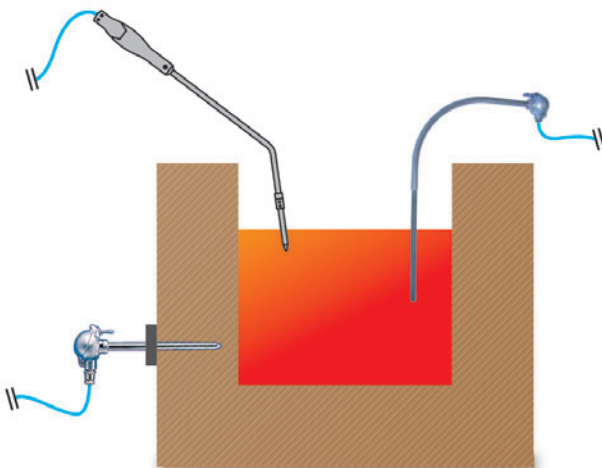




> OPTIMIZE YOUR PRODUCTION PROCESS

► Temperature measurements in melting baths and holding baths

The temperature of aluminium alloy baths is between 680 °C and 820 °C. This temperature range is ideal for the K thermocouples equipping the 3 types of temperature sensor assemblies presented below.



1. Test or monitoring measurement using a measuring lance.
2. Bath control measurement using an elbowed sensor assembly which may be fixed or movable, to avoid breaking the protective sheath when the furnace is loaded with aluminium-alloy ingots
3. Bath control measurement using a fixed straight sensor assembly in the refractory, with a known temperature gradient.

► Temperature measurements in hardening, annealing and stabilization furnaces

These measurements are taken using straight sensor assemblies also equipped with K thermocouples. Installed in the furnace refractories, these are usually protruding sensors to facilitate measurement of the ambient temperature in the furnace.

> CHOOSE SPECIFIC SENSORS WITH PROVEN CHARACTERISTICS

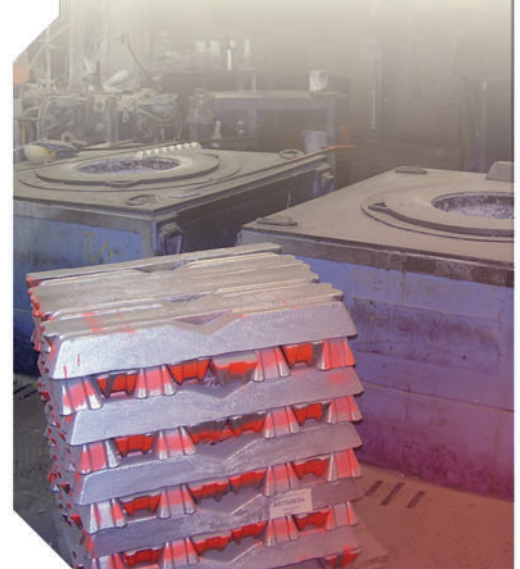
Pyro-Contrôle, which specializes in temperature sensors, proposes temperature sensor assemblies with an excellent life span, including assemblies incorporating "in-situ calibration" technology. These models with in-situ calibration can be used to monitor sensor drift over time and offer a large number of advantages in terms of energy saving, productivity, quality and traceability.

IN-SITU CALIBRATION

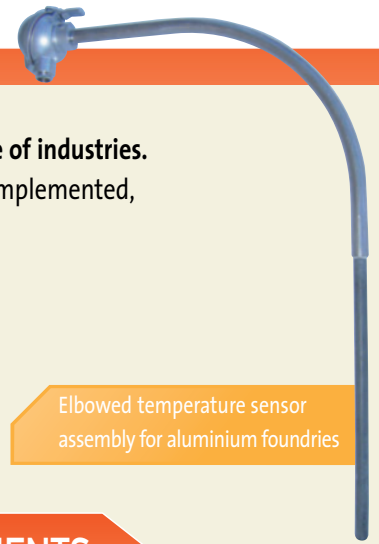
Measurement Accuracy

Life Span

Energy Saving



> LIFE SPAN OF TEMPERATURE SENSORS



Pyro-Contrôle benefits from long experience of producing specialized sensors for a wide range of industries.

It is possible to significantly increase sensor life spans by carefully choosing the components implemented, particularly in terms of the materials of the protective sheaths.

Main characteristics of the assemblies for aluminium foundries:

- ▶ Excellent resistance to corrosion
- ▶ Good capability for withstanding thermal shocks
- ▶ Good mechanical resistance at 800 °C
- ▶ No maintenance required

Elbowed temperature sensor assembly for aluminium foundries

> ACCURACY AND STABILITY OF TEMPERATURE MEASUREMENTS

Our temperature sensor assemblies are equipped with thermocouples rated Class 1 according to the NF EN 60584-2 standard. They are interchangeable.

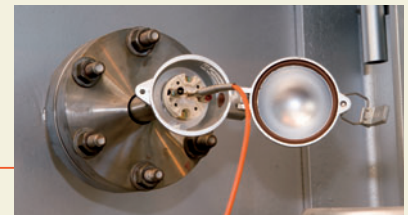
Pyro-Contrôle proposes temperature sensor assemblies with "in-situ calibration" for checking the accuracy and stability of your measurements over time, as all thermocouples are naturally subject to downward drift of a few degrees every year. This phenomenon is usually counteracted by defining a heating setpoint higher than the optimum temperature for the process. At high temperatures, the cost of each additional °C is considerable!... See our Case Study on "in-situ calibration".

By using sensor assemblies with "in-situ calibration", you can guarantee reliable temperature measurements over time, with two major advantages:

- ▶ Improved end-quality of the parts cast
- ▶ Energy savings

In-situ calibration method*: quick and simple to implement.

- ▶ **The connection head of the sensor to be tested is opened.**
- ▶ **The standard sensor is inserted into the guide tube.**
- ▶ **The standard sensor is connected to the precision thermometer.**
- ▶ **The temperature is left to stabilize.**
- ▶ **Calibration** is carried out by comparing the respective temperatures of the standard sensor and the process sensor.



* Patent no. 0213616

> ASSOCIATED SERVICES

Pyro-Contrôle possesses a temperature metrology calibration laboratory. COFRAC accreditation no. 2-1385 - Calibration by comparison.

- -20 °C to +450 °C for Pt 100 Ω probes
- -20 °C to +1,550 °C for thermocouples



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