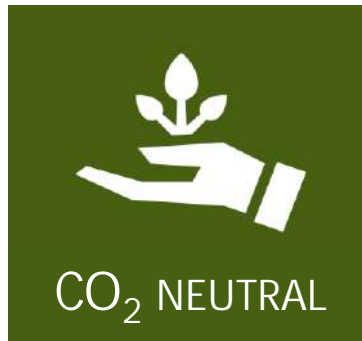


Gas-Insulated Switchgear - Blue GIS Vacuum Circuit Breaker and Clean Air Technology

Values for customers and environmental sustainability

- 40 years of experience – 5.5 million vacuum interrupters delivered
- Perfect for frequent switching and low temperature applications
- Completely type-tested according to latest international standards
- Lowest operation and maintenance costs:
Sealed for life interrupter unit; no gas handling during lifetime required
- No reporting or emission costs during operation and recycling:
No SF₆- or F-gas tax or future risk, No CO₂e emission compensation or future risk
No F-gas documentation or reporting costs; no risk of F-gas gas recycling costs



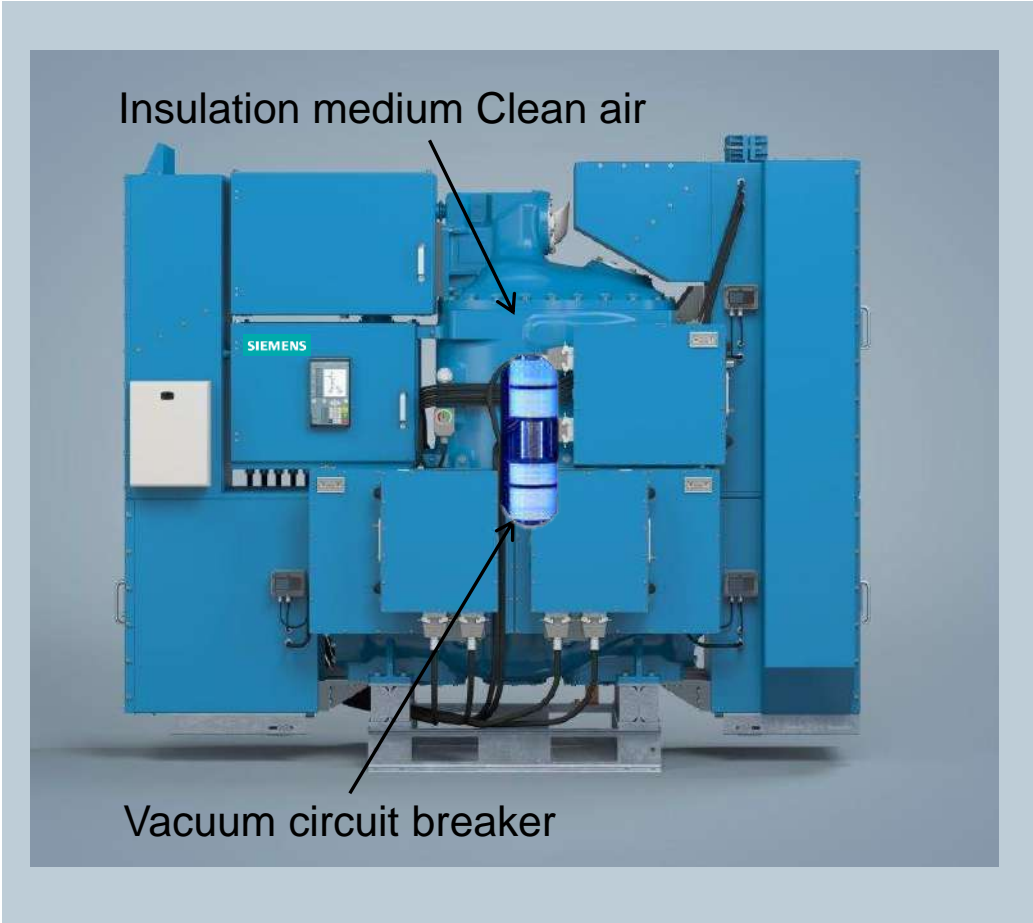
Gas-Insulated Switchgear

Type 8VM1 blue GIS up to 72.5 kV / 25 kA



Technical data

Switchgear type	8VM1	
Rated voltage	up to	72.5 kV
Rated frequency		50 / 60 Hz
Rated short-duration power-frequency withstand voltage (1 min)	up to	140 kV
Rated lightning impulse withstand voltage (1.2 / 50 µs)	up to	325 kV
Rated continuous current	up to	1250 A
Rated short-circuit breaking current	up to	25 kA
Rated peak withstand current	up to	68 kA
Rated short-time withstand current (up to 1 s)	up to	25 kA
Leakage rate per year and gas compartment (type-tested)		< 0.1 %
Driving mechanism of circuit-breaker		stored-energy spring
Rated operating sequence		O-0.3 s-CO-3 min-CO
		CO-15 s-CO
Interrupter technology		Vacuum
Insulation medium		Clean air
Weight of SF ₆ or other fluorinated greenhouse gases		0 kg
GWP Global Warming Potential		0
CO ₂ equivalent		0 kg
Rated filling pressure		0,56 MPa abs
Bay width common pole drive		1050 mm
Bay hight, depth (depending on bay arrangement)		2330 mm x 2500 mm
Bay weight (depending on bay arrangement)		1,6 t
Ambient temperature range		-30 °C up to +45 °C
Installation		indoor
First major inspection		> 25 years
Expected lifetime		> 50 years
Standards		IEC / IEEE
Other values on request		



