 1-2 switch disconnectors (right or left side)
- Wide range of accessories

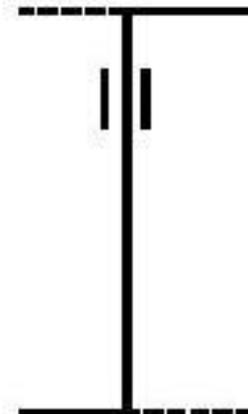
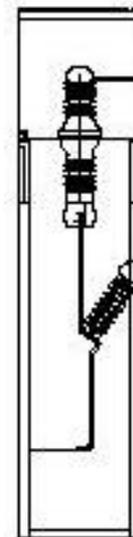
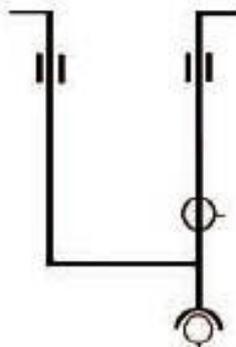
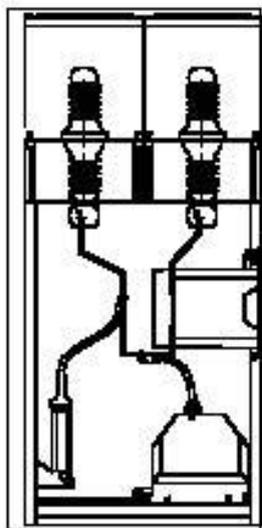
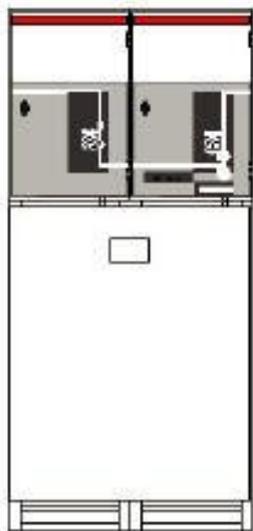
SMC - Sectionalising Metering cubicle with CB

Width: 750 mm

Height: 1635 & 1885 mm

- Circuit breaker, vacuum or SF6
- 1-2 switch disconnectors
- Wide range of accessories

Standard range of cubicles



BMC - Busbar Metering Cubicle

Width: 750 mm

Height: 1635 & 1885 mm

- Current transformers
- Voltage Transformers
- Accessories (surge arresters etc)
- Also available as a Universal Metering Cubicle (UMC) for other than DIN-type transformers

