Better measurement with field calibration

Increasingly stringent requirements for temperature measurement are making it more worthwhile to relocate the calibration process from the laboratory out to the production site.

"The latest instruments for field calibration are getting close to laboratory performance level," comments Pentronic's Per Bäckström.

Field calibration will never be able to compete with laboratories with regard to the lowest measurement uncertainty. A laboratory is a protected environment with a stable temperature and is shielded from all types of disturbances.

However, on-site calibration has other advantages.

First, the tests are performed where the measurement equipment is actually being used. This makes it possible to take into account the influences coming from the installation and surroundings. It is also easier to fine-tune the measurement equipment for optimal functioning within the specific process involved.

Second, field calibration reduces production disruptions and standstills compared with sending the sensors to the producer's own laboratory or to an external one.

Third, when working on site it is possible to measure the entire process. One example is the thermal mapping of furnaces. Installed temperature sensors only measure the temperature at their own location, but what is the temperature distribution like in the rest of the furnace?

"This is one of the reasons why Pentronic's laboratory is doing more and more on-site calibrations at the customers' premises," Per Bäckström says.

The laboratory's accreditation also encompasses field calibrations, which means that traceability can be assured with a calibration certificate.

Nowadays there are high-performance hand-held instruments that can measure and log two temperature sensors while simultaneously being able to control a calibration furnace or calibration bath.

The technology exists to move the calibration laboratory out to the production process, with the possibility of achieving higher measurement performance in practice. In turn, this can save energy and costs, reduce the number of rejects, and increase product quality.

Per Bäckström shows an example of a hand-held calibration instrument that controls a calibration furnace.