



ABB – ELDS, 2019

MV Primary Gas-insulated Switchgear

Type ZX1.2

Speaker, position



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ZX1.2

MV Primary Gas-insulated Switchgear – ZX1.2

References

Canada



Crosslinx Transit Solution Constructors
122 x ZX2 Panels for Toronto Metro

Brazil



Arena Fonte Nova
18 x ZX0.2 Panels for the stadium

Turkey



Istanbul Metropolitan Municipality
198 x ZX0.2 panels for the Istanbul Metro

South Africa



City of Cape town
More than 100 x ZX0.2 Panels for the Cape Town

Over 75.000 panels installed in more than 100 countries!

MV Primary Gas-insulated Switchgear – ZX1.2

Reliable, safe, cost-effective and operator-friendly

Our solution



Reliable

- Performance and aging behavior independent of site conditions
- **Proven**, durable circuit breaker design with extended lifetime
- Increased availability



Safe

- Reduced fault rate
- Increased operator safety due to **arc-resistant** design
- No access to MV parts



Cost-effective

- **Compact** switchgear design and optimized substation layout
- **Maintenance-free** MV parts
- Reduced demand for spare parts



Operator-friendly

- **Safe, fast and easy installation** without gas works and the need for special tools
- Intuitive panel control
- **Flexible, customized design**

Portfolio

Portfolio overview ZX1.2

Why choose ABB?

Contacts

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ABB's MV GIS offering

IEC primary switchgear

Gas-insulated switchgear (GIS Primary):

– Global: ZX0, **ZX0.2**, **ZX1.2**, **ZX2**, ZX1.5R (for rail applications)

Recent innovations: **Digital switchgear**, **eco-efficient GIS**



For ANSI markets

Gas-insulated switchgear (GIS Primary): **ZX2**, **ZX2.2**, **ZX0.2**



IEC secondary switchgear

Gas-insulated switchgear (GIS RMU): **SafeRing**, **SafePlus**, **SafeLink** families

Recent innovations: **Eco-efficient GIS**, **smart grid enabled switchgear**



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Where is MV GIS technology used?

Applications



Utilities (ZX0.2, ZX2)

- Electricity Distribution
- Substations
- Power Generation
 - Conventional
 - Renewables



Industry (ZX2, ZX1.2)

- Oil and Gas
- Mining and Minerals
- Pulp and Paper
- Petrochemicals
- Steel



Transportation (ZX0.2, ZX2, ZX1.5R)

- Rail
- Airports
- Marine
 - Offshore Applications
 - Vessels



Building (ZX0.2, ZX2)