DBC - Direct Busbar Cubicle

BRC - Bus Rise Cubicle

Width: 375 & 500 mm

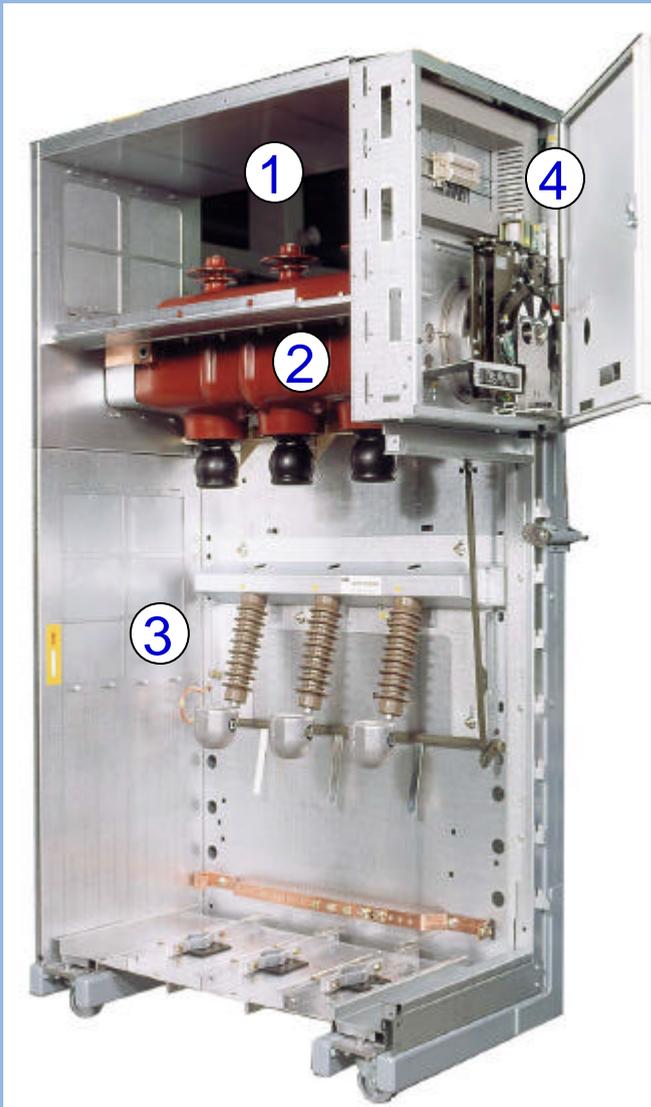
Height: 1635 & 1885 mm

- Cable entry with cable support or busbars to left or right
- Wide range of accessories

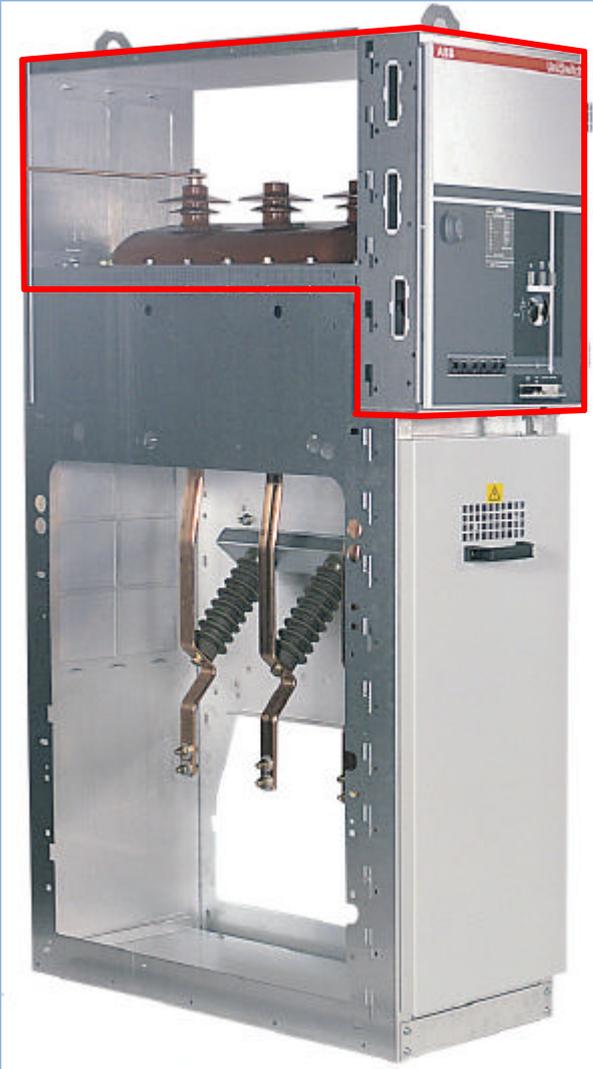
Compartments separated

- possibility to carry out maintenance, repair and upgrading in cable compartment while switchgear is in service

- 1) Busbar compartment
- 2) Switching compartment
- 3) Cable compartment
- 4) Low voltage compartment

