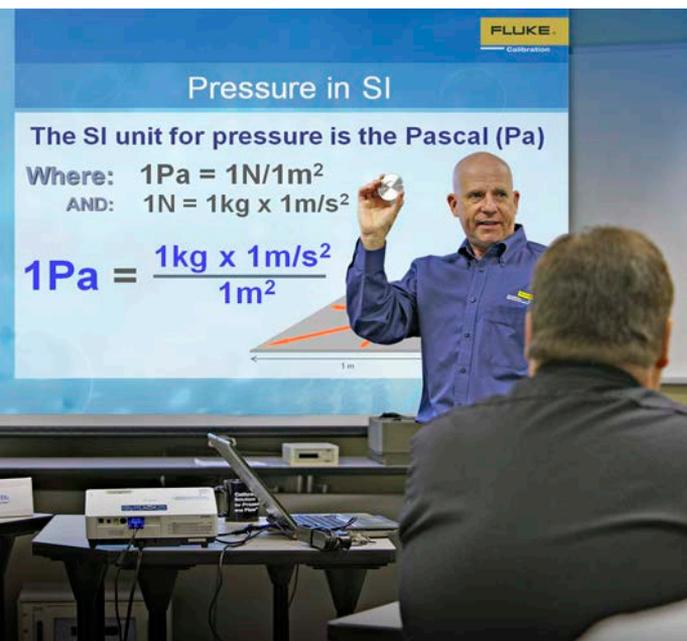


APPLICATION NOTE

Getting started in pressure calibration: a guide to breaking down the barriers

Does your calibration lab currently calibrate pressure instruments, either fully or on a limited basis?

Accurate pressure measurements are important for ensuring the safety and efficiency of many processes found in power generation, aerospace, pharmaceutical, oil and gas, and other major industries. If you are currently outsourcing or turning away pressure calibration business, you may be doing so unnecessarily. The barriers to enter the pressure calibration business can be overcome fairly easily.



Fluke Calibration provides a variety of training courses year round at our Phoenix, Arizona facility.

As with any calibration work, to perform pressure calibrations you need to have trained personnel, defined processes, and the right equipment. Fluke Calibration can assist you with all three.

Barrier: How do I train my personnel to calibrate pressure and close the knowledge gap?

Solution: Modern pressure standards, like those available from Fluke Calibration, make the job of training your personnel even easier. Older equipment requires more extensive manual interaction or even user calculations of corrections. Getting repeatable results is much more user dependent. Modern instruments, like pressure controllers or digital reference gauges, are easier to use and require less operator training. When combined with software like COMPASS® for Pressure, pressure controllers can be

fully automated, making calibrations easy and repeatable with only modest training.

Fluke Calibration provides pressure seminars at our Phoenix, Arizona facility at various times throughout the year. Participants learn the basic theories behind pressure measurement, setup of pressure equipment and calibration processes, and hands-on experience performing a variety of different pressure calibrations. While you won't become a leading expert in pressure measurement after just one week, we can take a technician who is brand new to pressure calibration and give him or her the basic tools to perform quality pressure calibrations.

We can also provide installation and training services onsite, right at your facility. You get customized training for your equipment, as well as the confidence that your equipment is set up and operating

properly—without having to spend travel budget sending your technicians to a training class.

In addition, Fluke Calibration provides other educational opportunities such as our online library of application notes, free web seminars, and presentations at local and national industry group meetings (like NCSLI). This includes technical notes explaining how to generate uncertainty budgets for our products, simplifying the challenge of the accreditation process for you.



The Fluke Calibration 6270A Pressure Controller/Calibrator has a modular design that lets you purchase what you need now and add more pressure capability later.

Barrier: How do I get the right equipment, when I don't even know the pressure range or accuracy of the devices I'm going to calibrate?

Solution: There are a wide variety of pressure ranges that need to be measured. From low pressures like vacuum or low differential pressures all the way to high pressures found in hydraulic applications, each of these pressure ranges serve a vital interest in the industry. You're not going to be able to cover everything all at once, but the more you do cover, the better off you are. Ideally, you need equipment that can cover a wide range of pressures and can be easily expanded in terms of pressure range and accuracy as your needs grow.

An example of such equipment is the Fluke Calibration 6270A Modular Pressure Controller/Calibrator. The 6270A can cover a very wide range of pressures, from vacuum to 3000 psi. The optional Contamination Prevention System (CPS) provides additional coverage by allowing one system to calibrate both gas and liquid filled devices. Its modular design allows you to acquire pressure measurement modules to cover certain pressure ranges now and add more measurement

modules later, without requiring you to send the system back to the factory for re-tuning or re-configuration. There are two different pressure module accuracy classes available. You can keep your initial investment low by starting off with the lower accuracy PM200. As your pressure calibration business grows into higher accuracies, your pressure controller can grow with it by simply adding a PM600 high accuracy pressure module. Finally, when your needs grow beyond the accuracy available through the PM600 pressure modules, the 6270A can be used as a component in a PG7000 piston gauge system, providing the highest levels of accuracy in an automated package. In this manner, your



For pressures above 3000 psi, consider either a hydraulic deadweight tester like the P3124 or a pressure-comparator-based solution like the P5515 and 2700G Reference Pressure Gauge.

investment today won't outlive its usefulness, no matter where your pressure measurement needs go.

For higher pressures (above 3000 psi), consider either a hydraulic deadweight tester like the Fluke Calibration P3124 or a pressure-comparator-based solution like the Fluke Calibration P5515 combined with a 2700G Reference Pressure Gauge. The deadweight tester provides the benefit of percent-of-reading accuracy over a very wide range. With very simple operation, it can provide 0.015 % uncertainty. By combining the deadweight tester with software to perform additional corrections, it can provide 0.008 % uncertainty, increasing the workload it can be used with. While the P5515 and 2700G don't provide the same level of measurement performance and wide range of coverage, they are simple to use, low cost, and easy to expand. You can start with just the pressure comparator and a single gauge and then purchase additional gauges to cover other pressure ranges as needed.

If your goal is to be accredited, then you'll want to make sure that your calibration standards have an ISO 17025 accredited calibration. Almost all pressure standards from Fluke Calibration come standard with an ISO 17025 accredited calibration. Those that do not have accredited calibration standard have it available for a nominal additional fee.



The 6270A includes internal pressure relief valves and designed-in pressure safety ratios to ensure operator safety.

Barrier: Pressure can be dangerous. How do I make sure my technicians are safe?

Solution: There are some inherent dangers when working with pressure, and the first step is to make sure your personnel are properly trained (see above). Fluke Calibration is committed to providing safe pressure equipment. Our pressure standards meet or exceed all relevant government safety regulations. Products like the 6270A include internal pressure relief valves and designed-in pressure safety ratios to ensure the safety of the operator. The 6270A also includes user-programmable pressure limits and an emergency abort key.

Automating the calibration process can make it safer as well. First, it removes user operations from the process, eliminating mistakes that may lead to hazards. Second, automation allows the pressure calibration process to be completed remotely, separating the operator from any dangerous conditions.

Conclusion

Fluke Calibration offers the equipment and resources that make up your pressure calibration solution. Our solutions remove the challenges to entering the pressure calibration business and deliver the return you need on your investment.

Fluke Calibration. *Precision, performance, confidence.™*

Electrical	RF	Temperature	Pressure	Flow	Software
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