- Data Center
- Hospitals
- Infrastructure

MV Primary Gas-insulated Switchgear – ZX1.2

Well-positioned in attractive markets

Well-positioned ZX portfolio

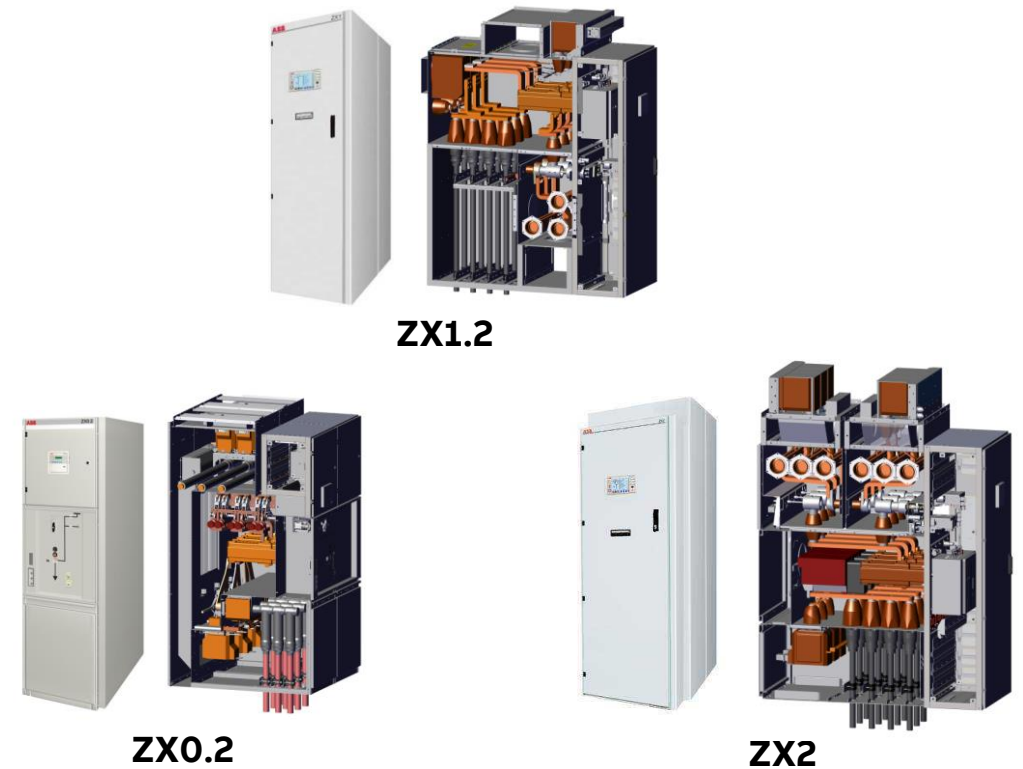
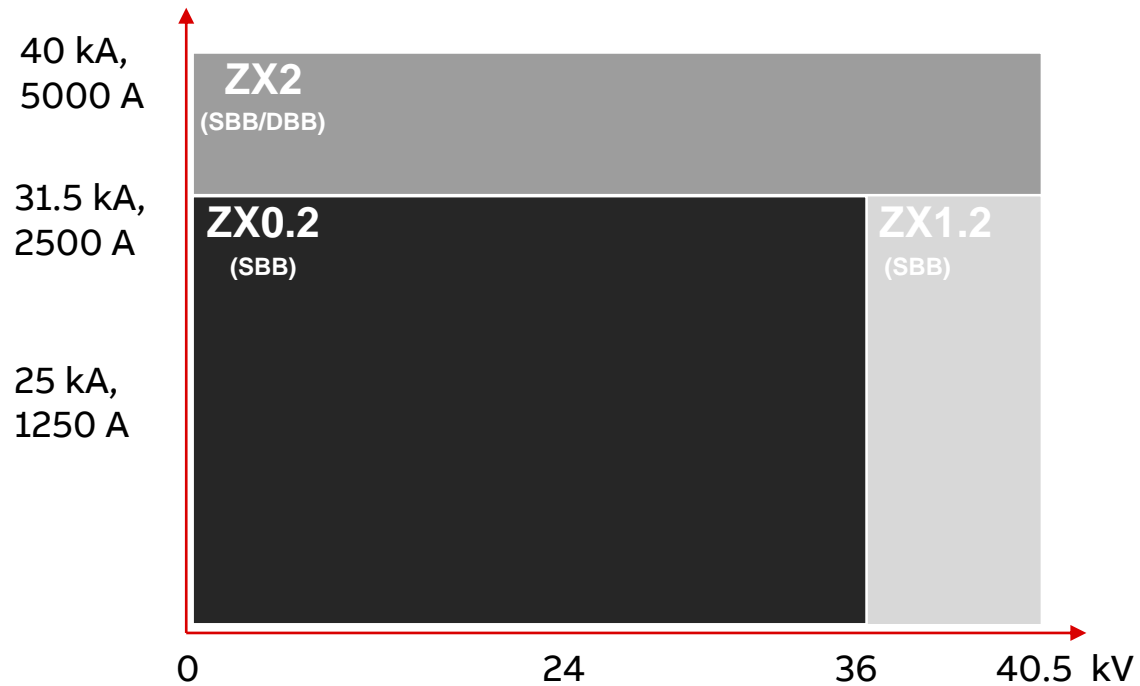
- Most **complete switchgear** portfolio
- Global coverage of requirements – **locally supplied and supported**
- **Flexible** design, **reliable and** and **cost-efficient**
- Global presence with **local service and support**



