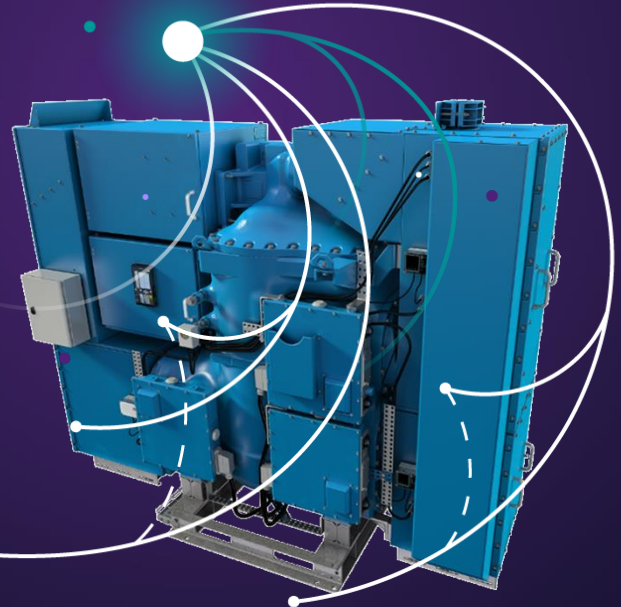


8VM1 Blue GIS™ up to 72.5 kV

Vacuum interrupting technology
and clean air insulation for wind
turbine applications



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

Enabling higher voltage levels within wind turbines

It is essential to raise environmental awareness and increase resource efficiency, and offshore wind power is making a major contribution to meeting these challenges. Growing power demand requires a new generation of wind power plants equipped with innovative technologies.

One core aspect: Due to increased wind turbine power, there is a movement to higher voltages within the wind turbine network to decrease the current and therefore the cable losses. This is where compact, environmentally friendly, gas-insulated high-voltage switchgear can make an optimal contribution.

Vacuum interrupter technology

The outstanding technical performance and low lifecycle cost of vacuum circuit-breakers make this solution the preferred technology in medium-voltage grids up to 52 kV.

Relying on more than 40 years of expertise in medium-voltage vacuum-switching technology and more than 6 million delivered units, Siemens Energy has introduced this proven technology to high-voltage grids above 52 kV in 2010. This switching technology is an environmentally friendly solution as vacuum is utilized for arc extinguishing during the circuit-breaker switching operations.

Clean air as insulating medium

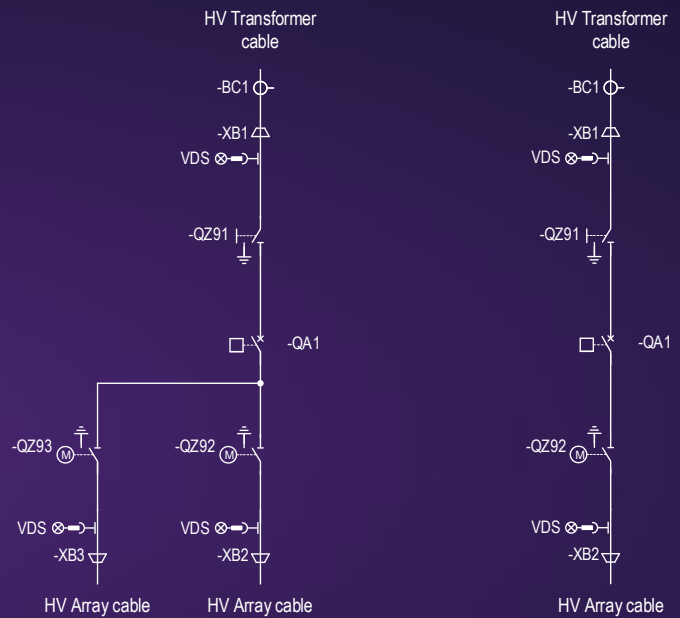
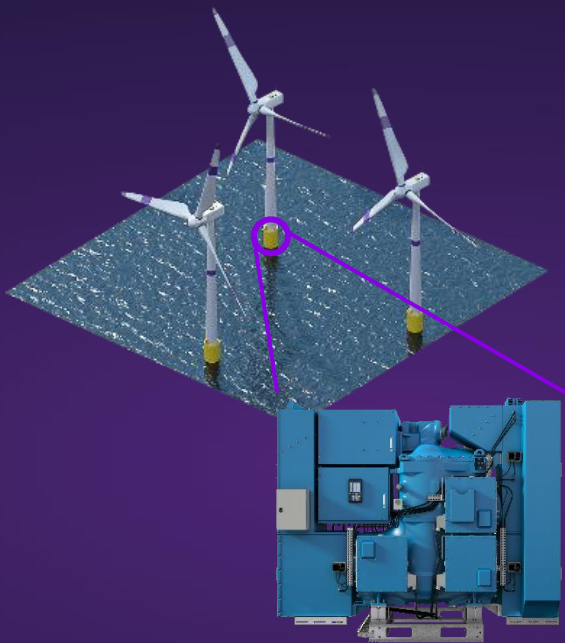
Vacuum interrupting technology facilitates the implementation of clean air as insulating medium in gas-insulated switchgears.