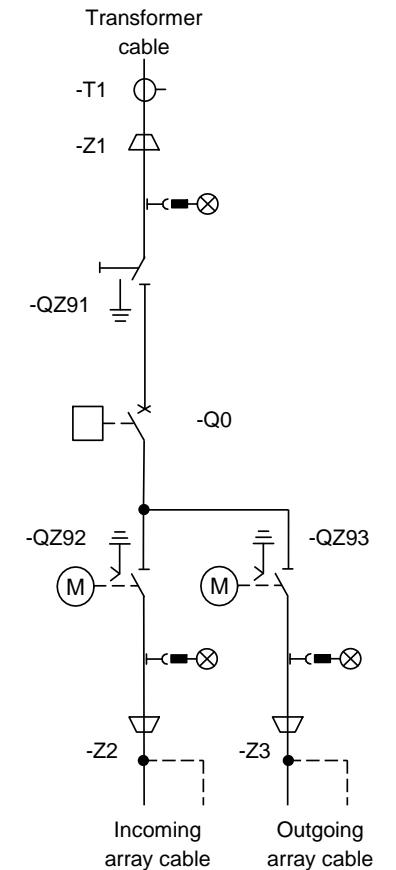
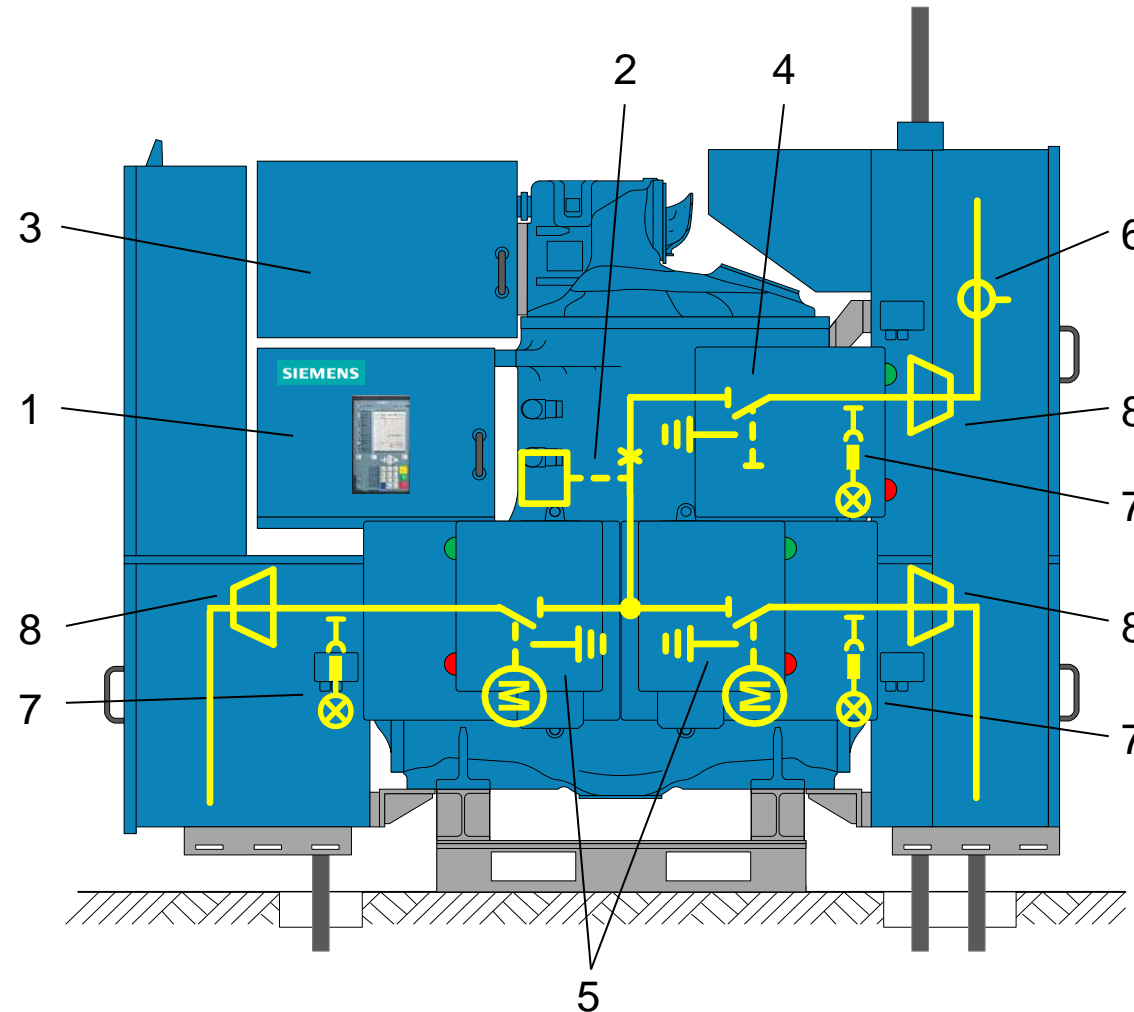
Gas-Insulated Switchgear

