

PGFR

Condenser Bushing Resin Impregnated Paper for AC Generators

PGFR are bushings designed for use on AC power generators. The dielectric insulation is achieved by a capacitance-grade condenser body, for installation in any position.

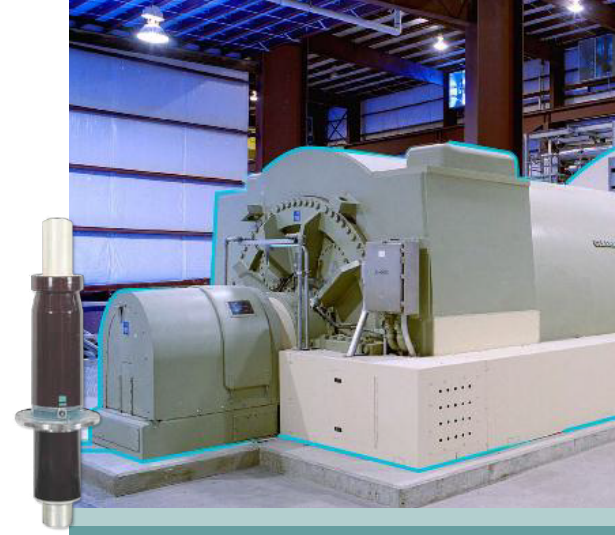
Design, components and manufacturing technology ensure an average life time of over 40 years under normal operating conditions.

Manufacturing of Capacitance Graded Bushings

The main electrical component is the condenser body that is manufactured using resin impregnated paper (RIP) technology. This technology utilizes a continuous sheet of pure crepe paper, wound around a support tube. During the winding process, the first step is to reduce its water content to 1% maximum by drying the paper with heated cylinders and infrared rays. During winding, a series of aluminum foils are coaxially inserted between the layers of the paper in order to grade the best possible distribution of radial and longitudinal electrical gradients between the central conductor and the grounded flanges.

The winding and foil placement is made by computer-controlled machines. After winding, each condenser core is placed into an autoclave for resin impregnation under vacuum. Each core is then machined to achieve the final shape.

Depending on the overall dimensions of the bushing, when the gradients are very low, the insulation can be achieved directly by a tube impregnated in epoxy resin and reinforced by a fiber glass filament winding.



Key Benefits

- Bushings with longer lifetime and higher
- Even voltage distribution across the bushing thanks to the capacitance-graded condenser core.
- No deterioration of grounding part for CT installation realized internally and protected by porcelain
- Helical springs to absorb conductor dilatation and vibrations in service
- Installation in any position



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PGFR Bushings Main Features

Condenser Bushings

- Rated voltages up to 30 kV outer envelopes: Porcelain and/or Fiberglass tube
- Cooling: Natural, hydrogen, water
- Coupling by means of helical springs placed on the air side
- Inner conductor made of aluminum or copper casting
- Dry filling (polyurethane foam) of the space between the porcelain and condenser body
- Installation in any position
- CT accommodation on request
- Flange made of aluminum or stainless steel, low permeability
- Maximum current rating up to 45,000 A
- All o-ring gaskets, FPM material: elastomer



Bushing Designation

**THE BUSHING IS DESIGNATED AS FOLLOWS:
PGFR.24.125.25000**

P	Condenser bushings ("P" from the Italian word "Passante")
G	Power generator
F	High current application (force cooled)
R	Resin Impregnated Paper (RIP)
24	Rated voltage in kV
125	BIL class in kV
25000	Rated current in A



Fig. 1
(24 kV - 9,000 A)



Fig. 2
(24 kV - 12,000 A)



Fig. 3
(24 kV - 25,000 A)



Fig. 4
(24 kV - 25,000 A)



Fig. 5
(24 kV - 20,000 A)



Fig. 6
(24 kV - 25,000 A)



Fig. 7
(20 kV - 10 kA)

For more information, visit
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