Clean air technology from Siemens Energy is free of fluorinated greenhouse gases and it supports the company's goal to develop completely environmentally friendly technologies. Clean air is composed of 80 % nitrogen and 20 % oxygen, cleaned and free of humidity.

Clean air technology has a Global Warming Potential (GWP) of 0. It is a non-toxic, non-harmful and safe medium. No specially trained personnel is needed for the transport, handling, or operation of the clean air GIS. Expensive purchasing, handling, and recycling costs of sulfur-hexafluorinate (SF₆) or other gases do not apply.

Although SF₆ shows the best characteristics as an insulating and arc-quenching medium, the clean air switchgear solution emphasizes the green aspect of technology free of F-gases. 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, labeling and handling. Its main goal is to minimize the emission of fluorinated greenhouse gases.

There is also a movement in the USA and Korea to gradually ban SF₆, based on available technology per voltage level.



Switchgear configurations for wind turbine installations

Technical data

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 (1.2/50µs)	up to 325 kV
Rated continuous current	up to 1250 A
Rated short-circuit breaking current	up to 31.5 kA
Rated peak withstand current	up to 85 kA
Rated short-time withstand current (up to 1 s)	up to 31.5 kA
Internal arc classification of HV cable compartments	IAC A FLR 31.5 kA, 1 s (acc. IEC 62271-200)
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
Interrupter technology	vacuum
Insulation medium	clean air
Weight of SF ₆ or other fluorinated greenhouse gases	0 kg
Rated filling pressure	0.56 MPa (abs.)
GIS width ¹	up to 2935 mm
GIS height, depth	2430 mm up to 1230 mm
GIS weight ¹	up to 2.6 t
Ambient temperature range	-30°C up to +45°C
Installation	Indoor
First major inspection	> 25 years
Expected lifetime	> 50 years
Standards	IEC / IEEE

8VM1 Blue GIS™

Compact GIS solution designed for on- & offshore wind turbine installations based on proven component technology.

8VM1 Blue GIS™ is designed using a well-proven modular components platform concept based on decades of manufacturing and operating experience. This successful concept has been implemented in our new generation of high-voltage gas-insulated switchgear.

Main features

- World's leading environment-friendly and future-proof technology free of F-gases
- Innovative clean air insulation medium significantly reduces carbon footprint
- Proven and maintenance-free vacuum interrupter technology
- Completely factory assembled, tested and shipped in single transport unit
- High operational safety
- Low operational costs throughout the entire life cycle

Other values on request

¹ depending on GIS configuration

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For more information, please visit our website:
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