Type 8VM1 blue GIS up to 72.5 kV / 25 kA

SIEMENS
Ingenuity for life

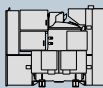
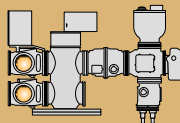
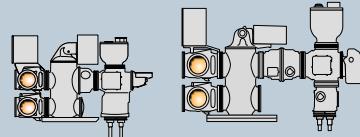
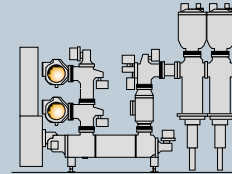
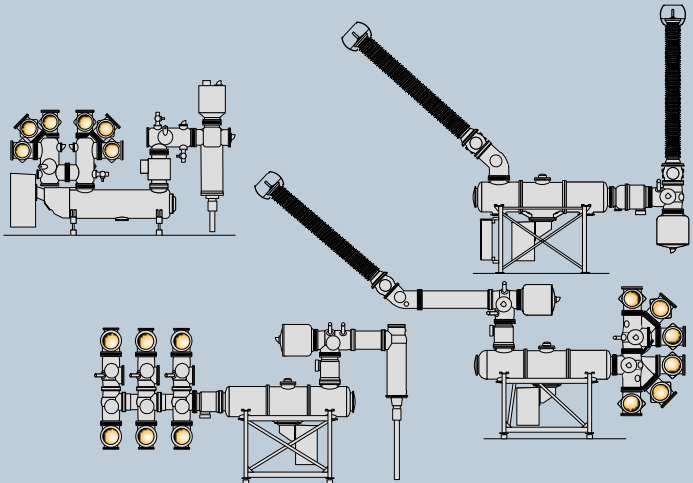
Switchgear Bay

- 1 Integrated local control cubicle
- 2 Circuit-breaker with vacuum interrupter
- 3 Spring-stored-energy operating mechanism with circuit-breaker control unit
- 4 Disconnecter and earthing switch
- 5 Disconnecter and Make-proof earthing switch (high speed)
- 6 Current transformer
- 7 Voltage Detector System (VDS)
- 8 Cable termination



Gas-Insulated Switchgear

Product Line 8VN1 blue GIS

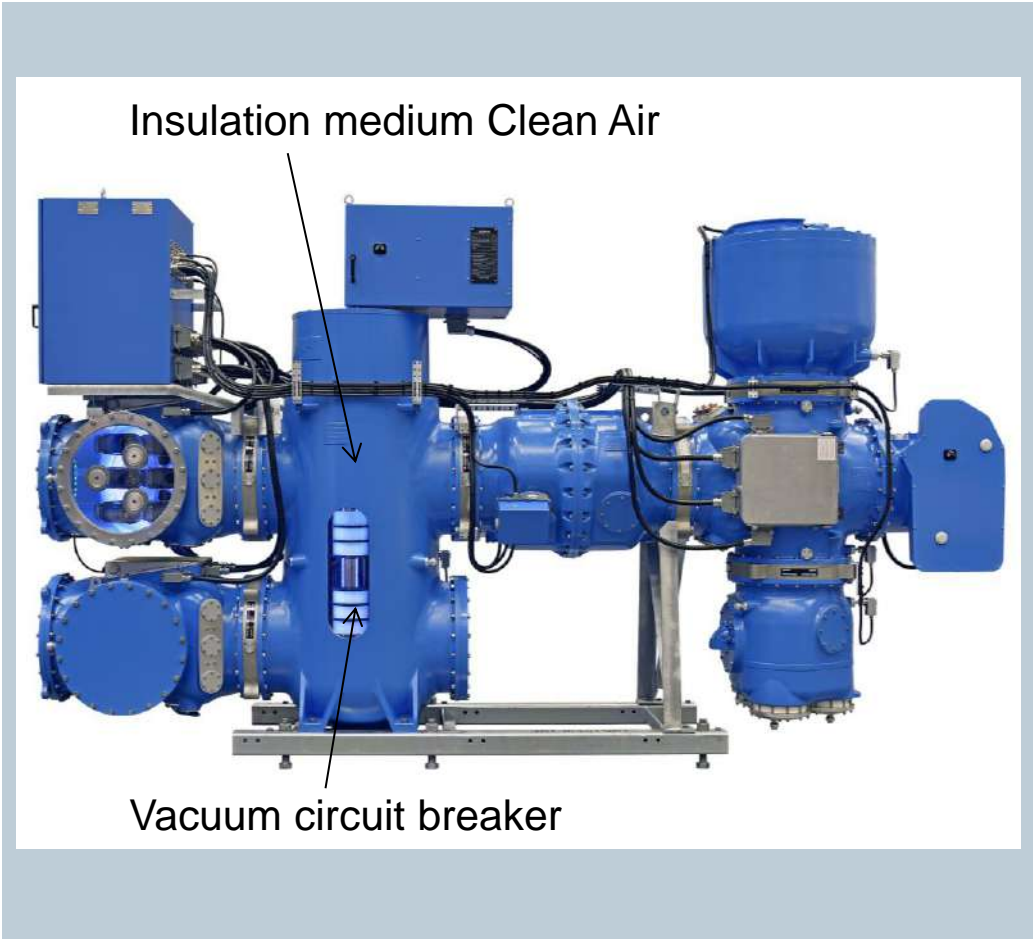
Product line		8VM1	8VN1	8DN8		8DN9	8DQ1		
Solution									
Rated voltage	up to:	72.5 kV	145 kV	145 kV	170 kV	245 kV	420 kV (245 kV)	420 kV	550 kV
Rated short circuit-breaking current	up to:	25 kA	40 kA	40 kA	63 kA	50 kA	63 kA (80/90 kA)	80 kA	63 kA
Rated current busbar	up to:	-	3150 A	3150 A	4000 A	4000 A	6300 A	6300 A	5000 A
Rated current feeder	up to:	1250 A	3150 A	3150 A	4000 A	4000 A	5000 A	5000 A	5000 A
Interrupter technology		Vacuum		Self-compressions principle					
Insulation medium		Clean air		SF ₆					