Most complete portfolio, global coverage

MV Primary Gas-insulated Switchgear – ZX1.2

ZX Family



MV Primary Gas-insulated Switchgear – ZX1.2



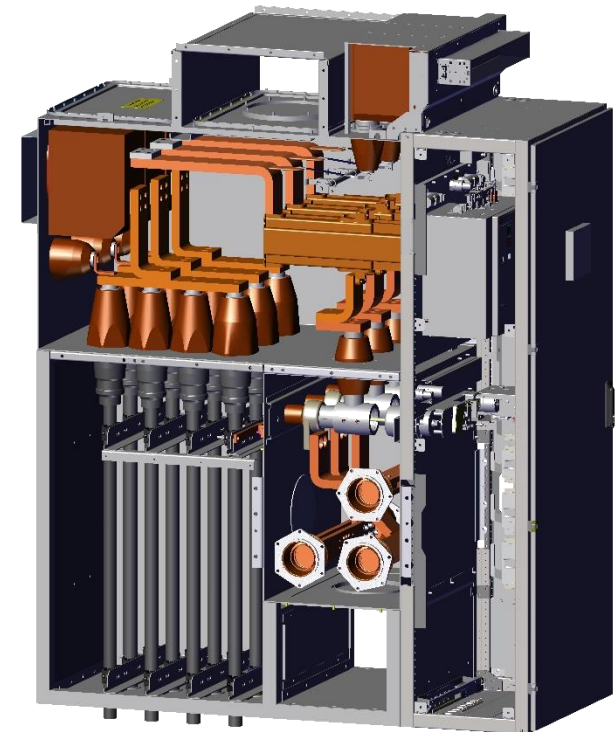
Safe and reliable design for special applications

MV Primary Gas-insulated Switchgear – ZX1.2

Are you looking for a safe, reliable and compact switchgear design?

Flexible, high-quality design to meet all customer requirements type ZX1.2

- Up to **40.5kV**
- Up to **2500A**
- Up to **31.5kA, 3 sec**
- **3-phase encapsulated, modular arc-resistant design**
- All gas compartments are fully segregated, no gas connection between adjacent panels
- Factory-assembled, -filled and -tested panels
- IEC62271-200
- Several local certifications available on request



MV Primary Gas-insulated Switchgear – ZX1.2

Are you concerned about gas handling?

Gas compartments

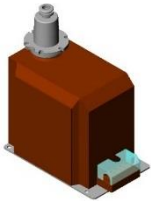
- Each feeder consists of 2 gas compartments made from laser-cut stainless steel
- Each gas compartment is equipped with a on-return filling valve (with protective cap) and repair openings
- Operation at slight overpressure - rated **operating pressure 130kPa** (alarm level 120kPa) > 36 kV
- **Low amount of SF₆** used per panel: 5 - 10kg
- **Gas leakage < 0,1% per year**
- Permanently ensured for entire high voltage area of panels
- **No checks on the insulating gas are necessary and maintenance-free**



MV Primary Gas-insulated Switchgear – ZX1.2

Technology: safe, fast and easy installation

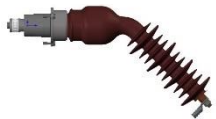
Voltage transformer



Surge arrester



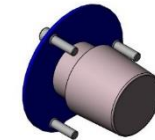
Test plug



Busbar (plug-in)



