

**SIEMENS**  
*Ingenuity for life*



## 8VN1 blue GIS up to 145 kV

Vacuum interrupting technology and  
clean air insulation for CO<sub>2</sub>-neutral footprint

[siemens.com/energy/gas-insulated-switchgear](https://www.siemens.com/energy/gas-insulated-switchgear)

Environmental awareness and resource efficiency require new technologies. On January 1, 2015, the new EU F-Gas Regulation no. 517/2014 came into effect. It contains a number of items of interest for the electrical industry: reporting obligations on a frequent basis, training of personnel, and labeling and handling. Its main goal is to minimize the emission of fluorinated gases (F-gases). There is also a movement in parts of the USA and Korea to gradually ban SF<sub>6</sub>, based on available technology per voltage level.

This poses new challenges for the electrical industry and creates demand for products that are environment-friendly. Siemens has developed innovative solutions that enable easy and secure transmission of electrical power free of F-gases.

### Vacuum interrupting technology

Siemens has more than 40 years of expertise in medium-voltage vacuum-switching technology and many years of experience in high-voltage vacuum-switching technology. The vacuum high-voltage circuit-breakers for up to 145 kV offer the same benefits as the Siemens SF<sub>6</sub> portfolio of circuit-breakers:

- Reliable making and breaking capabilities
- Excellent interrupting performance at rated nominal current and rated short-circuit current
- High-performance and maintenance-free operating mechanism
- Highest availability and long operating life

The new 8VN1 vacuum clean air gas-insulated switchgear (GIS) for up to 145 kV combines proven vacuum-switching technology with the advantages of clean air as the insulation medium.

### Clean air as an insulating medium

Vacuum interrupting technology allows clean air to be used as the insulating medium in gas-insulated switchgear. Clean air technology from Siemens is the first insulation free of F-gases for high-voltage GIS up to 145 kV, and it supports the company's goal to develop completely environmentally friendly technologies.

Clean air technology has a Global Warming Potential (GWP) of 0. Clean air is composed of 80 percent N<sub>2</sub> and 20 percent O<sub>2</sub>, cleaned and free of humidity.

### Benefits of clean air

Although SF<sub>6</sub> shows the best characteristics as an insulating and arc-quenching medium for GIS, the clean air switchgear solution emphasizes the green aspect of technology free of F-gases, and also provides many other benefits.

Clean air is not a hazardous contaminant because its emission to the atmosphere is not harmful. The expensive purchasing, handling, and recycling costs of other gases do not apply. Clean air is a non-toxic, non-harmful, and safe medium. No specially trained personnel are needed for the transport, handling, or operation of the clean air GIS.

### Main features

- World's leading environment-friendly and future-proof technology free of F-gases
- Climate neutral: Global Warming Potential (GWP) of switching and insulation technology = 0
- Innovative, non-toxic clean air insulation medium significantly reduces carbon footprint
- In compliance with future norms and standards for environment-friendly insulation mediums
- Proven vacuum interrupter technology
- Maintenance-free operation
- Safe and easy handling, no special safety precautions or training required
- High operational safety
- Low operational costs throughout the entire life cycle
- No unknown follow-up costs caused by expected future regulations

### 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 – bus bar	up to	3,150 A
Rated continuous current – feeder/bus coupler	up to	3,150 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 <sub>6</sub> or other fluorinated greenhouse gases		0 kg
GWP		0
CO <sub>2</sub> equivalent		0 kg
Rated filling pressure		0.79 MPa abs
Bay width common pole drive		1,000 mm
Bay height, depth (depending on bay arrangement)		3,200 mm x 5,500 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

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