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Calibration White Paper

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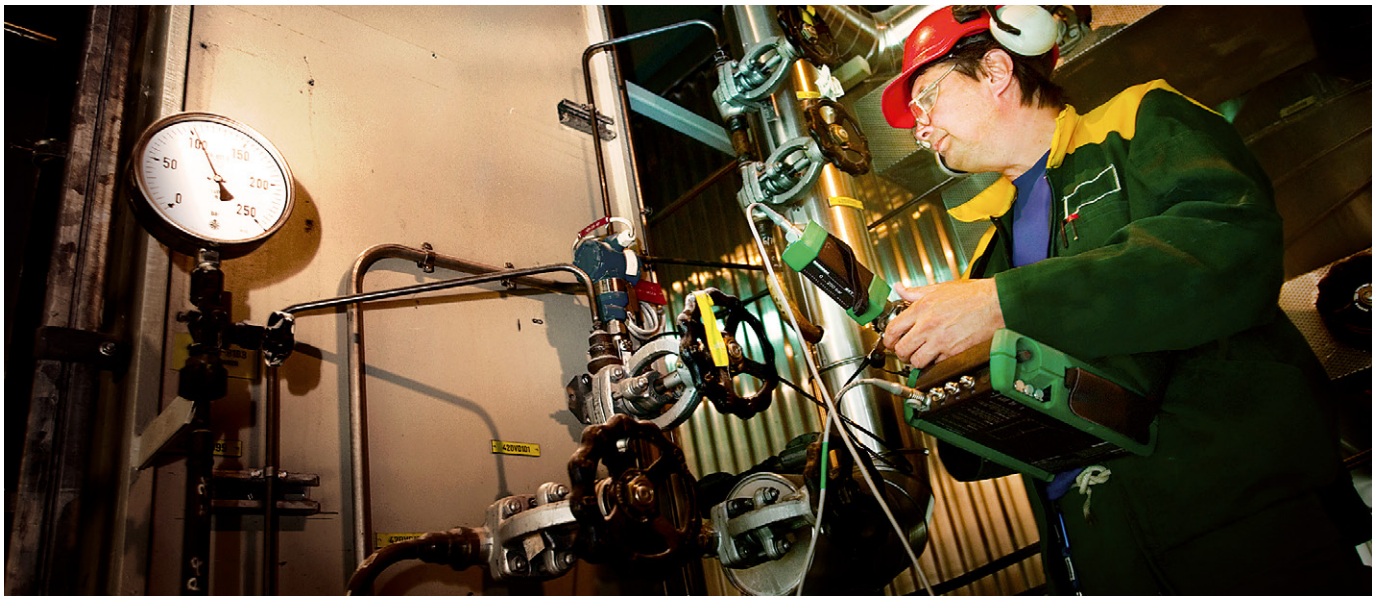

The Benefits of Using a Documenting Calibrator

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WORLD-CLASS CALIBRATION SOLUTIONS™

The Benefits of Using a Documenting Calibrator

For process manufacturers, regular calibration of instruments throughout a manufacturing plant is common practice. In plant areas where instrument accuracy is critical to ensure product quality, safety or custody transfer, calibration every six months – or even more frequently – is not unusual.

However, the key final step in any calibration process – documentation – is often neglected or overlooked because of a lack of resources, time constraints or the pressure of everyday activities. Indeed, many process plants are under pressure to calibrate instruments quickly but accurately and to ensure that the results are then documented for quality assurance purposes and to provide full traceability.

However, the key final step in any calibration process – documentation – is often neglected or overlooked because of a lack of resources, time constraints or the pressure of everyday activities.

The purpose of calibration itself is to determine how accurate an instrument or sensor is. Although most instruments are very accurate these days, regulatory bodies often need to know just how inaccurate a particular instrument is and whether it drifts in and out of a specified tolerance over time.

What is a documenting calibrator?

A documenting calibrator is a handheld electronic communication device that is capable of calibrating many different process signals such as pressure, temperature and electrical signals, including frequency and pulses, and then automatically documenting the calibration results by transferring them to a fully integrated calibration management software. Some calibrators can read HART, Foundation Fieldbus or Profibus output of the transmitters and can even be used for configuring 'smart' sensors.

