

PNS COMPOSITE

Condenser Bushing up to 420 kV/2000A Oil-to-Air Applications Resin-Impregnated Synthetics (RIS) Bushings

PNS bushings are paperless capacitance-graded condenser cores with excellent electrical performance, consisting of synthetic insulating material impregnated with epoxy resin. The new series represents an environmentally friendly and safe solution for connecting power transformers to high-voltage overhead lines in different service conditions. The PNS series is certified according to IEC 60137 to provide customers with reliable products.

GE Vernova Bushings

GE Vernova — a company you can trust to harness your power. Following the acquisition of Passoni & Villa in 2008, GE Vernova offers a wide range of condenser bushings for AC and DC applications. We are recognized as one of the most reputable and reliable bushings manufacturers in the world.

A Wealth of Benefits

RIS bushings represent a modern innovation, utilizing synthetic insulating material combined with epoxy resin for insulation. They are engineered to be fire-resistant, explosion-proof, and environmentally friendly, making them an intelligent choice for those who prioritize reliability and sustainability. The internal and external insulation is designed to prevent water absorption, ensuring easier long-term storage than Resin-Impregnated Paper (RIP) bushings without additional precautions. Furthermore, they are manufactured without mineral oil, silicone oil, SF₆, or nitrogen, ensuring a cleaner production process. Our range of RIS bushings is versatile, suitable for alternating current applications, and high voltage applications up to 420 kV.

Seismic Solutions

RIS bushings are designed to meet IEC TS 61463 and IEEE 693:2018 requirements.

Flexibility

Easy transport, handling, storage, and installation. Flexibility in any installation angle.

Safety – Our Priority

- Personnel, substation and environment protection
- Risk-free for oil leakage and overpressure
- RIS bushings are fire- and explosion-proof
- High thermal strength (class E, 120°C)
- Oil- and SF₆-free for environment
- Long-term storage capability



Key Benefits

- Compact, robust and reliable design.
- Partial discharge-free up to the highest voltage Um according to IEC 60137
- Excellent mechanical strength
- High thermal class E up to 120°C
- Low dielectric losses ($\tan\delta \leq 0.30\%$)
- Very heavy site pollution severity
- Suitable for ester oil immersion media
- Suitable for low temperatures down to -50°C
- Interchangeable with GE Vernova RIP solution

Minimal Maintenance

- RIS bushings are 100% oil- and pressure-free
- Measurements of $\tan\delta$ and capacitance are recommended as best practice for planned maintenance

Test Standards

- Bushings compliant to IEC 60137
- Heavy cantilever operating load
- Seismic design compliant to IEC TS 61463 and IEEE 693:2018
- Class "E" pollution compliant to IEC TS 60815
- Tailor-made design available upon request

Main Features

Resin-Impregnated Synthetics Bushing

- Oil-to-air
- RIS according to IEC 60137
- Installation in any position
- Partial discharges < 5pC at 1.5 Um/V3
- Power factor tap grounded through the cap
- Aluminum flange suitable for application in corrosive environments (i.e., industrial and coastal areas with salinity or chemical plants)
- Connection types with draw-lead, fixed and removable rod
- Type F (based on EN50180/EN50181 and future EN 50673)
- The local control cubicle integrates all protection and control systems with digital communication.

Bushing Designation PNS.145.650.1250

CODE	DESCRIPTION
P	Condenser bushings ('P' from the Italian word 'Passante')
N	Normal
S	RIS
145	Rated voltage in kV
650	BIL in kV
1250	Rated current in A

Nameplate

Each bushing is provided with a nameplate, containing complete electrical data and the serial number, in accordance with IEC 60137 requirements.

The aluminum nameplate is secured to the flange with rivets and carries the information seen in Figure 2.

Key Features

Metal Surface Treatment

All bushing metal parts are made of aluminum alloy with high corrosivity resistance for industrial and aggressive environments, like offshore applications or coastal areas with high salinity. Test and voltage tap surface finishing avoids any corrosion throughout the asset's lifetime and allows for easy fixing and unscrewing in service. Further finishing or final painting can be customized based on the request.

Packing & Transportation

Bushings are thoroughly cleaned after testing and before packing. Bushings are packed in vacuum-sealed bag along with silica gel to avoid moisture ingress.

Long-Term Storage Accessories

The standard bushing PNS packaging is also suitable for long-term storage without any additional protections.

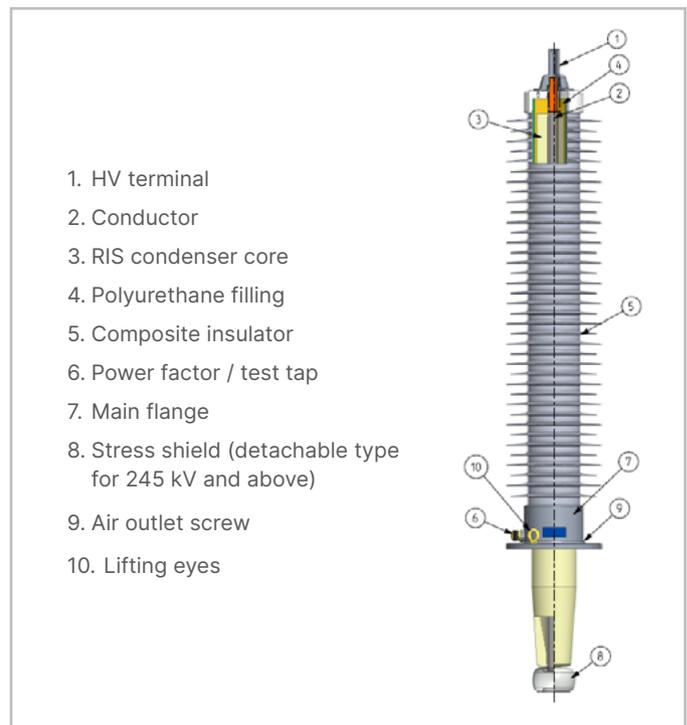


Fig. 1 PNS Bushing Typical Cross Section

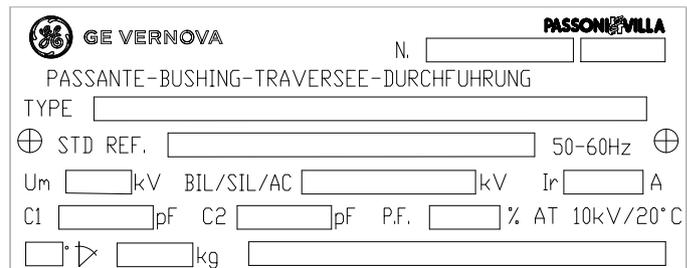


Fig. 2: Nameplate



Fig. 3: Packaging and transportation



Bushings Manufacturing Site:

*Grid Solutions at GE Vernova
Sesto San Giovanni
Milan, Italy*



GE VERNOVA

For more information visit
governova.com/grid-solutions

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