

Tube skin temperature sensors for surface measurement



INNOVATIVE TEMPERATURE
MEASUREMENT SOLUTIONS
FROM THE GLOBAL LEADER



TUBE SKIN TEMPERATURE SENSORS

Thermo Electric Instrumentation manufactures and supplies radiant tube skin temperature sensors across a variety of industrial sectors.

Tube skin thermocouples accurately measure surface temperature in fired process furnaces and boilers. The sensor comes with a protection pad (weld pad) at the tip of the thermocouple. The protection pad is designed to minimise disruption and damage to the device, caused by flame impingement and radiant heat.

There are a number of applications for tube skin thermocouples. Each process requires sensors that are purposely designed and matched with the furnace or boiler.

OPTIMUM EFFECT TUBE SKIN

For a tube skin temperature sensor to work at its optimum range, the thermocouple sheath must remain in close contact with the tube. The weld pad should be positioned at the critical point and the remaining cable should be routed away from the direct heat - along the coolest side of the vessel.

This installation technique is important as it allows the thermocouple to utilise the process tube as a heat sink.





EXPANSION LOOPS ENSURE OPTIMUM LIFETIME

In addition to the weld pad we also offer expansion loops as part of our design considerations. A furnace can experience a movement of between 50 mm and 350 mm, from start up, to reach its process temperature.

If such incremental expansions are not considered through the integration of expansion loops, the Tube Skin Thermocouple will be subjected to strain and even breakage. Expansion loops are therefore recommended to ensure the optimum lifetime of the Thermocouples helping to reduce commissioning and maintenance problems.

Thermo Electric Instrumentation designs and manufactures Tube Skin temperature sensors which can be matched to your process conditions. There are a variety of designs such as: V-pad, Weld-pad or constructions with or without a protection-pad.

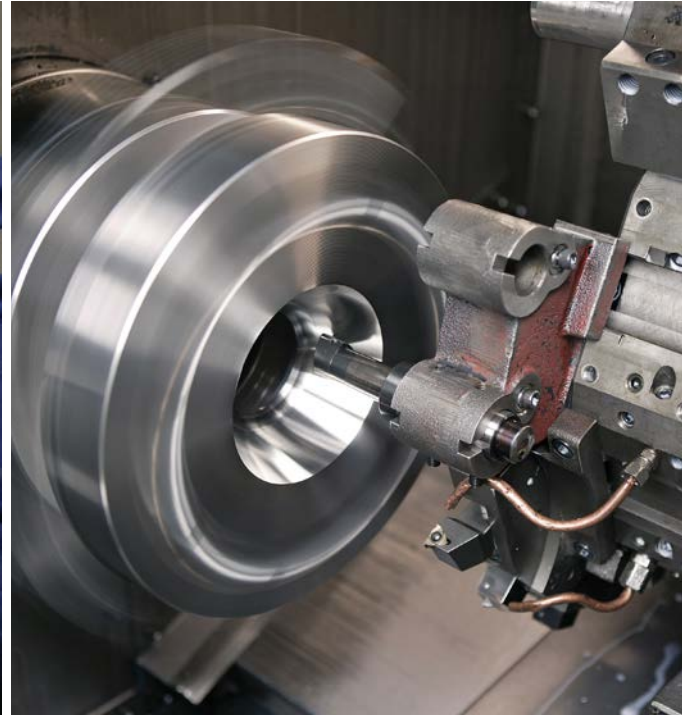
SHEATH MATERIALS

In addition to weld end construction types we also offer a range of standard and exclusive sheath materials. Mineral Insulated cable used in the manufacture of tube skin temperature sensors can be supplied with SS310, SS446, Hastelloy or HR160 sheath.

Our experienced staff are always available to assist you with your sensing requirements. We only select the highest grades of materials based on your applications.

Our production procedures and quality control system is fully certified by Lloyds quality register and our reputation for consistent excellence in Tube Skin sensor manufacturing speaks for itself.