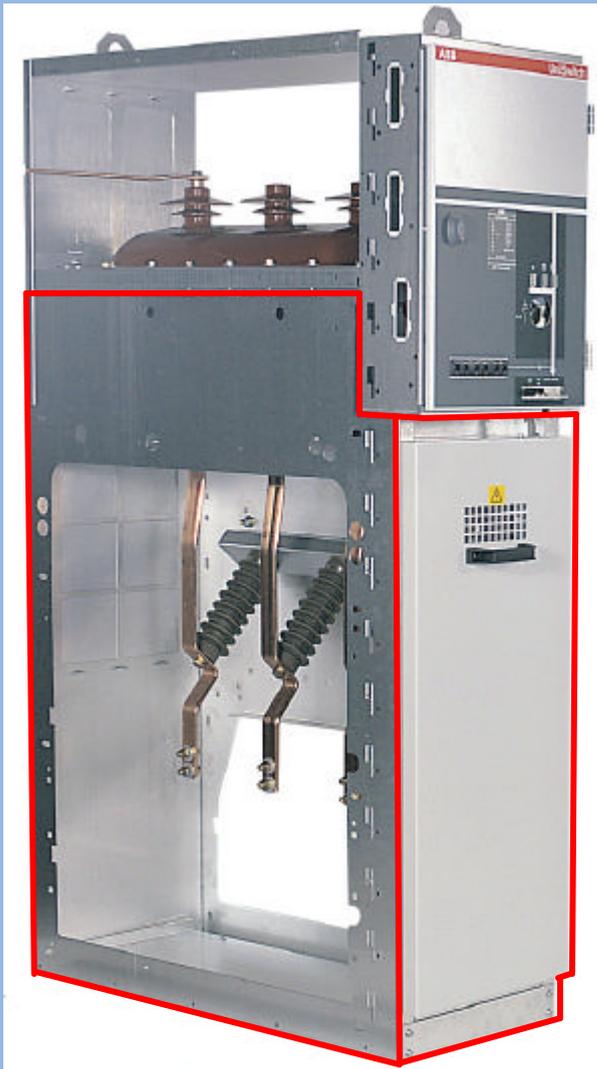


Top unit



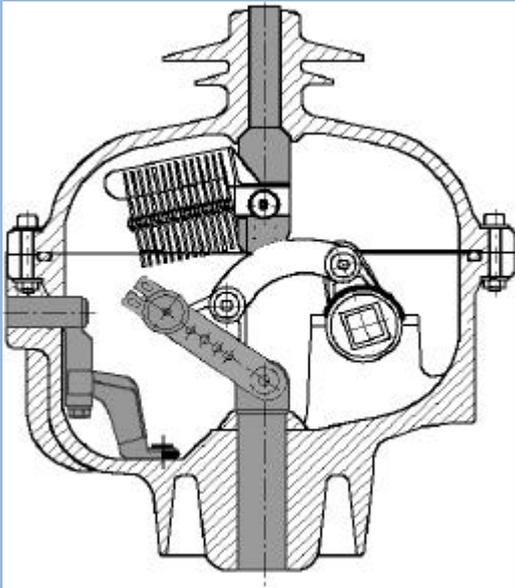
- 3-position SF6 switch disconnector, SFG
- Epoxy cast resin housing
- Inspection windows
- Operating mechanism with mechanical position indicator

Bottom unit



- Cable entry with cable support
- Circuit breaker
- Fuses
- Surge arresters
- Current transformers
- Voltage transformers
- Sensors
- Earthing switches

SFG - switch disconnecter



- 3-position-switch disconnecter
- SF₆-gas filled
- Mechanical lifetime
 - Switch disconnecter: 5000 o/c
 - Earthing switch: 1000 o/c
- Filling pressure 0,4 bar
- Max. fuses
 - 100 A at 10 kV (1600 kVA)
 - 80 A at 20 kV (2000 kVA)

Operation & Interlocking



- Totally safe operation
- One shaft simple operation
- Interlocking
 - Padlock
 - Key lock (Ronis, Profalux)



Inspection windows



- Easy to perform a visual check of the position of the switch-disconnector and earthing switch



Installation & cable termination



- Modular construction makes installation easier
 - easy installation of cubicles
 - easy installation of cables