Dummy plug



Cable plug

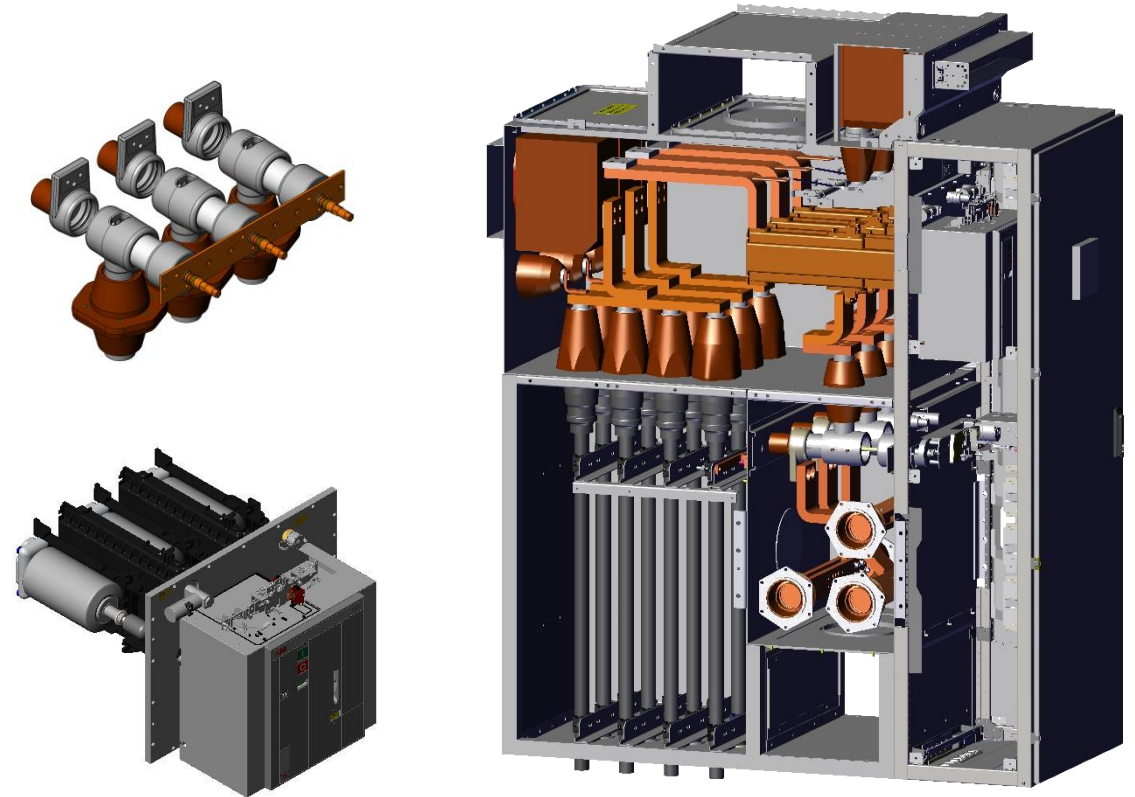


MV Primary Gas-insulated Switchgear – ZX1.2

Key components

Operations

- Motorized operating mechanisms for switching devices located easily accessible inside LVC
- Manual emergency operation possible
- Advantages of **earthing via circuit breaker and three position switch** in series:
 - Circuit breaker is of higher quality than any earthing switch
 - Higher number of make-proof earthing operations
 - No contamination of SF6 through switching operations
- Optional view ports for visual verification



MV Primary Gas-insulated Switchgear – ZX1.2

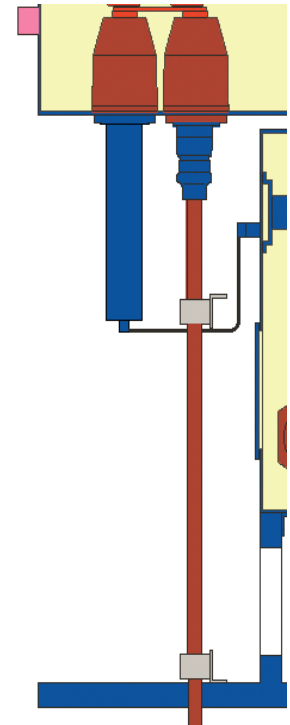
How would you like to make your cable connection?

Inner cone termination

Inner cone termination

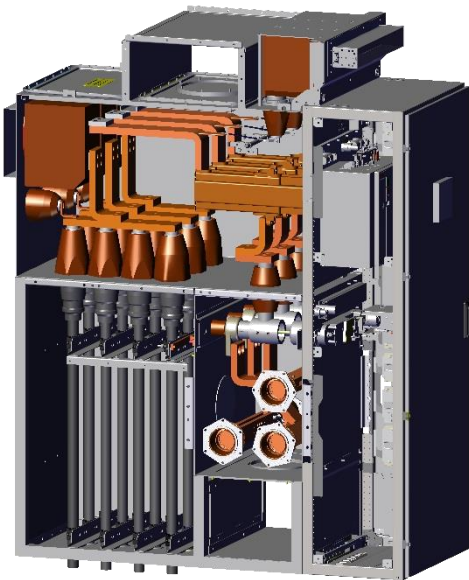


Connection of cables



MV Primary Gas-insulated Switchgear – ZX1.2

Current transformer

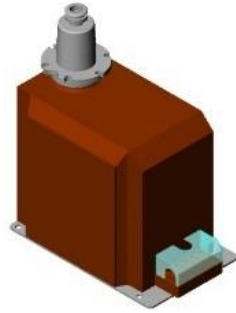
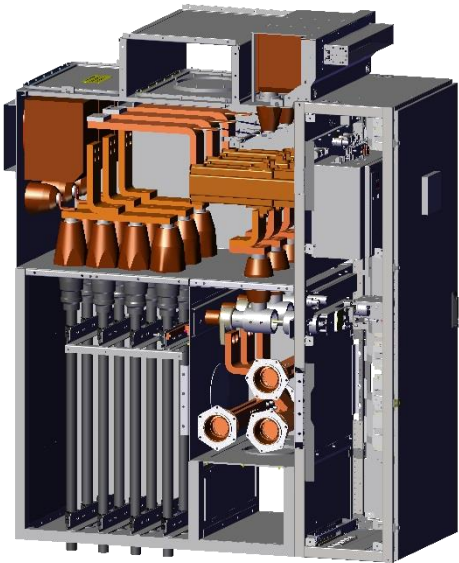


