

8VN1 Blue GIS™ up to 145 kV

Vacuum interrupting technology
and clean air insulation for CO₂-
neutral insulation



[siemens-energy.com/gas-insulated-switchgear](https://www.siemens-energy.com/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 in Korea to gradually ban SF₆, 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 Energy has developed innovative solutions that enable easy and secure transmission of electrical power free of F-gases.

Vacuum interrupting technology

Siemens Energy relies on 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 outperforms the SF₆ circuit-breaker technology:

- 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 working 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 insulating medium

Vacuum interrupting technology allows clean air to be used as the insulating medium in gas-insulated switchgear. Clean air technology from Siemens Energy is the first solution 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 N₂ and 20 percent O₂, cleaned and free of humidity.

Benefits of clean air

Although SF₆ shows the best characteristics as an insulating and arc-quenching medium for GIS, the clean air switchgear solution emphasizes the green aspect of the 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. Only clean air insulation contributes to a carbon neutral future.

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 vacuum interrupter unit
- 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 of 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 (1.2/50µs)	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 %
Drive 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
Rated filling pressure	0.8 Mpa (abs.)
Bay width common pole drive	1,000 mm
Bay height, depth (depending on bay arrangement)	3,200 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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