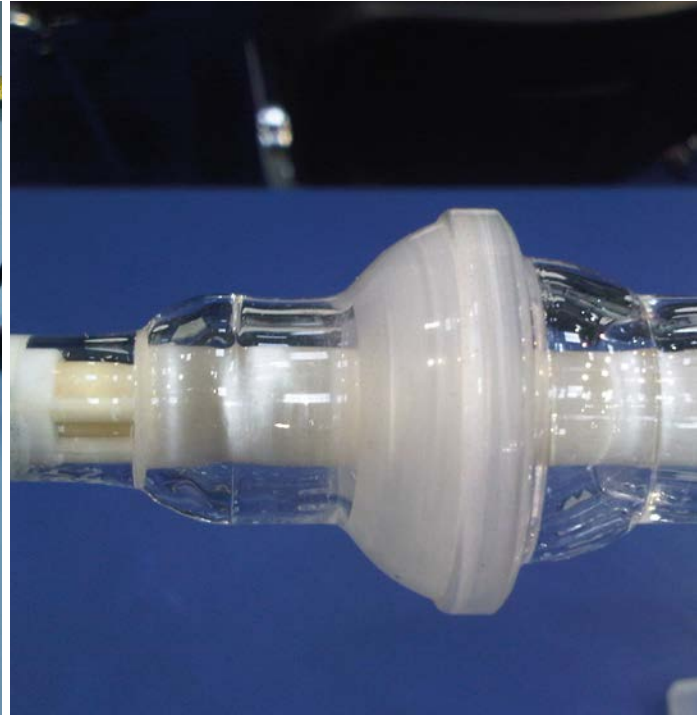


Temperature sensors for semi conductor & solar industry



INNOVATIVE TEMPERATURE
MEASUREMENT SOLUTIONS
FROM THE GLOBAL LEADER



SEMI CONDUCTOR & SOLAR TEMPERATURE SENSORS

Thermo Electric Instrumentation specialises in the design, manufacture and supply of spike and profile Thermocouples to both OEM's (original equipment manufacturers) and end-users.

STRICT CLEAN ROOM MANUFACTURING POLICY

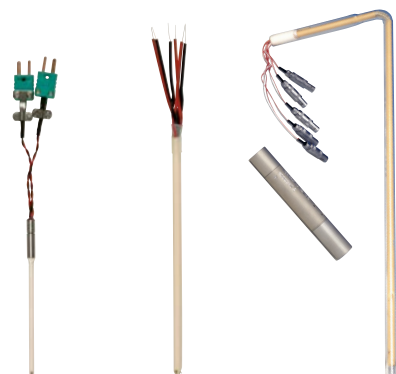
We manufacture all of our spike and profile thermocouples in our purpose-built clean room, under exactly the same conditions required for the production of wafer steppers. This facility is dedicated to the manufacturing of our semi-conductor & solar sensors. Not only do we produce sensors in a clean room environment, we also ensure that our materials are clean room compatible. Our products are also shipped in 'clean room' approved packaging materials. These strict manufacturing policies ensure that our temperature sensing devices meet the highest standards for the Semi-conductor & Solar industry.

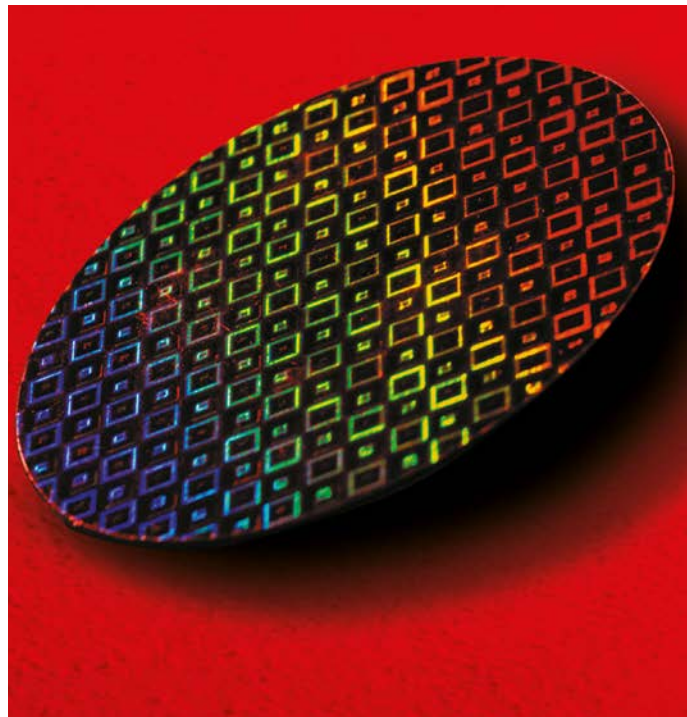
IN-HOUSE CALIBRATION LABORATORY

In addition to our clean room we have an accredited calibration laboratory by RvA. The accreditation is based on an assessment against the requirements as laid down in ISO/IEC 17025:2005. These unique facilities allow us to calibrate Semi-conductor & Solar temperature sensors from $-195\text{ }^{\circ}\text{C}$ up to $1.500\text{ }^{\circ}\text{C}$. This quality guarantee and calibration service provides our customers with a reassurance they have come to rely on. This is in part, why Thermo Electric Instrumentation continue to be the

number one choice for the supply of high quality semi-conductor & solar sensors.

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 are fully certified by Lloyds Quality Register and our reputation for consistent excellence in Semi-conductor & Solar sensor manufacturing speaks for itself.





SPECIALISED APPLICATIONS

The semiconductor & solar industry has advanced at a spectacular rate over the past five years. Thermo Electric has contributed significantly to temperature sensing developments in the diffusion and oxidation processes. For example, we have developed intelligent solutions such as our profiling sensors and spikes. These developments make extremely compact, multiple applications possible in the wafer stepping process.

We are also extremely proud to have created a number of proprietary features that increases our guarantee for quality, durability and prevention of contamination:

- Vacuum testing for profile Thermocouples
- Single ceramic insulation sleeves with channels for 5-fold Thermocouples
- Lightweight handles - anodised aluminium
- Simple assembly features
- Positive and negative t/c wires over the whole length (no common return)
- Batch calibration – we can also provide a RvA accredited calibration certificate from our own accredited laboratory





PROFILE LEVEL ASSEMBLY

PROFILE THERMOCOUPLE

Probe type: single piece ceramic insulator with fused quartz sheath.

Thermocouple:

- Pt/Pt 10% Rh (type S)
- Pt/Pt 13% Rh (type R)
- Pt 6% Rh/Pt 30% Rh (type B)

RVA ACCREDITATION

We have a in-house calibration laboratory accredited by RVA. The accreditation is based on an assessment against the requirements as laid down in ISO/IEC 17025:2005 in accordance with EA (the European co-operation for Accreditation) This strict manufacturing and calibration control provides us with a competitive advantage and guarantees the quality of our products.

CONSTRUCTIONS

- Profile Thermocouples for 3 zone – 5 zone
- Spike single/duplex Thermocouple
- Paddle single/duplex Thermocouple
- Sic protection tube
- Quartz protection tube
- Ball joints



QUALITY CONTROL

Our customer rely on our products because of our experience, reliability and manufacturing excellence. All of this is backed by our quality management system and ISO certificate. This quality guarantee provides additional security and has formed the foundation of our Thermo Electric brand, synonymous for semiconductor temperature sensors that have the highest level of performance and reliability.





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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