Core data (Device A)

Panel width		mm	600	800
Rated primary current		I_r A	...1250	...1250 ...2500
Rated secondary current		A		1 or 5
Max. number of cores			3	5 5
Measuring cores	Capacity	VA	2.5 to 15	
	Class			
Protection cores	Capacity	VA	2.5 to 30	
	Class			
	Overcurrent factor			

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Voltage transformer



Technical data of voltage transformers

Rated voltage	Panel width	Max. capacity	Classes	Rated secondary voltage of the metering winding	Rated secondary voltage of the earth fault winding	Rated thermal current limit of the metering winding with rated voltage factor 1.2 / continuous [A]	Rated thermal long duration current of the earth fault winding with rated voltage factor 1.9 / 8 h [A]
[kV]	[mm]	[VA]		[V]	[V]		
Up to 24 kV	600	15	0.2	100 / $\sqrt{3}$	100 / $\sqrt{3}$	4	4
		45	0.5	110 / $\sqrt{3}$	110 / $\sqrt{3}$		
		100	1				
	800	30	1	100 / $\sqrt{3}$	100 / $\sqrt{3}$	6	6
> 24 to 36 kV	800	75	0.2	110 / $\sqrt{3}$	110 / $\sqrt{3}$		
		150	0.5			6	6
			1				

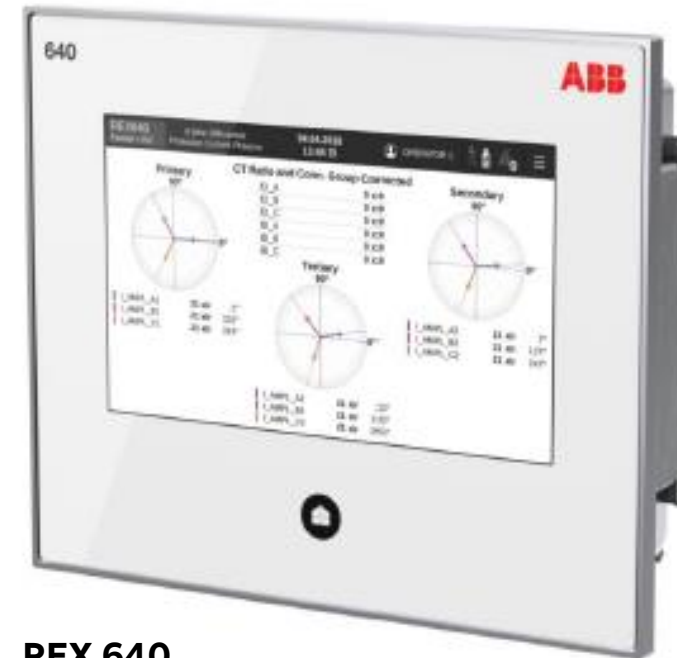
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What is your control and protection philosophy?

Protection, metering and control



PCU

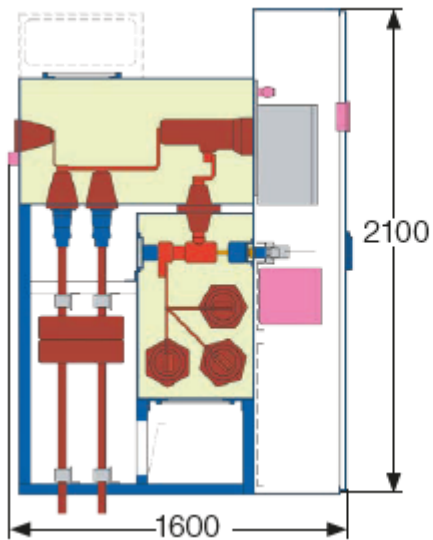


REX 640

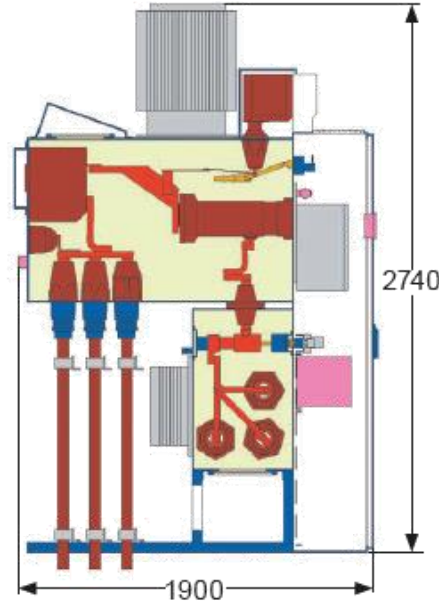
MV Primary Gas-insulated Switchgear – ZX1.2