- Simple cable clamp connection
- Cheap and easy



Circuit breakers



- Both technologies available
 - Vacuum (VD4/S, VD4/US)
 - SF6 Gas (HD4/S , HD4/US)
- Highest degree of reliability
- Compact with high rated values
- Extensive range with many options
- Virtually maintenance free
- Very long economical service life



Protection relays



- SPACOM series
- REF, REJ, REA
- PR_ (w/o aux voltage)
- SEG WIC 1 (w/o aux voltage)
- Additional apparatus can be installed in an additional LV compartment

Instrument transformers



- DIN-type block transformers
 - VT's
 - CT's + capacitive divider
 - Sensors
- Ring type cable current transformers
 - Integrated on circuit breaker
 - separately mounted in the bottom unit





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ABB

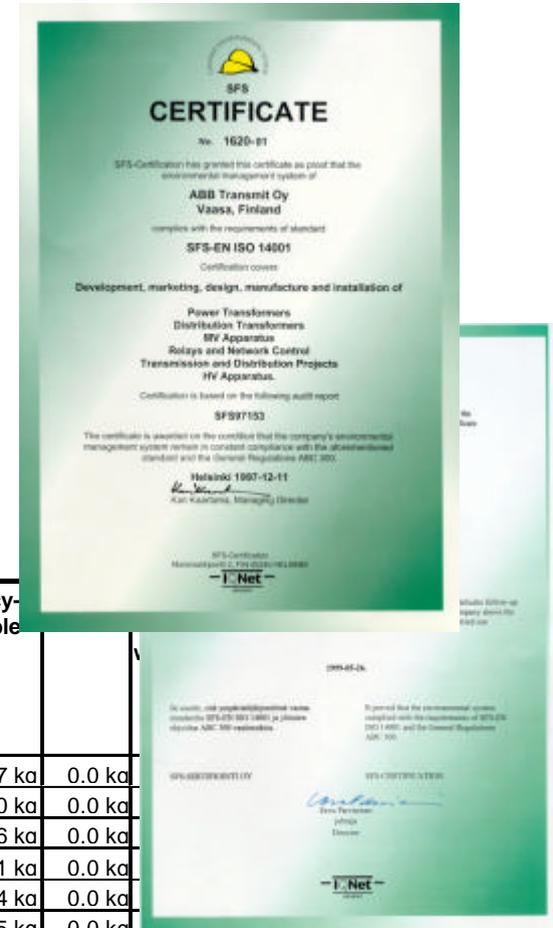
Safe

- Uniswitch is type tested according to IEC standards
- Short circuit tested and arc fault tested according to IEC standards
- Arc fault tested according to IEC, 20 kA, 1 sec.
 - Cable compartments, and
 - Busbar compartment
- For extra safety ready designed solutions
 - TVOC Arc Guard System
 - REA Arc Protection Relay
- Key interlocking for additional safety



Environmental

- Air insulated
- Recyclable
- Long lifecycle
- ISO 14001
- The Environmental Product Declaration determines that materials are recyclable with an almost 100% yield



Material	Gross-weight	Recycle %	Recyclable		
Steel	89.7 ka	100.0 %	89.7 ka	0.0 ka	
Stainless steel	6.0 ka	100.0 %	6.0 ka	0.0 ka	
Copper	7.6 ka	100.0 %	7.6 ka	0.0 ka	
Aluminium	1.1 ka	100.0 %	1.1 ka	0.0 ka	
Brass	0.4 ka	100.0 %	0.4 ka	0.0 ka	
Zinc	0,5 kg	100,0 %	0,5 kg	0,0 kg	
Polycarbonate	0.9 ka	100.0 %	0.9 ka	0.0 ka	1 %
EPDM	0.7 ka	80.0 %	0.6 ka	0.1 ka	0 %
Polypropylene	0.1 ka	100.0 %	0.1 ka	0.0 ka	0 %
Polyester	0.1 ka	100.0 %	0.1 ka	0.0 ka	0 %
Glass	0.1 ka	98.0 %	0.1 ka	0.0 ka	0 %
Epoxy resin	22.6 ka	0.0 %	0.0 ka	22.6 ka	0 %
SF6-gas	0.2 ka	96.0 %	0.2 ka	0.0 ka	0 %
Paint	0.8 ka	0.0 %	0.0 ka	0.8 ka	0 %
Total	130.8 ka		107.3 ka	23.6 ka	



