Medium voltage distribution

CBGS-O
Gas Insulated metal-enclosed Switchgear

SF6 circuit breaker technology
Up to 24/36 kV - 1250/1600/2000 A - 25/31.5 kA
Your requirements

- Continuity of service
- Optimised safety
- Easy installation and operation
- Investment optimisation
Our offer

Continuity of service
• Insensitivity to environmental conditions
• Extended endurance (mechanical and electrical)
• Sealed-for-life compartments
• Reduced gas pressure

Optimised safety
• No access to medium voltage parts ("safe to touch")
• Secure access to cables and front access to all mechanisms and the low voltage compartment
• Falses maneuvers avoided (interlockings)
• Internal arc classification tested

Easy installation and operation
• No need of any specific qualification
• Solid insulated busbar
• Synoptical indication

Investment optimisation
• Space savings
• Installation savings
• Maintenance savings
Standards compliancy

- IEC 62271-1: Common clauses for high voltage switchgear standards.
- IEC 62271-100: High voltage alternating current circuit breakers.
- IEC 62271-200: Metal-enclosed switchgear for alternating current at rated voltages between 1 and 52 kV.
- IEC 62271-102: High voltage AC disconnectors and earthing switches.
- IEC 62271-103: Switches for rated voltages above 1 and less than 52 kV.
- IEC 60044-1: Current transformers.
- IEC 60044-2: Voltage transformers.
- ANSI: CBGS-0 according to ANSI, please contact us.

A wide choice of configurations

The CBGS-0 range gives you the choice of already standardised switchgear for different installations, even at a detailed level for the LV cabinet, which brings quite important advantages.

If any other option is needed, the flexibility of the design of CBGS-0 switchgear allows most of them.

Environment

CBGS-0 switchgear has been designed with the aim of preserving the environment. The materials used are clearly identified for easy separation and recycling. Also, the SF6 can be collected and reused after appropriate processing.

The environmental management system followed by Schneider Electric is certified according to the established requirements of the ISO 14001 standard and is RoHS compliant.

CBGS-0 key features

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Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage (kV)</td>
<td>24* 36*</td>
</tr>
<tr>
<td>Insulation level (kV)</td>
<td>50 70</td>
</tr>
<tr>
<td>Power frequency, 50 Hz</td>
<td></td>
</tr>
<tr>
<td>Lightning impulse withstand voltage</td>
<td>125 170</td>
</tr>
<tr>
<td>Rated current (A)</td>
<td>630/1250/1600/2000</td>
</tr>
<tr>
<td>Busbar system</td>
<td>2000</td>
</tr>
<tr>
<td>Incoming/outgoing</td>
<td></td>
</tr>
<tr>
<td>Short-circuit breaking current (kA)</td>
<td>25 (3s) / 31.5 (3s)</td>
</tr>
<tr>
<td>Short-circuit making capacity (kA)</td>
<td>63 / 80</td>
</tr>
<tr>
<td>Short time withstand current (kA/s)</td>
<td>Max 25 / 3 - 31.5 / 3</td>
</tr>
<tr>
<td>Internal Arc Withstand IAC AFL-AFLR</td>
<td>25 / 31.5</td>
</tr>
<tr>
<td>Relative SF6 pressure at 20 °C (bar)</td>
<td>0.30</td>
</tr>
<tr>
<td>Degree of protection</td>
<td></td>
</tr>
<tr>
<td>HV compartment</td>
<td>IP65</td>
</tr>
<tr>
<td>LV compartment</td>
<td>IP3X - IP41</td>
</tr>
</tbody>
</table>

* Up to 27kV/38kV (ANSI / IEEE)
CBGS-0 cubicle structure

The outer structure of each switchgear is a set of panels (RAL 9002), metal sheets, and metal frames. All of them are earthed according to the "metal-enclosed" definition and comply with the requirements of IEC 62271-200. It comprises four independent compartments in accordance with the "metal-clad" definition given by the current IEC standards.

- **The Low voltage cabinet (box)** (1), separated from the medium voltage area, is located at the top part of the switchgear and contains Sepam type relays as an option and the rest of low voltage auxiliary elements of protection and control.

- **The busbar system** (2), which uses earthed solid and shielded insulation, is located in the top rear part of the switchgear, outside the SF6 compartment.

- **The compartment (SF6 tank)** (3) containing the breaking system is located in the central part of the switchgear. The power cables and the busbar system are connected to it by means of a bushing. This is the only compartment (sealed for life) using SF6 as an insulating medium.

