DISTRIBUTION SOLUTIONS

UniSec AirPlus™ HBC

New air-insulated medium-voltage secondary distribution switchgear

- Reduce global warming potential by 99.99%
- Compact dimensions
- Same reliable design as proven UniSec HBC
The ability to reduce global warming potential by 99.99% makes AirPlus™ a breakthrough technology. Businesses are under increasing pressure to reduce their carbon footprint. At ABB, we endeavor to drive innovation. Our eco-efficient, medium-voltage air-insulated switchgear featuring HySec apparatus with AirPlus offers the same reliability and compactness as our proven UniSec HBC range with SF₆ apparatus, but with a global warming potential of less than one reducing climate impact. Besides providing the highest levels of efficiency for your network, ABB's solutions also reduce your emissions.
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UniSec AirPlus™ HBC
An answer to the latest environmental requirements

To enhance eco-efficiency and reduce environmental impact, ABB has been developing and deploying alternatives to the greenhouse gas sulfur hexafluoride (SF₆). Thus ABB now offers high and medium-voltage switchgear with AirPlus™, a groundbreaking eco-efficient gas mixture which reduces global warming potential (GWP) by 99.99%.

The UniSec AirPlus HBC panel is based on AirPlus technology as insulation medium inside HySec AirPlus apparatus. UniSec AirPlus HBC is the world’s first eco-efficient Secondary AIS with a new gas molecule. It is an eco-efficient SF₆ alternative for medium voltage networks, which combines the same compact dimensions and advantages as the well-established UniSec HBC but with a Global Warming Potential (GWP) of less than 1.

UniSec AirPlus HBC design is based on the existing UniSec portfolio. The advantage for end users is that it features the same user interface, footprint, spare parts, operation and technical compliance with IEC62271-200 standards.

AirPlus technical characteristics

AirPlus is an environmentally friendly alternative to SF₆. The new gas mixture for both insulation and interruption in medium-voltage GIS applications contains fluoroketone, nitrogen and oxygen. AirPlus insulation gas is based on the C5-fluoroketone molecule (C5-FK).

In order to guarantee that C5-FK is always gaseous, approximately 8% C5-FK is mixed with dry air. With AirPlus, the global warming potential of the insulating gas is reduced to less than 1.

AirPlus has the following characteristics:

- nonflammable
- nontoxic
- its lifetime in atmosphere is 16 days
- neither the substance itself nor its decomposition products deplete the ozone layer
Key benefits
- Alternative for users with a green focus: AirPlus insulation gas with Global Warming Potential (GWP)<1
- Conforms to IEC62217-200 standards
- Easy replacement and integration: same compact dimensions as the proven UniSec HBC with SF₆-insulated HySec
- Safe and Reliable: highest level of personnel safety and same power supply availability as the proven UniSec HBC with SF₆-insulated HySec
- No SF₆ regulations: less administration work and lower costs

Key features
- Does not contain SF₆: AirPlus insulation gas is an eco-efficient alternative for networks up to 24kV
- Same size as the existing UniSec HBC
- Compact design with small footprint and low physical weight
- Low filling pressure
UniSec AirPlus™ HBC Innovation

HBC AIS medium voltage panel introduces a new concept in addition to the traditional circuit-breaker and switch-disconnector panel. HySec is a multi-function apparatus with integrated circuitbreaker and disconnector housed in a single apparatus in the HBC panel. The breaking mechanism is positioned in the moulded epoxy resin upper part of the apparatus with the vacuum interrupters installed inside. The disconnecting mechanism is in the lower part of the apparatus, which is made of stainless steel and houses the contacts of the gas-insulated 3-position (line – isolated – earthed) disconnector. ABB innovation does not stop with the hybrid apparatus concept but continues with new AirPlus gas, decreasing global warming potential by 99.99%.

Main features connected to multi-function apparatus technology:
- HySec fully tested as a single component
- All mechanical interlocks are integrated
- Few spare parts
- High insensitivity to the external environment
- Low filling pressure
UniSec AirPlus™ HBC

Safety

LSC2-PM
HySec AirPlus consists of 2 parts. The upper epoxy resin part guarantees the insulation class, while the stainless steel lower part provides the panel with metal segregation. The AirPlus HBC panel has two compartments for busbars and cables. The cable compartment can be accessed while the busbars and the adjacent panels are live. Thanks to these two features, panel classification is LSC2-PM as established by IEC 62271-200, guaranteeing maximum safety for the personnel who can work inside the line compartment even when the main busbars are live.
Unisec AirPlus™ HBC

Safety

Internal arc-proof solution
Like the other Unisec panels, the Unisec AirPlus HBC unit is internal arc proof to ensure a high level of security for the people in accordance with standard IEC 62271-200, annex A.
All the available solutions are class A (only authorized personnel), can be accessed from different sides (F for front, L for laterals, R for rear) and comply with all the 5 IEC standard criteria.

