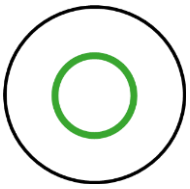
Product Datasheet
Busbars: 420 kV, 5000 A, 1-ph enclosed



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 (420 kV / 5000 A)
- ✓ Maintenance-free, non-flammable, and safe in operation
- ✓ Environmentally friendly: lowest losses, recyclable aluminum, reduced CO_2 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

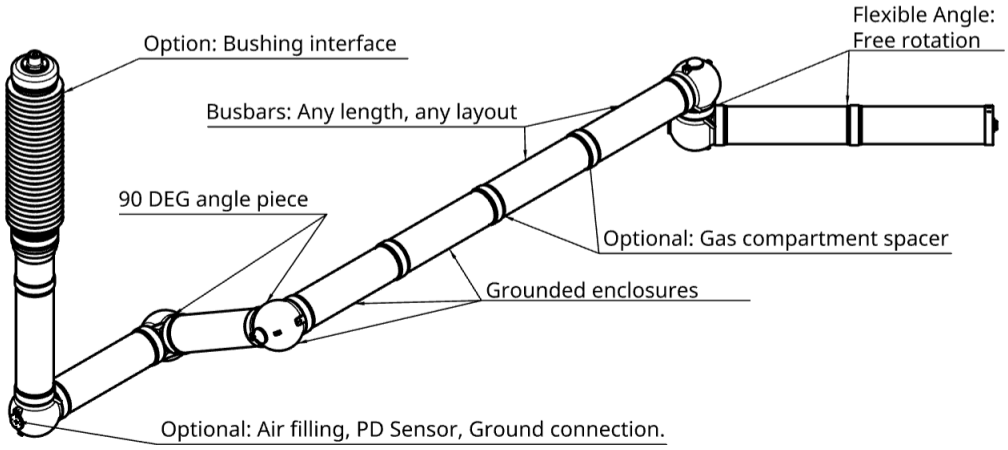
The Hivoduct Busbars form a single-phase enclosed system for reliable high-voltage and high-current transmission. They can be engineered for nearly any layout requiring a high-voltage connection inside a building, on a substation or over long distances.

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
- **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
Capacity	Transmission capacity	3600 MW	For one 3-phase system made of 3 single-phase busducts
Electrical Ratings	Rated voltage	420 kV	IEC 62271-1
	Rated current	5000 A	IEC 62271-1
	Short circuit current	63 kA, 1 s	IEC 62271-1
	AC test voltage	650 kV	Partial discharge < 5 pC
	BIL test voltage	±1425 kV	IEC 62271-1
	Capacitance	55 pF/m	Each phase
	AC resistance	6.2 µΩ/m	–
	Magnetic field	< 100 µT	@ 4000 A in > 2 m distance
Insulation & Conductor	Insulation media	Pressurized air (N_2 80%, O_2 20%)	Dry. Filled from bottle.
	Filling pressure	10 bar	Min 9.6, Max 11.4
	Conductor material	Aluminum	High conductivity > 28 m/Ω·mm²
	Conductor size	5340 mm²	Cross section
	Contact system	Spiral contacts	Silver plated
Enclosure	Material	Aluminum	Non-flammable, Anticorodal
	Cross section	16000 mm²	Ground connection included
	Max enclosure temperature	< 35 K	@ 4000 A for > 8 h without forced cooling
Mechanical Data	Transport length	< 6 m	For easy transport and handling
	Transport weight	Flexible	Depending on unit size
	Creepage/flashover	Project-specific	Bushing interface specification
Assembly & Shipping	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
Monitoring & Safety	Pressure indicator	Manometer	Scale 0–12 bar
	Alarm switch	< 9 bar	Potential-free, NO & NC
	Pressure monitoring	Online	Optional, GSM & cloud storage
Service & Sustainability	Life expectancy	> 40 years	–
	Reusable materials	Aluminum	–

Other ratings and features on request.

More Information online