THE CONSTRUCTION

We have been designing and manufacturing industrial tube skin temperature sensors for over 50 years. Thermo Electric Instrumentation has been fortunate enough to become the preferred temperature sensor supplier on some of the largest industrial projects across the globe.

SPECIAL PROTECTION MINERAL INSULATED CABLE

Our tube skin temperature sensors are manufactured from mineral insulated cable. We offer different types of sheath materials depending on the application. The sheath can be further protected with a second outer sheath, for example: fiber frax sleeve. We also offer a double outer sheath comprising of two different types of materials.

Diameters available from 1,5mm (1/16") upto 12,7mm (1/2") in all metric and imperial sizes.

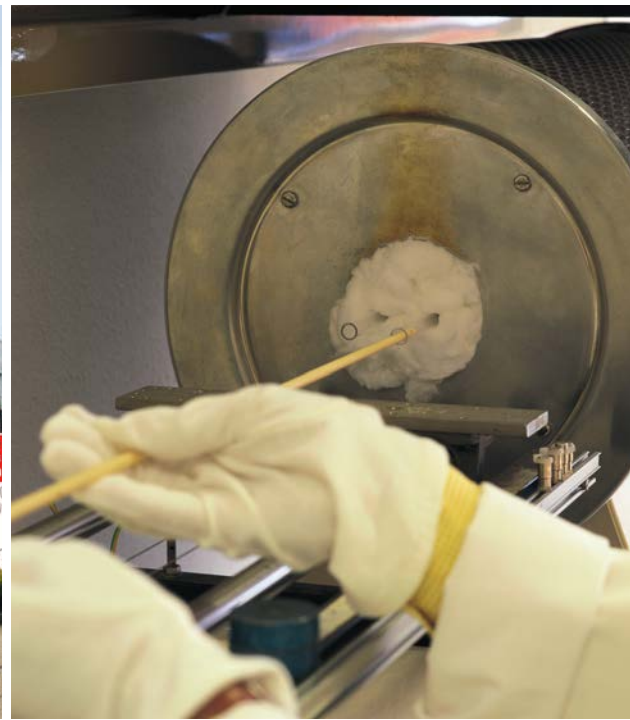
All constructions longer than 1.000 mm will be supplied with weld clamps. We also provide installation, operation and maintenance instructions should this be required.

For further detailed product information on our range of temperature sensors and applications in which they can be used, please visit our website:

www.te-instrumentation.com

or contact one of our sales specialists.





MANUFACTURING FACILITIES

We have dedicated manufacturing and testing facilities located in the Netherlands. Our Thermo Electric temperature sensing products are supplied directly from our headquarters to our customers, through sales and service centres across the globe.

HIGH STANDARDS AND EFFICIENT SUPPLY

Our dedicated central production and engineering facilities allow us to maintain our high standards and best practice in engineering and design. This expertise is reflected in the efficient supply of Thermo Electric temperature sensors and in our consistent achievement of quality in the field.

SERVICES

- Wake frequency calculations according ASME PTC 19.3 (2010)
- X-rays
- Welding robot
- Manufacturing record book
- Quality inspection plan
- Explosion safe certificate Exi, Exe, Exd, Exn
- Cleaning for oxygen service
- Visual inspection
- Dimensional check
- According EN 10204 3.1 and NACE MR0175
- WPS and PQR for welded Thermowells
- Batch certificate
- Certificate of origin
- Certificate of conformance
- CSA/US
- IEC-Ex
- ATEX
- KTL
- CCOE
- GOST R

TEST FACILITIES

- Functional performance test
- Loop resistant test
- Insulation resistance test
- Dye penetration test
- Pressure test
- Calibration test
- From $-200\text{ }^{\circ}\text{C}$ up to $1.500\text{ }^{\circ}\text{C}$ (RvA/ILAC)
- Calibration test for each instrument, mV, mA, Ohms and V (RvA/ILAC)
- Vacuum test
- Helium leak test
- PMI test

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DI11392-1



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