The available IAC versions are:
- IAC AF(*) 16 kA, 1 s
- IAC A-FL(**) 12.5 kA, 1 s
- IAC A-FLR 16 kA, 1 s

(*) WARNING: it is forbidden to access the rear and laterals sides of the switchgear during service
(**) WARNING: it is forbidden to access the rear of the switchgear during service

Structure for an internal arc withstand test
**Interlocks**

The UniSec AirPlus HBC panel is equipped with all the interlocks and accessories able to ensure top-level safety and reliability for both the installation and operators. Interlocks ensure that operations take place in the correct sequence in accordance with IEC 62271-200.

The mechanical interlock between the cable compartment door and the position of the disconnector prevents access to the cable compartment when cables are not earthed. Key interlocks can be installed on the earthing switch and feeder disconnector. In addition to the interlocks required by IEC 6227-200, the circuit-breaker and disconnector in the HySec AirPlus enclosure are mechanically interlocked with each other and guarantee a correct operating sequence. The system is thus error-free.

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**Standard supply**

- HySec multifunction apparatus
- Opening and closing push-buttons for breaking part
- Operation counter for breaking part
- Mechanical signalling device for closing springs loaded/released
- Auxiliary contacts of breaking part (6NO + 6NC)
- Shunt opening release (-MB01)
- Apparatus state indicators
- Mechanical interlock between circuit breaker and disconnector part
- Mechanical interlock with door for access to cable compartment of panel
- Pre-engineering for padlocks to lock position of operating mechanism of disconnector part and integrated earthing switch
- Lever for loading the closing springs
- Operating lever of disconnector part and integrated earthing switch

**Optional accessories**

- Shunt closing release (-MBC)
- Motor for loading the closing springs (-MAS)
- Thermomagnetic protection for closing spring loading motor
- Springs loaded signalling contact
- Under-voltage release (-MBU)
- Mechanical override of under-voltage release
- Contact for signalling under-voltage release tripped
- Auxiliary contacts of switch-disconnector part (4 line and 4 earth)
- Key locks for line disconnector
- Key locks for integrated earthing switch
- Coil to prevent lever from entering earthing switch operating seat (-RLE)
- Voltage presence devices on cable side
- Gas signalling indicators (*)
- Protection for push-buttons of breaking part

* Contact ABB
UniSec AirPlus™ HBC

Flexibility

Thanks to flexibility in use and application of the HySec multi-function apparatus, the HBC panel can be used to protect and control both the incoming and outgoing feeders; in addition, it can be coupled to all other functional units of existing UniSec portfolio.
UniSec AirPlus™ HBC
Dimensions and ratings

Thanks to the multi-function apparatus, ABB is able to offer a circuit-breaker and disconnector panel in only 500 mm width. In addition the cable connection height is up to 600 mm.

Panel characteristics
- Compactness: 500 mm width only
- Suitable ratings: up to 24 kV - 630 A - 16 kA 1 s
- Few spare parts
- High insensitivity to the external environment
- Low filling pressure

Electrical characteristics

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<th>12</th>
<th>17.5</th>
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<tbody>
<tr>
<td>Rated voltage</td>
<td>kV</td>
<td></td>
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<tr>
<td>Test voltage (50-60 Hz for 1 min)</td>
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<td>38</td>
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<tr>
<td>Impulse withstand voltage</td>
<td>kV</td>
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<tr>
<td>Rated frequency</td>
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<td>Rated current of HySec</td>
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<td>Rated short-time withstand current</td>
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<tr>
<td>Internal arc withstand current (IAC)</td>
<td>kA (1s)</td>
<td>16</td>
<td>16</td>
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UniSec AirPlus™ HBC
Where to install

01 Compact Secondary Substation
02 Utility
03 Residential and commercial building
04 Light Industry
For more information please contact:

More product information:
abb.com/mediumvoltage
Your contact center:
abb.com/contactcenters
More service information:
abb.com/service