- **The medium voltage incoming/outgoing cable connection compartment** (4) is placed in the lower part of the switchgear, accessible from the front area.

Locating CBGS-0 in MV networks
CBGS-0 key benefits
Gas Insulated metal-enclosed Switchgear
SF6 circuit breaker technology - Up to 24/36 kV - 1250/1600/2000 A - 25/31.5 kA

Highly confirmed quality
- At present, more than 10,000 switchgear units of the CBGS type have already been installed.
- In compliance with ISO 9000, ISO 14000 and OSHAS, our factories have 18,000 certificates for their quality and environmental management systems.
- Fully factory-tested equipment, also with type test reports available for each switchgear version.

Continuity of service
- Insensitivity to ambient conditions
  - Sealed for life SF6 compartment: routine tested.
  - Service life >30 years. The hermetic nature of the tank (primary enclosure) ensures the protection of the switchgear against external agents such as dirt, dust, insects, rodents, etc.
- Extended endurance (mechanical and electrical)
  - Lower distances/dimensions due to SF6 insulation.
  - Minimum energy required.
- Sealed-for-life compartments
  If the appropriate cable terminals are used, CBGS-0 switchgear can neither be affected by moisture or dirt nor by corrosive or polluted operating environments, since all high voltage parts are provided with shielded solid insulation (busbar system) or are contained in the SF6-filled tank, which is sealed for life.
- Reduced SF6 pressure
- High repairability
  - The circuit breaker operating mechanism is accessible from the outside of the SF6 tank (primary enclosure).
  - Voltage transformers are inductive type, metal enclosed for plug-in and assembled outside the SF6 tank.
  - Current transformers are toroidal-core type and are also located outside the SF6 tank.
### Optimised safety
- No access to MV parts: “Safe to touch”
- Secure access to cables
  - Front access.
  - Voltage presence indication.
  - Cable access avoided without earthing.
- Front access to all mechanisms and LV compartment
- False maneuvers are avoided (interlockings)
- Impossible to act on the disconnector with circuit breaker in closed position.
- To finish up disconnector maneuvers is a must.
- Position indicators are totally reliable (IEC).
- Internal arc tested... 31,5kA/1s
- Minimum fire risk

### Easy installation and operation
- No need of specially qualified staff for installation
  - No SF6 handling on site.
  - Busbar installation: similar to cable connectors.
  - Cable connectors installation: similar to well known RMU.
- Synoptical indication
  - Front of the panel.
  - Easy to read.
  - Totally reliable.
- Simple and secure operation
- Interlockings to avoid false manoeuvres
- Maintainability
  - Free of maintenance in MV parts.
  - Just low maintenance is recommended for operating mechanisms.
  - Operating mechanisms are easily accessible from the front.

### Investment optimisation
- Space and civil works savings
  - The compact design, as well as the SF6 insulation of the switchgear, provides extremely reduced dimensions, thus achieving important space savings.
  - The frontal access to the switchgear allows it to be installed against the wall (observing a minimum distance), without needing any aisle for rear access.
- Installation savings
  - The modularity of design, the simplicity of the connection system and the fact that there is no need to manipulate SF6 on site permits an extremely quick installation.
- Maintenance savings

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**More than 500 wind farms equipped with CBGS-0 around the world**

**Only 43 hours of maintenance for 30-year continuity of service**

**Investment optimisation - space savings**

<table>
<thead>
<tr>
<th>Model</th>
<th>24 kV m²</th>
<th>36 kV m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBGS-0 24 kV</td>
<td>0.75</td>
<td>1.95</td>
</tr>
<tr>
<td>AIS 24 kV cubicle</td>
<td>1.95</td>
<td>2.30</td>
</tr>
</tbody>
</table>

**Investment optimisation - space savings**

**Synoptical indications**
CBGS-0: more than 10,000 units already installed throughout the world

- **Transmission & Distribution:**
  - Iberdrola
  - Endesa
  - Scottish Power
  - NEC
  - RG&E
  - CMP
  - NYSEG

- **Wind power:**
  - GAMESA
  - Iberdrola Renovables
  - GE Wind
  - Vestas
  - Suzlon
  - Nordex
  - Enercon

- **Airports:**
  - Madrid Airport
  - Barcelona Airport
  - Bilbao Airport
  - Lisboa Airport

- **Trains:**
  - Barcelona Underground
  - ADIF High Speed Trains
  - Eurotunnel
  - Suburban Train

- **Oil & Gas:**
  - REPSOL
  - ARAMCO
  - TOTAL

- **Mining:**
  - Koniambo
  - Aznalcollar