Gas-Insulated Switchgear

Type 8VN1 blue up to 145 kV / 40 kA

Technical data

Switchgear type	8VN1	
Rated voltage	up to	145 kV
Rated frequency		50 / 60 Hz
Rated short-duration power-frequency withstand voltage (1 min)	up to	275 kV
Rated lightning impulse withstand voltage (1.2 / 50 µs)	up to	650 kV
Rated continuous current – busbar	up to	3150 A
Rated continuous current – feeder / bus coupler	up to	3150 A
Rated short-circuit breaking current	up to	40 kA
Rated peak withstand current	up to	108 kA
Rated short-time withstand current (up to 3 s)	up to	40 kA
Leakage rate per year and gas compartment (type-tested)		< 0.1 %
Driving mechanism of circuit-breaker		stored-energy spring
Rated operating sequence		O-0.3 s-CO-3 min-CO
		CO-15 s-CO
Interrupter technology		Vacuum
Insulation medium		Clean air
Weight of SF ₆ or other flourinated greenhouse gases		0 kg
GWP Global Warming Potential		0
CO ₂ equivalent		0 kg
Rated filling pressure		0,79 MPa abs
Bay width common pole drive		1000 mm
Bay hight, depth (depending on bay arrangement)		3200 mm x 5500 mm
Bay weight (depending on bay arrangement)		4,7 t
Ambient temperature range		-50 °C up to +55 °C
Installation		indoor / outdoor
First major inspection		> 25 years
Expected lifetime		> 50 years
Standards		IEC / IEEE
Other values on request		



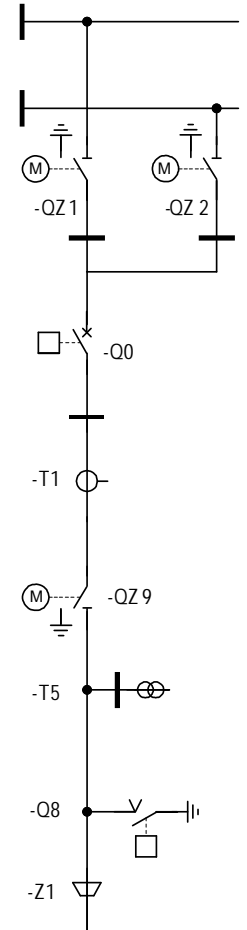
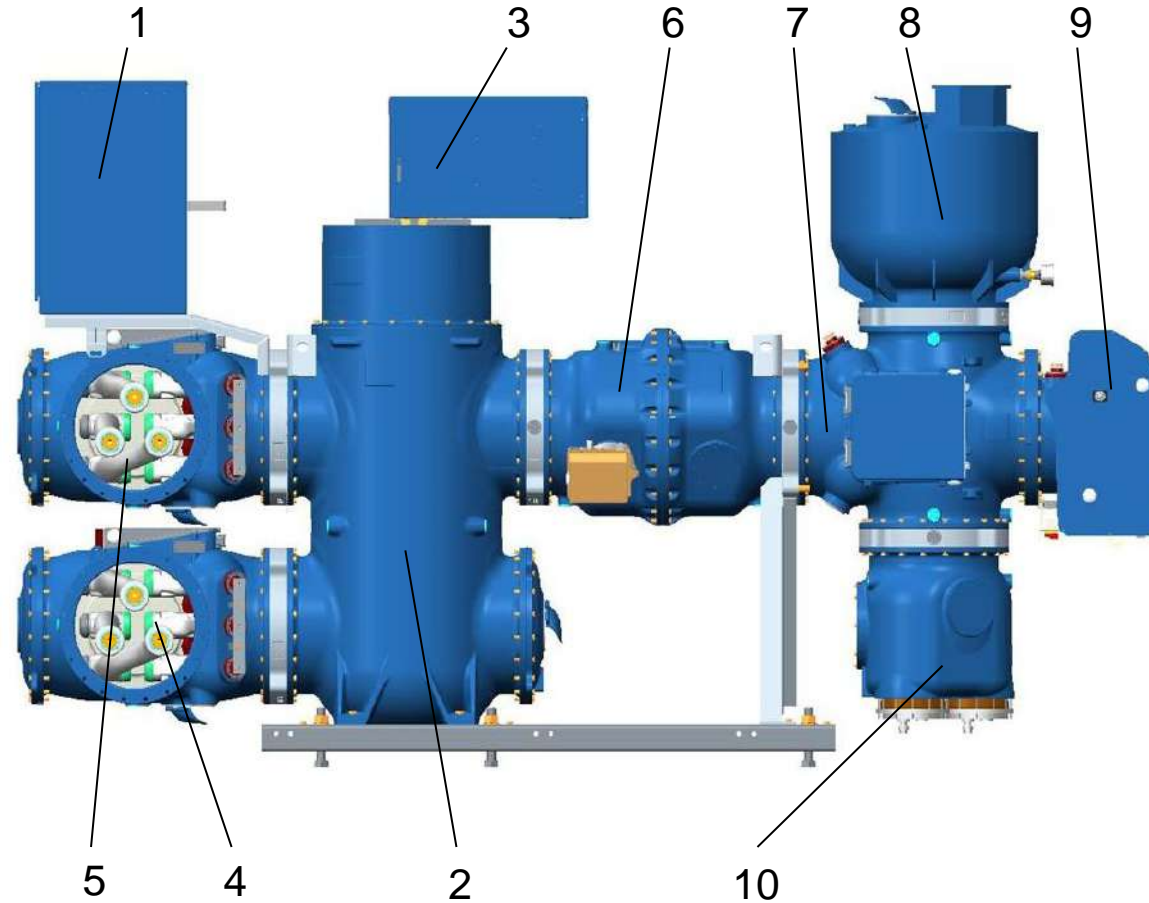
Gas-Insulated Switchgear