Section views

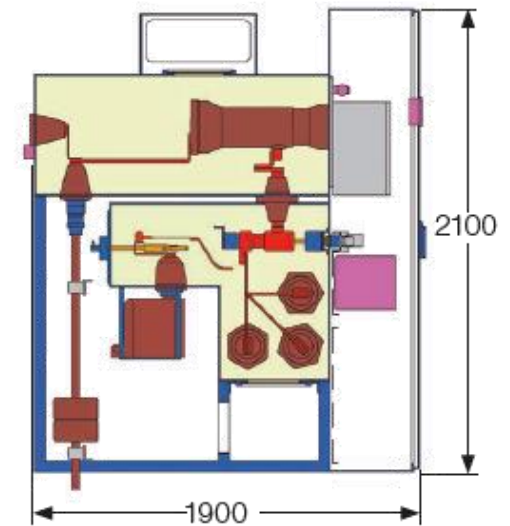
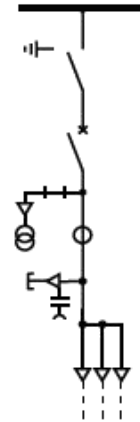
Typical panel variants ZX1.2



Outgoing feeder panel



Incoming feeder panel



Feeder panel



Saving space helps to reduce cost

- Delivery of **factory filled and tested panels**
- Installation without gas works at site
- Transverse installation is possible
- Installation on standard floor frames embedded in concrete floor, on intermediate frame or on raised false floor
- Installation and commissioning shall be done by **trained and certified service personnel**

800 – 1250 A panel variants	From approx. 550 kg to approx. 1000 kg
2500 A – panel variants	Up to 1650 kg



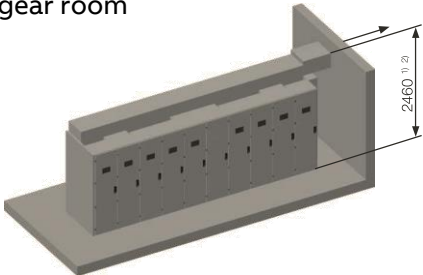
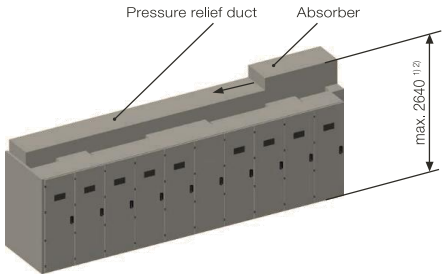
MV Primary Gas-insulated Switchgear – ZX1.2

How does your switchgear room look like?

Installation – Minimum room heights

Minimum room heights

System with tall heat sinks on at least one circuit-breaker compartment		3250 mm
System without ZX1.2 – C (with or without voltage transformers on the circuit-breaker compartment)	Pressure relief duct with discharge to the outside	2700 mm
	System with plasma diverters	2800 mm
	Pressure relief duct with discharge into the switchgear room	2950 mm
System with ZX1.2 – C (with or with voltage transformers on the circuit-breaker compartment)	System plasma diverters	3000 mm
	Pressure relief duct with discharge to the outside (ZX1.2 – C not at the end of the system)	3200 mm
	Pressure relief duct with discharge to the outside (ZX1.2 – C at the end of the system)	3200 mm
	Pressure relief duct with discharge into the switchgear room	3200 mm



Sales Product Presentation – ZX1.2

Why choose ABB?

Highlights

- ABB is the pioneer in MV GIS
- Continuous improvement
- Products tailored to meet your local requirements and standards
- Highly reliable, smart, compact and economic solution
- Full engineering and technical support
- Worldwide footprint and service network



Sales Product Presentation – ZX1.2

Links

<http://abb.com/>

<http://abb.com/medium-voltage>

<https://new.abb.com/medium-voltage/switchgear/gas-insulated-switchgear>





**Let's write the future
of safe, smart, and sustainable
electrification**

ABB