PROCESS INSIGHT SOLUTIONS

JUNE 2023

CALIBRATION

WITH EXPERT CONTRIBUTIONS FROM:

ALPHA CONTROLS & INSTRUMENTATION
BEAMEX
ENDRESS & HAUSER CANADA
SRP CONTROL SYSTEMS

Canadian PROCESS EQUIPMENT & CONTROL NEWS

TABLE OF CONTENTS

This calibration ehandbook is for operators engaged in verifying and calibrating measuring instruments used in systems and applications for assuring and managing industrial process measurement.
Technical staff can benefit from a handbook that clearly and completely explains calibration procedures for measurement instruments in process applications such as: chemical, petrochemical, pharmaceutical, food, energy, and custody and transfer for water, oil, and gas.
The articles listed here are an aid to ensure that these needs are met, such as adhering to government standards, flowmeter calibration strategies, and maintaining optimal calibration parameters for process instrumentation.

INDUSTRIAL AUTOMATION
Process Insight Solutions

JUNE 2023

PUBLISHER/AD SALES: Rob Sommerville
rsommerville@cpecn.com

EDITOR: Mike Edwards
editor@cpecn.com

Canadian PROCESS EQUIPMENT & CONTROL NEWS

Produced By
ANNEX BUSINESS MEDIA

THE SECRETS BEHIND A QUALITY CALIBRATION

Tips on how you can spot the difference between good and great

By Marc Brand, Alpha Controls & Instrumentation

One of the most common misconceptions in process instrumentation circles is that all calibrations are considered equal. Yet the potential for variation in everything from testing equipment to technicians and processes to procedures means the gap between a good and great calibration is wider than you would think.

In turn, this can pose significant challenges for today's operator who is already facing incredible pressure to ensure every instrument in their business consistently meets incredibly precise targets, and the finished product is of the highest quality.

In fact, the financial implications of uncalibrated instrumentation extend well beyond defective products. Inefficient production processes can lead to increased scrap rates, rework, and even worker safety concerns. These costs are exacerbated by the risk of regulatory non-compliance, which can result in fines, legal penalties and damage to a company's reputation.

Instrumentation calibration assumes an even greater significance amid industry's ongoing digital transformation. With the integration of advanced technologies such as the Internet of Things and artificial intelligence, the accuracy and reliability of data collected by sensors and instruments become critical for effective decision-making and predictive maintenance.

In this article, we will provide insights from Alpha Controls & Instrumentation into what we feel goes into a quality calibration, including:

- Accreditation
- Equipment
- Technicians
- Trusted provider

Accreditation

First, it's important to recognize that calibration laboratories can vary in their standards and quality. One of the clearest examples of this is when comparing standard and accredited facilities.

A non-accredited laboratory conducts its calibrations solely under a laboratory's quality system. The calibration still includes a standard certificate that contains information such as the manufacturer, model/serial number, calibration date, next service date and a pass/fail grade.

Yet a standard calibration laboratory does not have a third-party authority formally recognizing its abilities to meet certain standards – whether that's from the perspective of management system documentation, sample handling processes or capabilities of the technicians themselves.

As a result, calibrations performed at non-accredited facilities may not always align with the more stringent test methods and parameters established by standards such as ISO/IEC 17025.

In contrast, an accredited calibrated laboratory is required to meet those standards, which can include providing customers with a complete history of measurement trends for each piece of their instrumentation, as well as the necessary data – including uncertainty values – to analyze the results and accuracies.

Accreditations such ISO/IEC 17025 also covers management and quality systems, as well as technical competence for the scope of accreditation to provide customer with added certainty of a facilities' competencies. These scopes vary, depending on the laboratory. In Alpha's case, our location in Markham, Ont., is accredited to ISO/IEC 17025 (scope # 2260.01), by the American Association for Laboratory Accreditation (A2LA), one of the most stringent accreditation authorities that is accepted worldwide. Scope includes temperature, humidity and dew point, pressure, electrical, particles and flow.

Lastly, accredited calibration facilities are also subjected to regular reviews by governing bodies. Officials will regularly re-evaluate a lab's technical competencies and quality manuals – in A2LA's case, it's an annual review. The reviews also provide opportunities to addresses updates to the standards themselves, whether that be technical changes, vocabulary or new techniques.

Quality equipment

Not all calibration equipment is considered equal, either. In fact, they can vary greatly depending on the type of instrument being calibrated and the desired level of accuracy.

A trusted piece of calibration equipment should include high-precision reference standards that are traceable to national or international standards. These standards are used as the basis for comparison and provide known values for the parameters being calibrated.