Type 8VN1 blue up to 145 kV / 40 kA

SIEMENS
Ingenuity for life

Switchgear Bay

- 1 Integrated local control cubicle
- 2 Circuit-breaker with vacuum interrupter
- 3 Spring-stored-energy operating mechanism with circuit-breaker control unit (common drive)
- 4 Busbar I with disconnecter and earthing switch
- 5 Busbar II with disconnecter and earthing switch
- 6 Current transformer
- 7 Outgoing module with disconnecter and earthing switch
- 8 Voltage transformer
- 9 Make-proof earthing switch (high speed)
- 10 Cable sealing end



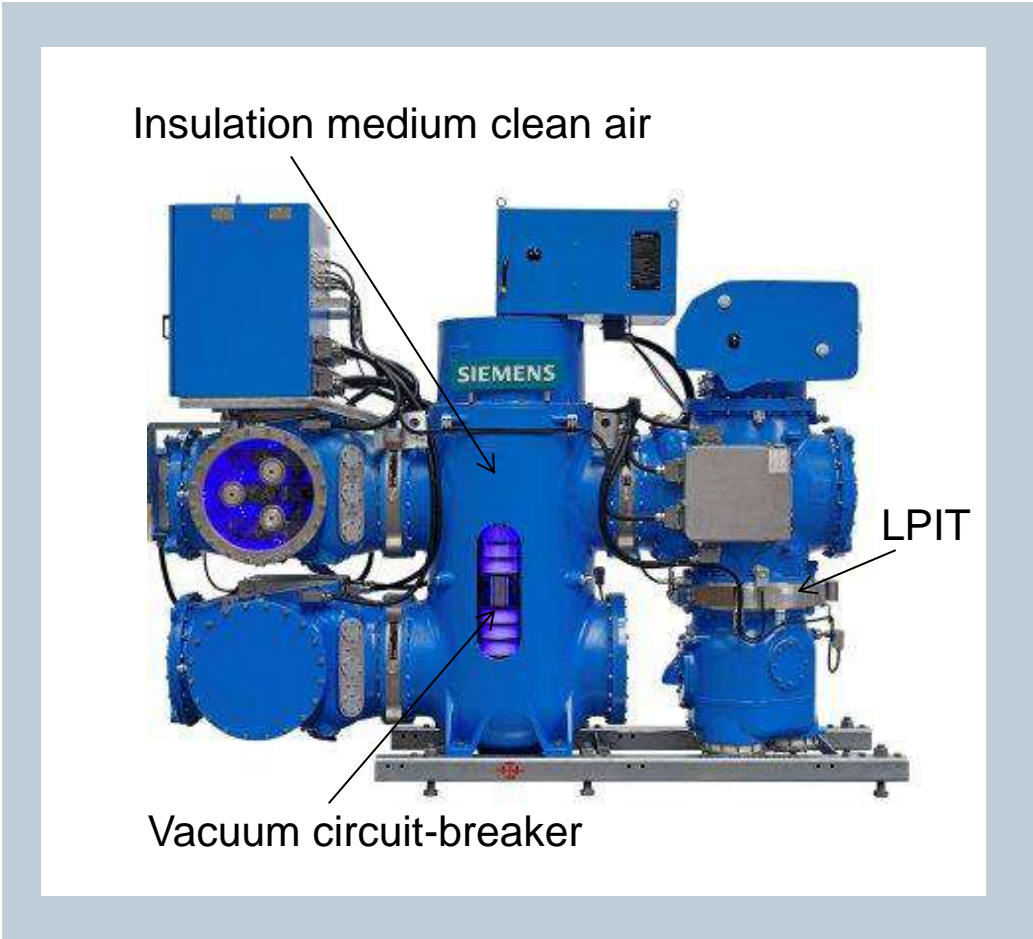
Gas-Insulated Switchgear

Type 8VN1 blue GIS up to 145 kV / 40 kA (with LPIT)



