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Four common PRESSURE CALIBRATION PAIN POINTS

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Pressure calibration is often critical to process control systems, helping to optimize operations and ensure plant safety. While pressure instrumentation can be found in nearly every process plant, proper calibration of this instrumentation can be frustrating.

The new Fluke 729 Automatic Pressure Calibrator has been designed from the ground up with process technicians in mind, offering features that will change the way you calibrate pressure.

Here are four common issues that process technicians encounter when performing pressure calibrations:

With the new Fluke 729 Automatic Pressure Calibrator, an internal automatic electric pump self-regulates pressure during testing without the need for manual adjustments.

Automatic pressure regulation compensates for slow leaks in test setups providing you with more accurate and dependable results.

1

Performing a pressure calibration with a slow leak

Performing a proper pressure calibration requires equipment and connectors that are dependable. With a leaking pressure source, keeping pressure stable at a calibration point long enough to take a reliable reading can be difficult. Slow leaks can require technicians to constantly fine tune and adjust pressure applied from a pump, which makes it difficult for the system to settle. After the desired pressure set point is reached, it's recommended that systems settle for several seconds or even minutes prior to testing so a more accurate and repeatable test result can be performed.

While slow pressure leaks caused by damaged hoses, worn fittings, or improper connections are common, there are several steps technicians can take to ensure a better calibration experience.

1. **Test and debug pressure test systems before entering the field to reduce unnecessary trips back to the shop.**
2. **Try to decrease the number of pressure connections by using the correct hose length and removing extra fittings.**
3. **Ensure that the test equipment is properly mounted.**
4. **Mitigate leaks by using special-purpose test hoses.**

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Documenting a pressure calibration requires multiple tools

Documenting pressure calibration results is important for the purpose of maintaining accurate critical instrument records, but the number of steps associated with documenting the procedure, and the number of tools required for the average pressure calibration can make the task difficult. For instance, a typical pressure calibration could require a pressure calibrator, pressure module or gauge for measuring pressure, a pump to generate pressure, and multiple hoses and fittings between the devices (including the connections to the pressure transmitter itself).

Before going to the field, not only do technicians need to prepare for specific calibrations by testing their setup and making sure the equipment is properly calibrated, they also need to carry all the appropriate test components with them. And before testing begins, technicians need to either write out the test procedure or fill in a method sheet. During the procedure, they must document the pressure being applied and the resulting mA being measured, and then determine whether the unit under test passes or fails according to the determined criteria. If the unit under test fails, the technician will need to adjust the system as necessary and begin the testing procedure again.

Beyond having all the right components, the technician needs to ensure that the pressure measurement tool used is accurate enough to calibrate the transmitter or other device being tested. The tools required and accuracies needed vary from one device to another, further compounding the difficulty. Special-purpose test hoses and connectors can make pressure connections easier and reduce the likelihood of leaks, eliminating one source of testing difficulty.

Preforming a documented pressure calibration with the 729 is easy.

An automatic electric pump eliminates the need for carrying a separate hand pump, and built-in HART communication allows technicians to make adjustments on the spot rather than reaching for another calibrator. And, with automated documentation, managing calibration data has never been easier.

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Manually generating and controlling the pressure for each test point

Pressure calibrations in process manufacturing environments rarely require testing to occur at a single test point. In fact, a typical pressure calibration can require anywhere from three to eleven pressure test points. Trying to adjust and fine tune system pressure for these specific points can be difficult and time consuming. Each individual point requires technicians to increase or decrease pressure by either pumping the system up or releasing pressure, and then to fine tune the pressure using the fine adjust vernier of the test pump.

This process can be simplified by carefully matching the selected hand pump to the pressure range of the transmitter being tested. For instance, some portable pneumatic pumps have pressure ranges that go up to 600 psi / 40 bar, but it can be difficult to accurately increase pressure beyond 400 psi / 28 bar. There are, however, newer portable pumps that can be easily pumped and adjusted to over 1,000 psi / 69 bar if the primary calibration need is over 400 psi / 28 bar.

With the new 729 Automatic Pressure Calibrator, generating and controlling pressure for each test point is as simple as pressing a button. Simply input the calibration starting and ending pressures, and the desired number of set points, and the calibrator does the rest—all with out hand pumps, or manual fine adjustments.

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Achieving repeatability when calibrating a pressure switch

Calibrating a pressure switch can be a time-consuming task and repeatability is key to success. Achieving repeatability requires you to apply slow changes in pressure to the switch as it approaches its defined set or reset point. Not only do you need to determine where the switch sets, you need to make sure that the vernier or fine adjustment mechanism of your test pump has the capability of varying pressure up to the set point and back to the switch reset point. Since these adjustments are manual, achieving repeatable measurements of the set/reset points can be difficult. With practice, technicians can get the fine adjustment of the pump within range of the set and reset point pressure with more regularity.

This process can be further simplified by selecting a pump with a wide fine adjustment range, allowing you to more accurately make adjustments to meet your measurement needs.

When testing a pressure switch with the 729 Automatic Pressure Calibrator, the switch setpoint, reset point and deadband are found and documented automatically, saving time and providing reliable, repeatable results.

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The **Fluke 729 Automatic Pressure Calibrator** has been designed specifically with process technicians in mind for the purpose of simplifying the pressure calibration process while providing faster, more accurate test results. Technicians know that calibrating pressure can be a time-consuming task, but the 729 makes it easier than ever with an internal electric pump that provides automatic pressure generation and regulation in an in an easy-to-use, rugged, portable package.

The ideal portable pressure calibrator, the 729 will automatically pump to the desired set-point when you simply type in a target pressure.

You can then use its internal fine adjustment control to automatically stabilize the pressure at the requested value.

- Automatic pressure generation and regulation to 300 psi / 20 bar
- Easily document the process using onboard test templates
- Automatic internal fine-pressure adjustment
- Measure, source and simulate 4 to 20 mA signals

Find out more about the 729 Automatic Pressure Calibrator and how you can change the way you work by visiting www.fluke.com/729

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