Bushings for metal clad installations
SF6 / Oil
Type SOT
123 kV to 550 kV
Up to 2500 A
According IEC 1639-1996 & IEC 60137-2008
Bushings for transformer to gas insulated switchgear connections

Trench OIP technology for Oil / SF6 bushings

Application:
This type of bushing, suitable for direct connection between metal clad SF6-insulated switchgear and transformers, enables the integrating of power transformers to the grounded enclosure system of the switchgear.

It is no longer required to join the transformers to the switchgear by means of overhead lines or cables, thus saving outdoor bushing or cable end boxes on both switchgear and transformer side.

Features:
- Design is in line with latest requirements of IEC 1639 for gas side connection.
- Experience in bushing manufacture for more than 90 years.
- Capacitance fine graded oil-paper insulation with long experience.
- Computer optimized electrical field distribution.
- Proven high electrical withstand against transient or impulse test.
- Excellent long term stability due to extremely low partial discharge and power loss factor.
- Oil immersed part and SF6 part covered by epoxy resin tube providing high impact resistance.
- Tan δ and PD-values more than twice as good as requested by IEC 60137.
- Possibility to trace SF6 gas by means of doing DGA (dissolved gas analysis)
- Long term easy storage: Bushing 100% tight towards ambient humidity.

Certified ISO 9001
Certified ISO 14001
Oil / SF6 Bushing

Design

1. **SF6 side Shield (on request)**
2. **SF6 side Terminal**
   Terminal (Al or Cu) for connection is designed according standard IEC 1639.
3. **SF6 side end**
   The insulator on the SF6 side is made of an epoxy resin tube.
4. **Active part**
   The active part is made of oil-impregnated wide band paper with layers of aluminum foil to control the electrical field radially and axially. Depending on the current rating, the paper and foil are wound on either a central tube or conductor.
5. **Flange**
   Mounting flange with integrated test tap and oil sampling device made of corrosion free aluminum alloy, machined to ensure an excellent seal between the bushing and the transformer or metal clad SF6 insulated switchgear.
6. **Oil sampling device**
7. **Test tap**
   Test tap for through life capacitance and tan delta measurement.
8. **Oil side end**
   The insulator on the SF6 side is made of an epoxy resin tube.
9. **Oil side terminal**
   Terminal (Al or Cu) for connection
   Dimensions according customer request
10. **Oil side Shield (on request)**
<table>
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**Type SOT**

- Highest voltage (Um)
- Maximum phase to earth voltage
- Bushing Dry Power frequency voltage withstand (AC)
- Transformer Power frequency voltage withstand (AC)
- Lightning Impulse withstand voltage (BIL)
- Switching Impulse withstand voltage (SIL)
- Rated current (Ir)
- CT Space L4
- Mass Approx.
- Cantilever test load (min)
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Comments related to columns:
03: Bushings test voltage at 50Hz 60 sec.
08: Other extension current transformer on request
11,12: L1 depends on L4. The values in the table are valid for L4= 100mm. If L4>100mm add L4 to L1 and L.
Dimensional Drawing

SF6 side

Oil side

Dimensional Specifications:

- Ø D6
- Ø D5
- Ø D8
- Ø D7
- Ø D3
- Ø D2
- Ø D9
- Ø D10

- n2 x ø t2
- n3 x M 3
- n1 x ø t1
- n4 x M 4

Tolerances:

- ± 0.3
- 0 - 0.5

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**Standard**

**G1/4 Air Outlet**

- Flat gasket
- Test tap (2kV)
- Multiple spring contact
- O-ring gasket
- Valve

**Oil sampling device**
On request

Pressure control

This system permit to control the pressure inside of the bushing

Stress shield

Stress shields are also available with bayonet fixing system and screwed fixing system

If you need any Oil / SF6 bushing proven in operation conditions around the world, Trench has it!
## Technical data request

- **Um**
  - 123kV
  - 145kV
  - 170kV
  - 245kV
  - 420kV
  - 550kV
  - Other

- **Up Transformer**
  - 230kV
  - 275kV
  - 325kV
  - 460kV
  - 630kV
  - 680kV
  - Other

- **BIL**
  - 550kV
  - 650kV
  - 750kV
  - 1050kV
  - 1425kV
  - 1550kV
  - 1675kV
  - Other

- **Rated Current**
  - 1250A
  - 1600A
  - 2500A
  - Other

- **CT Space**
  - 100mm
  - 300mm
  - Other

- **Terminals Material**
  - Aluminum
  - Copper
  - Other

- **Maximum Oil Temperature**
  - 70°
  - 80°
  - 90°
  - 100°
  - Other

- **Bus Duct Temperature**
  - 60°
  - 70°
  - 80°
  - Other
Product Range

Bushings for

- Power Transformers
  up to 550 kV, 5000A

- High Current Application
  up to 52 kV, 40kA

- Transformer to SF6
  connection up to 550kV

- Gas-insulated Switchgear (GIS) up to 800 kV, 6000A

- Generators
  up to 36 kV, 50kA

- Railways

- Buildings, Wall
  up to 245 kV, 5000A

- Bushings according
  Standard IEC 60137

- Bushings according to
  customer’s special specification

Quality

At Trench quality is a way of life. Trench quality assurance complies with the most stringent standards of ISO 9001 and ISO 14001.

Certified by AFAQ since 1994

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