Technical data

Switchgear type	8VN1	
Rated voltage	up to	145 kV
Rated frequency		50 / 60 Hz
Rated short-duration power-frequency withstand voltage (1 min)	up to	275 kV
Rated lightning impulse withstand voltage (1.2 / 50 µs)	up to	650 kV
Rated continuous current - busbar	up to	3150 A
Rated continuous current - feeder / bus coupler	up to	3150 A
Rated short-circuit breaking current	up to	40 kA
Rated peak withstand current	up to	108 kA
Rated short-time withstand current (up to 3 s)	up to	40 kA
Leakage rate per year and gas compartment (type-tested)		< 0.1 %
Driving mechanism of circuit-breaker		stored-energy spring
Rated operating sequence		O-0.3 s-CO-3 min-CO CO-15 s-CO
Interrupter technology		Vacuum
Insulation medium		Clean air
Weight of SF ₆ or other flourinated greenhouse gases		0 kg
GWP Global Warming Potential		0
CO ₂ equivalent		0 kg
Rated filling pressure		0,79 MPa abs
Bay width common pole drive		1000 mm
Bay hight, depth (depending on bay arrangement)		2900 mm x 3700 mm
Bay weight (depending on bay arrangement)		3.3 t
Ambient temperature range		-50 °C up to +55 °C
Installation		indoor / outdoor
First major inspection		> 25 years
Expected lifetime		> 50 years
Standards		IEC / IEEE
Other values on request		



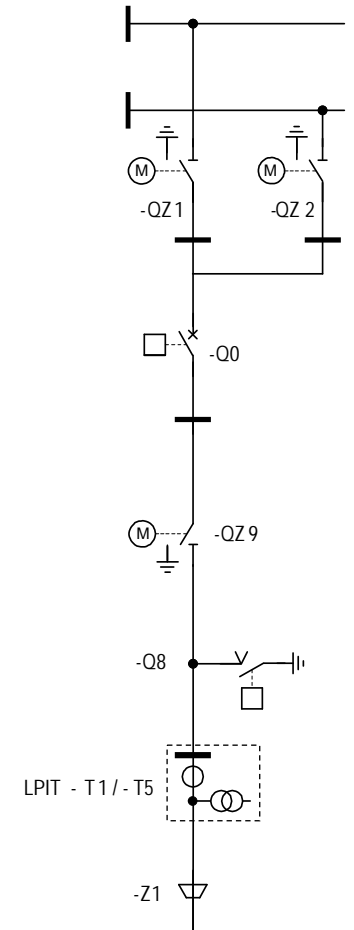
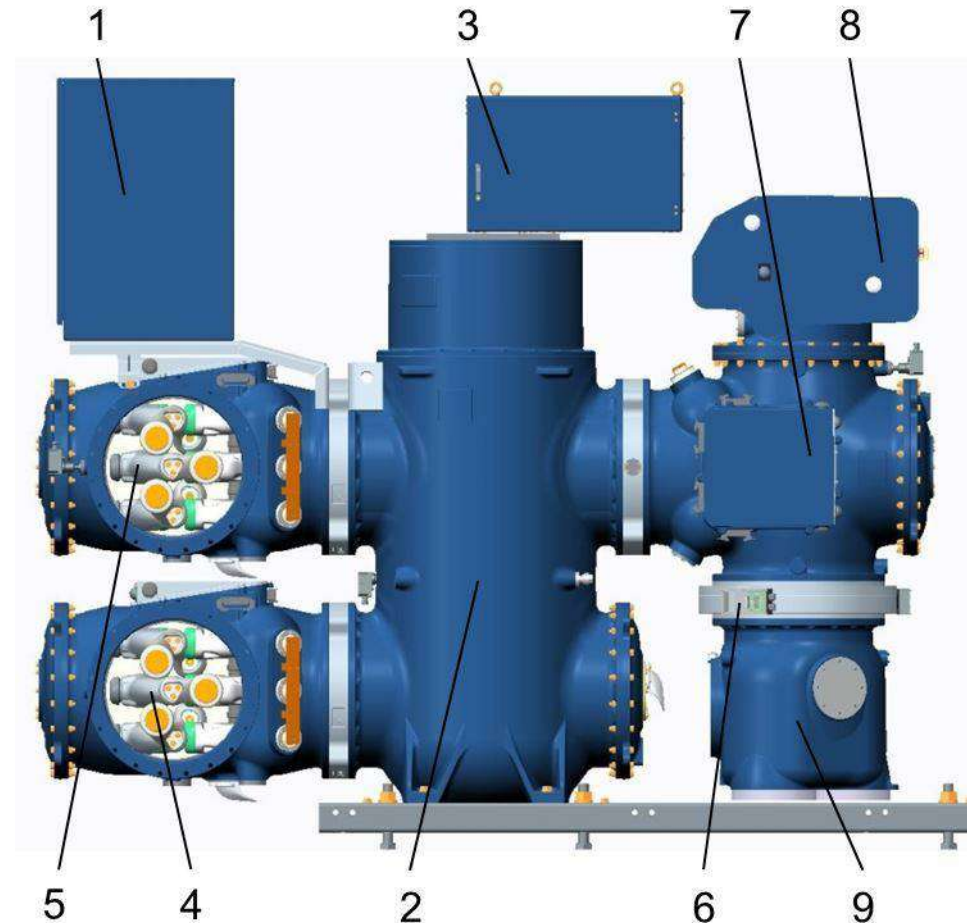
Gas-Insulated Switchgear

8VN1 blue GIS up to 145 kV / 40 kA (with LPIT)