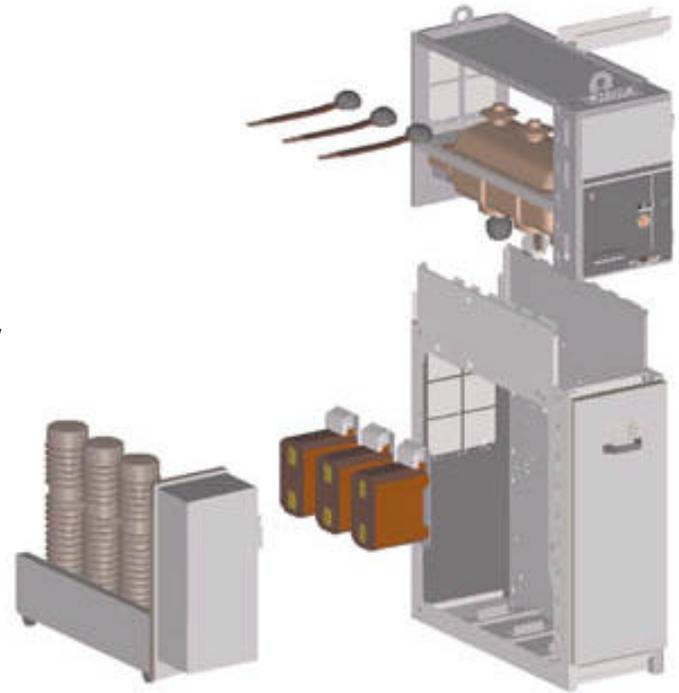
Reliable



- Virtually maintenance free for 30 years
- Solid, simplified metal enclosed Aluzinc construction
- Enclosed stainless steel spring mechanism
- Tested according to IEC-standards
- Reference from 30 countries all over the world

Modular

- Modular design/lego components for various solutions
- Robust simple construction with AluZink steel sheets
- Easy to extend an existing switchgear
- Wide range of accessories



Well proven technique in a new case !

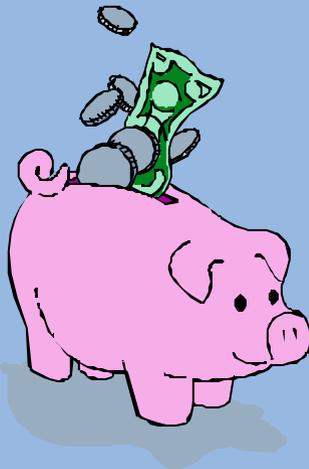
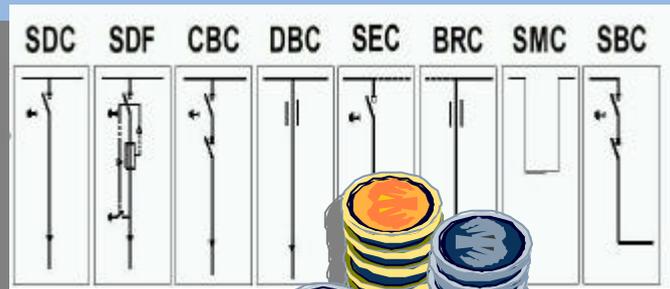


Flexible

- Remote operation possible
- Wide range of secondary devices & protection relays supported
 - optional low voltage compartment
 - interface for feeder terminal and protection&control relays
- Sensor technology available
- Key interlocking



Cost Effective



- Compact design/space saving
- Standard solutions
- Prefabricated wiring
- Virtually maintenance free
- Easy installation
- Air insulated
- Long lifetime (30 years)



A global leader
in power and automation technologies
that enable utility and industry customers
to improve their performance
while lowering environmental impact