Heikki Laurila, Product Manager at Beamex in Finland comments, "I would define a documenting calibrator as a device that has the dual functionality of being able to save and store calibration results in its memory, but which also integrates and automatically transfers this information to some sort of calibration management software."

A non-documenting calibrator is a device that does not store data, or stores calibration data from instruments but is not integrated to a calibration management system. Calibration results have to be keyed manually into a separate database, spreadsheet or paper filling system.

Why use a documenting calibrator?

By using a documenting calibrator, the calibration results are stored automatically in the calibrator's memory during the calibration process. The engineer does not have to write any results down on paper, which makes the entire process much faster and consequently reduces costs. The quality and accuracy of calibration results will also improve, as there will be fewer mistakes due to human error.

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The calibration results are automatically transferred from the calibrator's memory to the computer/database. This means the engineer does not have to spend time transferring the results from his notepad to final storage on a computer; again, saving time and money.

With instrument calibration, the calibration procedure itself is critical. Performing the calibration procedure in the same way each time is important for the consistency of results. With a documenting calibrator, the calibration procedure can be

automatically transferred from the computer to the handheld calibrator before going out into the field.

As Laurila states, "Engineers, who are out in the field performing instrument calibrations, receive instant pass or fail messages with a documenting calibrator. The tolerances and limits for a sensor, as well as detailed instructions on how to calibrate the transmitter, are entered once into the calibration management software and then downloaded to the calibrator. This means calibrations are carried out in the same way every time as the engineer is being told by the calibrator which test point he needs to measure next. Also, having an easy-to-use documenting calibrator is definitely the way forward, especially if calibration is one of many tasks that the user has to carry out in his daily maintenance routine."

With a multi-functioning documenting calibrator, such as the Beamex® MC5 or MC6, the user doesn't need to carry as much equipment while out in the field. Both calibrators can also be used to calibrate, configure and trim HART, Foundation Fieldbus H1 or Profibus PA transmitters.

Laurila continues, "With a documenting calibrator, such as the MC5 or the MC6, the user can download calibration instructions for hundreds of different instruments into the device's memory before going out into the field. The corresponding calibration results for these instruments can

be saved in the device without the user having to return to his PC in the office to download/upload data. This means the user can work in the field for several days."

Having a fully integrated calibration management system – using documenting calibrators and calibration management software – is important. Beamex® CMX Calibration Software ensures that calibration procedures are carried out at the correct time and that calibration tasks are not forgotten, overlooked or overdue.

Benefits in practice

Conventional calibration work relies on manual, paper-based systems for documenting. Manual calibration takes more time and is more prone to error. Oftentimes, the field engineer calibrates the instrument, handwrites the results onto a paper form and then re-enters this information into a database when he returns to the office. Unintentional errors often occur and the whole process is time-consuming.

Using Beamex® CMX Calibration Software and the documenting Beamex® MC6 or MC5 Multifunction Calibrators provides full control of the entire calibration process and reduces costs by up to 50%.* Why? Because the devices provide higher accuracy, the calibration process is much faster, and the system provides full traceability. When you've got to calibrate instruments throughout a site, typically with five-point checks on each instrument, speed and accuracy are critical. Using the MC6 or MC5 with CMX software means that calibration instructions for an instrument and calibration orders are downloaded to the calibrators and ready to guide the engineer in the field with correct calibration procedures.

After completing instrument calibrations, the system provides a full quality assurance report of all instruments calibrated along with a required calibration certificate. This not only ensures full traceability but also reflects full and traceable documentation of the completed work.

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SUMMARY

The benefits of using a documenting calibrator

- Calibration results are automatically stored in the calibrator's on-board memory during the calibration procedure.
- Calibration results are automatically transferred from the calibrator's memory to a computer or fully integrated calibration management system.
- Less paperwork and fewer manual errors.
- Reduced costs from a faster and more efficient calibration process.
- Improved accuracy, consistency and quality of calibration results.
- A fully traceable calibration system for the entire plant.
- The calibration procedure itself is guided by the calibrator, which uploads detailed instructions from the computer or calibration management software.
- No manual printing or reading of calibration instructions is required; again, saving time and money and simplifying the process.