SIEMENS
Ingenuity for life

Switchgear Bay

- 1 Integrated local control cubicle
- 2 Circuit-breaker with vacuum interrupter
- 3 Spring-stored-energy operating mechanism with circuit-breaker control unit (common drive)
- 4 Busbar I with disconnecter and earthing switch
- 5 Busbar II with disconnecter and earthing switch
- 6 Low Power Instrument Transformers (LPIT)
- 7 Outgoing module with disconnecter and earthing switch
- 8 Make-proof earthing switch (high speed)
- 9 Cable sealing end



Gas-Insulated Switchgear 8VN1 blue GIS up to 145 kV / 40 kA

Conventional - / Low Power - Instrument Transformer Technology



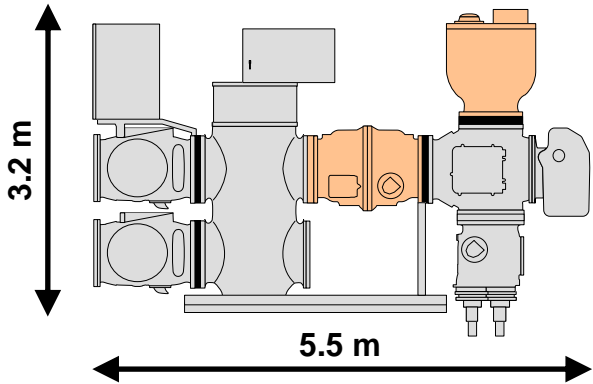
Instrument Transformer Technologie (Conventional)

Inductive Voltage Transformer (VT)

Inductive Current Transformer (CT)



+



Low Power Instrument Transformer (LPIT) Technology (Non-Conventional)



1 x Electric Field Probe for Voltage Measurement

+

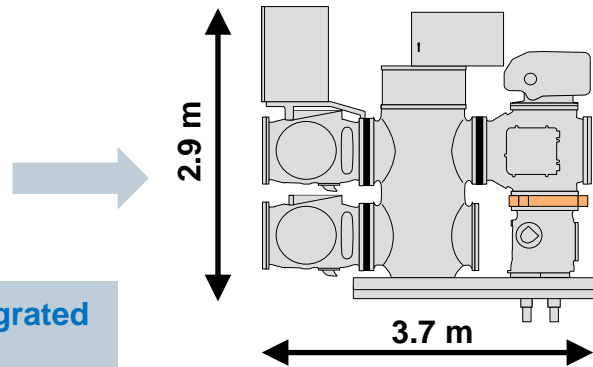


2 x Rogowski Coils for Current Measurement (redundant)

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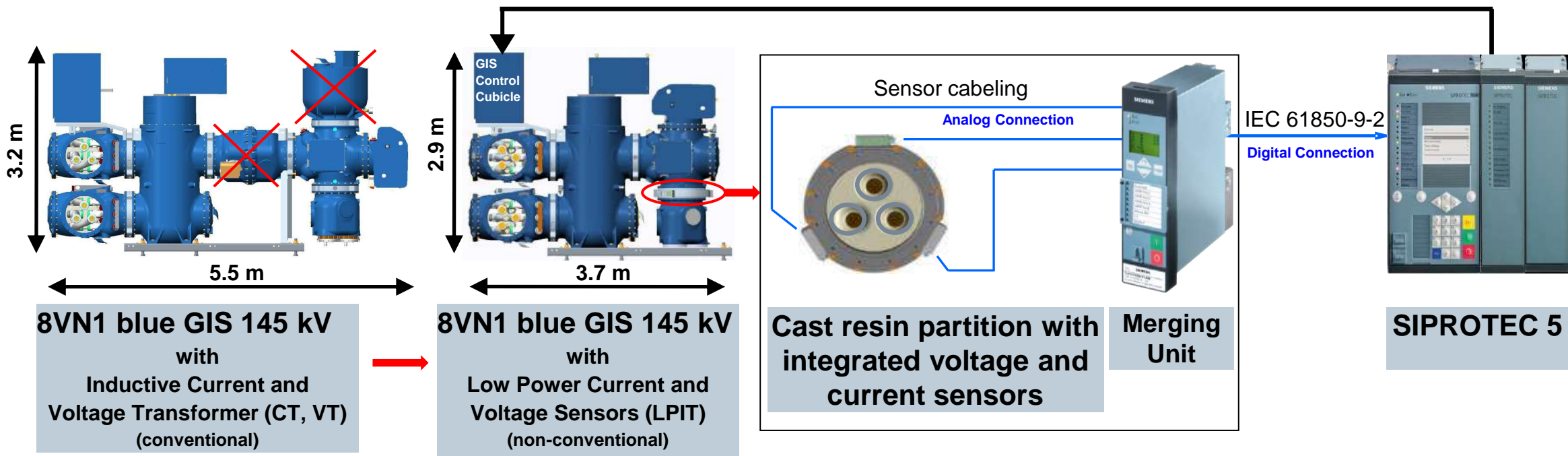


Cast resin partition with integrated voltage and current sensors



Gas-Insulated Switchgear 8VN1 blue GIS up to 145 kV / 40 kA

Low Power Instrument Transformer (LPIT) - Technology



- **Combined electronic Voltage and Current Sensor (eVT/eCT)** according to IEC / IEEE
- Applied technologies: **Rogowski Coil & Electric Field Probe**
- **One common measuring system** für protection and metering

	realized		achievable
Current range:	100 A	up to 3.150 A; 100 kA	up to 6.000 A; 216 kA
Voltage range:	72.5 kV	up to 145 kV	up to 550 kV

