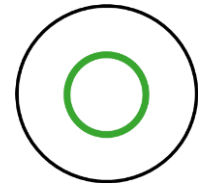


## Product Datasheet

### Busbars: 170 kV, 4000 A, 1-ph enclosed



### Executive Summary

The Hivoduct Busbars provide safe high-voltage and high-current transmission with maximum flexibility.

With non-flammable, maintenance-free pressurized air insulation, modular transport units, and a service life of more than 40 years, they combine outstanding technical performance with sustainability.

#### Key benefits at a glance:

- ✓ Suitable for high-voltage and high-current applications (170 kV / 4000 A)
- ✓ Maintenance-free, non-flammable, and safe in operation
- ✓ Environmentally friendly: lowest losses, recyclable aluminum, reduced CO<sub>2</sub> footprint
- ✓ Flexibility for all layouts: zero bending radius, modular transport units
- ✓ Fast installation and disassembly without proprietary tools
- ✓ All interface options (GIS, transformer, cable terminations, air bushings)
- ✓ Lowest outside magnetic field due to enclosure grounding
- ✓ Expected service life > 40 years

### Technical Description

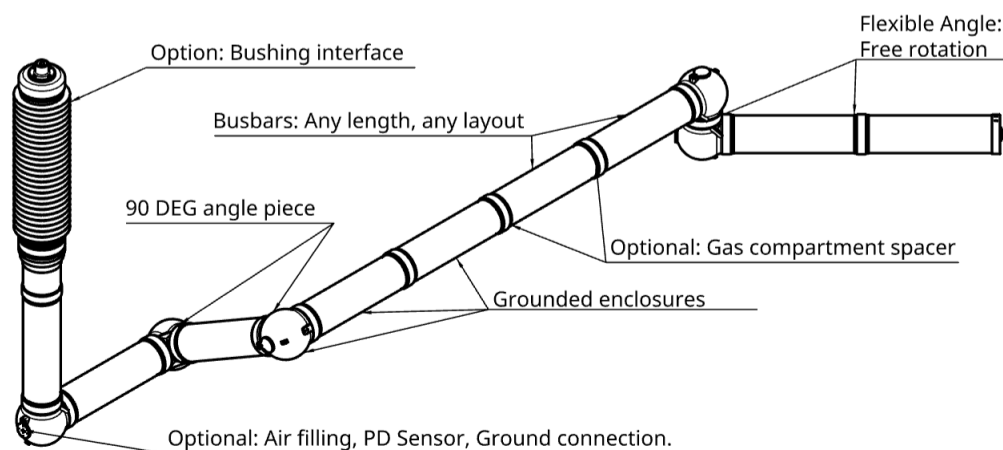
The Hivoduct Busbars form a single-phase enclosed system for reliable high-voltage and high-current transmission. They can be engineered for nearly any layout requiring a high-voltage connection inside a building, on a substation or over long distances.

The busbars can connect to all types of interfaces as specified by the application.

#### Typical interfaces:

- **Air bushings** - to connect to air-insulated busbars or overhead lines
- **Cable termination (IEC 62271-209)** - to connect to XLPE HV cables
- **GIS direct connection** - adapter to connect directly to a GIS with bolted flange
- **Fixations** - for mechanical fixation of the busducts to wall or sealing

Layout, interfaces, and gas compartments are engineered according to customer specifications during the project phase.



## Technical Parameters

Hivoduct busbars are engineered for flexible and demanding high-voltage installations. The following parameters summarize the key electrical, mechanical, and operational characteristics of the system.

| Category                            | Parameter                 | Value                                                    | Information                                            |
|-------------------------------------|---------------------------|----------------------------------------------------------|--------------------------------------------------------|
| <b>Capacity</b>                     | Transmission capacity     | 1170 MW                                                  | For one 3-phase system made of 3 single-phase busducts |
| <b>Electrical Ratings</b>           | Rated voltage             | 170 kV                                                   | IEC 62271-1                                            |
|                                     | Rated current             | 4000 A                                                   | IEC 62271-1                                            |
|                                     | Short circuit current     | 63 kA, 1 s                                               | IEC 62271-1                                            |
|                                     | AC test voltage           | 460 kV                                                   | Partial discharge < 5 pC                               |
|                                     | BIL test voltage          | ±1050 kV                                                 | IEC 62271-1                                            |
|                                     | Capacitance               | 55 pF/m                                                  | Each phase                                             |
|                                     | AC resistance             | 10 $\mu\Omega$ /m                                        | -                                                      |
|                                     | Magnetic field            | < 100 $\mu$ T                                            | @ 4000 A in > 2 m distance                             |
| <b>Insulation &amp; Conductor</b>   | Insulation media          | Pressurized air (N <sub>2</sub> 80%, O <sub>2</sub> 20%) | Dry. Filled from bottle.                               |
|                                     | Filling pressure          | 10 bar                                                   | Min 9.6, Max 11.4                                      |
|                                     | Conductor material        | Aluminum                                                 | High conductivity > 28 m/ $\Omega$ ·mm <sup>2</sup>    |
|                                     | Conductor size            | 4080 mm <sup>2</sup>                                     | Cross section                                          |
|                                     | Contact system            | Spiral contacts                                          | Silver plated                                          |
| <b>Enclosure</b>                    | Material                  | Aluminum                                                 | Non-flammable, Anticorodal                             |
|                                     | Cross section             | 10500 mm <sup>2</sup>                                    | Ground connection included                             |
|                                     | Max enclosure temperature | < 35 K                                                   | @ 4000 A for 3 h without forced cooling                |
|                                     |                           |                                                          |                                                        |
| <b>Mechanical Data</b>              | System weight             | 40 kg/m/phase                                            | Enclosure + conductor                                  |
|                                     | Transport length          | < 6 m                                                    | For easy transport and handling                        |
|                                     | Transport weight          | Flexible                                                 | Depending on unit size                                 |
|                                     | Creepage/flashover        | Project-specific                                         | Bushing interface specification                        |
| <b>Assembly &amp; Shipping</b>      | Shipping assembly         | Modular transport units                                  | Flange connection on-site                              |
|                                     | Shipping pressure         | <0.2 bar                                                 | Slight overpressure, topping up on-site                |
|                                     | Packing                   | Tubes stacked                                            | Standard pallets, < 2000 kg                            |
|                                     | Air filling connection    | Festo KD 1/4                                             | Pluggable socket                                       |
|                                     |                           |                                                          |                                                        |
| <b>Monitoring &amp; Safety</b>      | Pressure indicator        | Manometer                                                | Scale 0-12 bar                                         |
|                                     | Alarm switch              | < 9 bar                                                  | Potential-free, NO & NC                                |
|                                     | Pressure monitoring       | Online                                                   | Optional, GSM & cloud storage                          |
| <b>Service &amp; Sustainability</b> | Life expectancy           | > 40 years                                               | -                                                      |
|                                     | Reusable materials        | Aluminum                                                 | -                                                      |

Other ratings and features on request.

More information online

