

SENSBUSHING™

HVAC

Sensbushing™ is the new Trench Group revolutionary connectivity concept giving the possibility to gain **real-time insights** on the actual performance of bushings.

With **Sensbushing™**, Trench Group further contributes to the **REGENERA™ portfolio** with a product able to self-assess its performance and reliability and to respect the environment by alerting in case of potential failures.

>> CONNECTED SENSBUSHING™
SHARING ENCRYPTED DATA
ON THE CLOUD PLATFORM



FROM AN ANALOG TO DIGITAL PORTFOLIO

With the increasing demand for higher productivity, efficiency and environmental-friendly solutions, utilities and transmission system operators are looking for innovative solutions to gain **profitability**, without losing their productivity and decrease their carbon-footprint.

Digitalization is the best solution to improve performance, mitigate health, safety and environmental concerns, as well as reduce costs and risks through access of real-time data.

For this reason, Trench Group introduced the Sensbushing™ portfolio, which is part of the new generation of born-connected products able

to auto-generate and transmit data about their overall status and operation. This technology opens new possibilities, allowing for easier data collection and interpretation by our innovative analysis tool.

This is a huge step towards **operational cost reduction and maintenance optimization**, thus leading to an overall increase in productivity and efficiency, as well as improved reliability and environmental care.



TRENCH
Sense the Power

SENSBUSHING™ HVAC: HARDWARE AND SENSORS

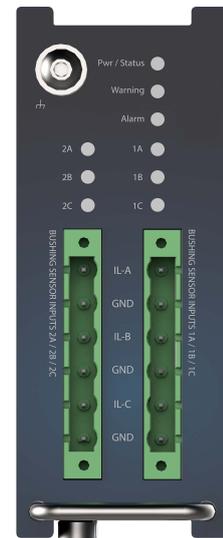
The Sensbushing™ monitoring device is a compact and rugged device, based on the proven Balance Current (Sum of Current) method for measuring Tan Delta (Power Factor - PF), and Capacitance of condenser type bushings.

It can be connected directly to the **voltage/test taps** of the bushing, measures the leakage current from the phases and calculates the changes in Tan Delta and Capacitance. Furthermore, the measured and calculated data from the device can be transmitted either to a smart and robust IoT gateway, which sends them to a **cloud-based storage and visualization** platform, or to any third-party device supporting the main substations protocols.



TECHNICAL SPECIFICATION

Leakage current measurement range	1mA to 200mA
Measurement accuracy	<ul style="list-style-type: none"> Leakage current: ± 0.5% Tan delta (PF): ± 0.1% Capacitance: ± 0.5% Voltage: ±0.5%
Communication protocols	<ul style="list-style-type: none"> Modbus Serial (standard) and TCP/IP DNP3.0 IEC 61850 IEC 60870-5-101/-104 Profinet MQTT (to AWS cloud only)
Operating temperature	-30° to 75°C heater on request for lower operating temperatures
Storage temperature	-40° to 85°C
Number of channels	3 to 6 channels
Dimensions	125mmx125mmx48mm
Humidity	95% non condensing
Power Input	12-24 VDC
Product appearance	Panel version (DIN32) or Cabinet version



DIGITALIZED SUBSTATION PRODUCTS

The Sensbushing™ is able to provide **indications and predictions** about the performance of new or installed bushings. This is done by sending a warning or an alarm depending on the criticality of the analyzed information, satisfying the latest **cyber-security requirements**. As one of the main founders of the Charter or Trust, we ensure to comply with state-of-the-art security and **encryption technologies** such as ISO / IEC 27001.

For data transmission to cloud storage, an end-to-end encryption is used. Each Sensbushing™ product has a unique ID, which is also used for encryption. We also comply with best-in-class data handling and management guidelines to ensure that data from different customers are strictly separated and secured in the cloud.

CUSTOMER VALUES

The customer benefits from a born-connected solution in the following ways:

ENVIRONMENTAL, SAFETY & HEALTH remote monitoring of a product like a bushing can prevent catastrophic events resulting in enhanced environmental and safety performance.

OPERATIONAL COST REDUCTION by having access to remote data at any given time and avoid unnecessary inspections at site.

OPTIMIZE inspection activities according to real needs and not by pre-defined time intervals. In addition, through online data a smart management of the fleet replacement can be defined.

CUSTOMIZABLE according to customer specific applications
Suitable for OEM-type applications (TMS, Gateways)