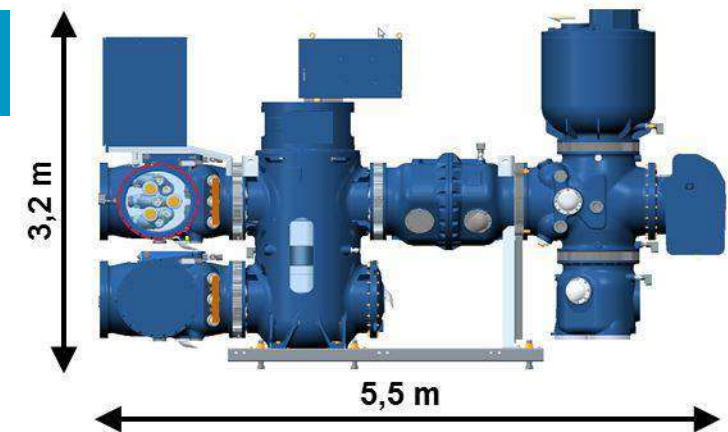
Gas-Insulated Switchgear 8VN1 blue GIS up to 145 kV / 40 kA

Low Power Instrument Transformer (LPIT) in GIS

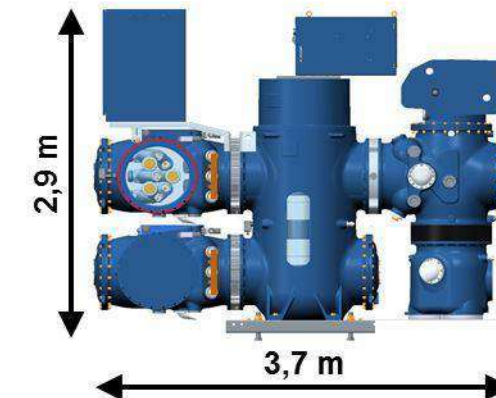
SIEMENS
Ingenuity for life

Customer Benefits

- **Decreased size and weight**
reduced weight of CT and VT (from approx. **1.500 kg to 85kg**),
lower dimensions of GIS bay and significantly less cabling
- **Simple network connections with improved safety**
significantly reduced cabling, more thin cables, easier cable works, smaller cable ducts
low signal levels for safe maintenance and operations
- **Reduced failure rate**
because connection failures are less likely to occur
- **Contribution to environmental protection**
no SF₆-Gas in NCIT → lower CO₂ footprint (if used with SF₆ GIS)
- **Simplified Engineering, Approval (“rating plate”) and Logistics**
only one hardware variant for current and voltage measurements
uniform configuration → no approval (at an early project status) needed
- **Improved measurement behaviour**
with wide dynamic range due to no saturation effect in multi-purpose current sensor
no magnetic losses, and no ferro-resonance effects



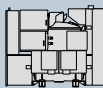
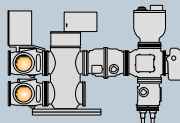
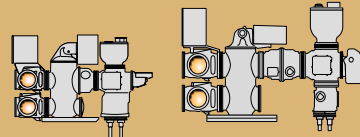
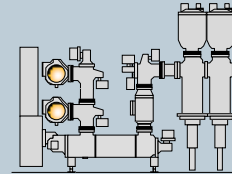
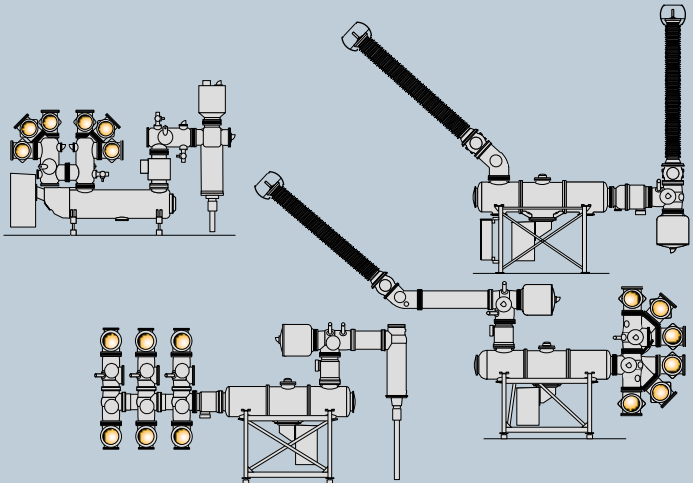
8VN1 blue GIS 145 kV
Inductive Current and Voltage Transformer (CT, VT)
(conventional)



8VN1 blue GIS 145 kV
Low Power Current and Voltage Sensors (LPIT)
(non-conventional)

Gas-Insulated Switchgear

Product Line 8DN8

Product line		8VM1	8VN1	8DN8		8DN9	8DQ1		
Solution									
Rated voltage	up to:	72.5 kV	145 kV	145 kV	170 kV	245 kV	420 kV (245 kV)	420 kV	550 kV
Rated short circuit-breaking current	up to:	25 kA	40 kA	40 kA	63 kA	50 kA	63 kA (80/90 kA)	80 kA	63 kA
Rated current busbar	up to:	-	3150 A	3150 A	4000 A	4000 A	6300 A	6300 A	5000 A
Rated current feeder	up to:	1250 A	3150 A	3150 A	4000 A	4000 A	5000 A	5000 A	5000 A
Interrupter technology		Vacuum				Self-compressions principle			
Insulation medium		Clean air				SF ₆			