

Customer-friendly traceability services

The ITS-90 temperature scale is based on the triple point of water, 0.01 °C. More and more companies are requiring traceability to ITS-90. Pentronic supplies this with almost all its temperature sensors.

One easy way to have traceability for temperature sensors is to order them from Pentronic. With a few exceptions, all the company's sensors undergo a final inspection prior to delivery. The inspection is documented in a certificate that is included in the shipment. The information is also made available via Pentronic's website.

Traceability as required

Pentronic inspects its Pt100 sensors at 0 °C and thermocouples at 100 °C. Because the inspection equipment is traceable to Pentronic's accredited laboratory, the final inspection is therefore also traceable.

Pentronic can provide full traceability if the customer requests it. The customer can also select from various levels of final inspection or material certificate. This alternative is becoming increasingly common as requirements for measurement certainty become more stringent.

One increasingly popular choice is batch inspections, in which sensors are selected according to a non-random pattern for closer inspection at the accredited laboratory.

"There is a standard for how to do batch inspections, which is established by the American Society for Testing and Materials, or ASTM," explains Lars Grönlund, manager of Pentronic's accredited laboratory.

Batch inspections

Here is one example of a commonly used batch

inspection method. The customer orders a large quantity of thermocouples. The sensors are made from the same roll of wire or mineral insulated cable. The first and last sensors of the batch, plus one from the middle of the batch, are selected for inspection in the accredited laboratory. The rest of the batch undergoes Pentronic's standard inspection procedure.

"This inspection method is not as reliable as a 100% inspection but it is probable that the material has the same properties throughout its length," Lars says. "The only way to convert probability into certainty is by doing 100% calibration. If this is also done under accreditation, the customer achieves a lower measurement uncertainty than that provided by Pentronic's standard inspection procedure."

On-site inspections or call-ins


However, a calibration only provides clarity about the measurement uncertainty of a sensor and any ancillary equipment. Usually, the goal of calibration is to help make a customer's production process more energy efficient, faster, or better quality. To achieve this, the entire production facility must be calibrated – but a giant papermaking machine or curing furnace is hardly something that can be sent to a laboratory for inspection.

"In such cases we perform the calibration on site under accreditation, and the result is better process performance," explains Lars, who over the years has visited many of Sweden's leading companies with Pentronic's calibration equipment.

Another type of calibration service available is a non-binding service agreement with an accredited laboratory. The customer decides how often such calibration should occur. For example, more than 100 of Sweden's municipal environment

and health protection offices have such an agreement with Pentronic's in-house laboratory. The lab calls in their food inspection equipment for calibration twice a year.

"The aim of doing these regular calibrations is so that the municipalities can perform traceable inspections resulting in measurement readings that will stand up in a court of law," Lars says.

Pentronic offers many options for traceability to the ITS-90 temperature scale. The choice is up to the customer. 



Laboratory manager Lars Grönlund activates a triple point cell of water, 0.01 °C. Pentronic offers traceability to the ITS-90 temperature scale in various ways.