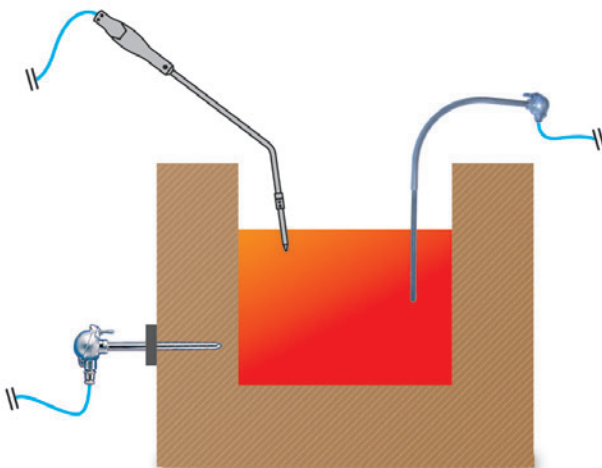




## > OPTIMIZE YOUR PRODUCTION PROCESS

### ► 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

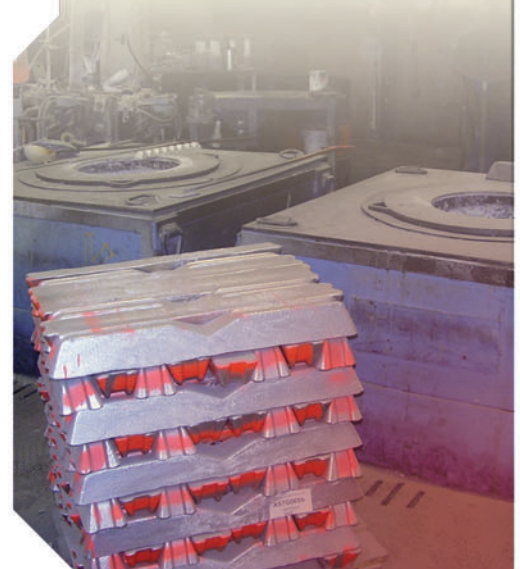
Pyro-Contrôle, which specializes in temperature sensors, proposes temperature sensor assemblies with an excellent life span, including assemblies incorporating "in-situ calibration" technology. These models with in-situ calibration can be used to monitor sensor drift over time and offer a large number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

### IN-SITU CALIBRATION

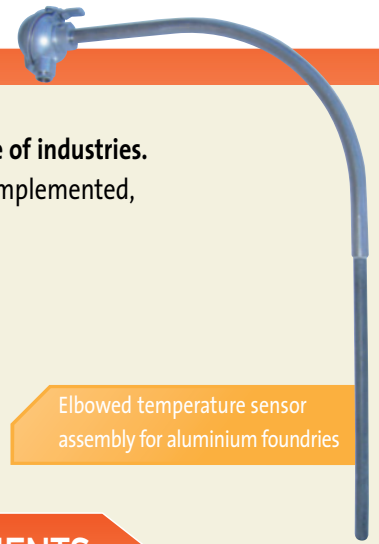
Measurement Accuracy

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.**

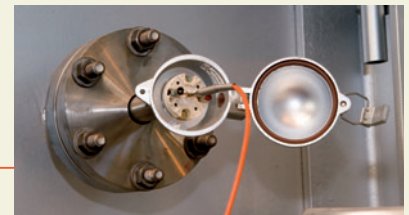
Pyro-Contrôle proposes temperature sensor assemblies with "in-situ calibration" for checking the accuracy and stability of your measurements over time, as all thermocouples are naturally subject to downward drift of a few degrees every year. This phenomenon is usually counteracted by defining a heating 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  $\Omega$  probes
- -20 °C to +1,550 °C for thermocouples



**FRANCE**  
**Pyro-Contrôle**  
6 bis, av du Docteur Schweitzer  
69881 MEYZIEU Cedex  
Tel: +33 4 72 14 15 55  
Fax: +33 4 72 14 15 41  
export@pyro-contrôle.tm.fr  
www.pyro-contrôle.com

**UNITED KINGDOM**  
**Chauvin Arnoux Ltd**  
Waldeck House - Waldeck Road  
MAIDENHEAD SL6 8BR  
Tel: +44 1628 788 888  
Fax: +44 1628 628 099  
info@chauvin-arnoux.co.uk  
www.chauvin-arnoux.com

**MIDDLE EAST**  
**Chauvin Arnoux Middle East**  
P.O. BOX 60-154  
1241 2020 JAL EL DIB (Beirut) - LEBANON  
Tel: +961 1 890 425  
Fax: +961 1 890 424  
camie@chauvin-arnoux.com  
www.chauvin-arnoux.com