Alpha Controls, for example, only uses state-of-the-art technology from the proven leaders in calibration instrumentation that includes Fluke Calibration, Thunder Scientific, Fluke Electronics and DH Instruments. Alpha's Primary Standards "calibrators" are also traceable to the NMI (National Metrology Institute) NIST, NRC and others to provide to customers with the highest available accuracies that they require.

Meanwhile, different calibrating equipment require different accurate measurement instruments to quantify the output of the instrumentation being calibrated. These instruments can be digital multimeters, oscilloscopes, power meters or any other suitable device for measuring the parameters being calibrated.

Depending on the type of calibration, the equipment might also need to incorporate environmental controls to ensure stable and controlled conditions during calibration. This may involve using environmental chambers to control temperature and humidity or shielding against external electromagnetic interference.

Common in today's calibration equipment are software and data acquisition systems designed to offer automated calibration procedures. These systems can help in managing calibration processes, recording measurement data, generating cali-

bration certificates and performing data analysis.

Lastly, equipment used for high-accuracy calibrations may require built-in tools for uncertainty analysis. These tools help estimate the uncertainty of the calibration results and provide a measure of the confidence in the calibrated values.

Technicians

With today's testing equipment being more accurate than ever, the difference between calibration facilities also lies within the different systems in place and technicians operating the equipment.

An accredited laboratory gives customers the benefit of having their equipment calibrations performed by certified technicians that adhere to much higher standards. ISO/IEC 17025 contains specific elements that directly address the competence and qualifications of technicians. It also emphasizes the importance of ongoing training and professional development.

In turn, certified technicians are able to follow prescribed methodologies and procedures to ensure the calibrations are performed in accordance with established guidelines, promoting consistency and quality assurance.

Alpha Controls, for example, has a service team that includes fully trained metrologists on staff who offer decades of experience in instrumentation from both lab and real-world environments. All staff are trained to provide quality calibration and service support with Fluke's MetTeam Calibration Asset Management Software.

Having such depth of technical knowledge at Alpha Controls means it is more than comfortable standing behind even the most stringent service guarantees.

Trusted partner

Finally, customers need to have confidence they are working with a trusted partner – that is, a provider that has a proven industry track record of delivering accurate and reliable instrumentation calibration services.

Alpha Controls is a second-generation Canadian-grown company that has been specializing in instrumentation solutions to customers across North America for more than 40 years. They are a one-stop destination for all things calibration – and, more recently, validation – to industries such as pharmaceutical, aerospace, food and beverage, automotive, cannabis, and more.

In addition to a diverse set of certifications, Alpha is distinguished from other calibration facilities in that it offers customers the benefits of working with a provider that offers accredited calibrations both in-house and on-site. In fact, Alpha Controls is the only lab in Canada that can offer calibration services for Particle Measuring Systems.

Meanwhile, with a customer-first mindset, Alpha's in-house

team of fully trained metrologists use Fluke's MetTeam Calibration Asset Management software to offer quick turnarounds on all types of service that reduce both instrument downtime and the need for spares.

Alpha also offers pickup and delivery services, as well as calibration services for instruments out of the box when purchasing through Alpha. This eliminates additional shipping time and charges, as well as ensures customers' instruments are ready the moment they arrive.

The primary objective of any calibration is to guarantee that instruments can maintain a consistent high level of precision throughout the production processes. Therefore, it is crucial to have a calibration partner that adheres to the highest standards, offers the highest level of expertise, uses the best equipment and goes beyond offering customers peace of mind.

Alpha's mandate has always been to provide the best solution and support to its customers, regardless of whether they are making beer or producing vaccines. From the simplest calibration to the most complex instrument, Alpha Controls continues to be committed to making sure customers get what they need as efficiently and cost-effectively as possible.

If you're looking for an accredited service provider, Alpha Controls is here to help. Contact us by phone at 800-567-8686, by email at services@alphacontrols.com or visit our website alphacontrols.com to request a quote.

About the author:
Starting out as a Calibration Manager and working his way up to his current role as Director of Sales & Service, Marc Brand has been working in the instrumentation industry with Alpha Controls for 20 years. You may also recognize his face as the host of Alpha's newest YouTube Series, Brand's Brands.

In addition to Marc's tenure in the industry, he is also an electronics technologist, with a post graduate in Biomedical Engineering Technology.

alpha
CONTROLS & INSTRUMENTATION

TRUSTED FAMILY OWNED & OPERATED BUSINESS FOR OVER 40 YEARS

SERVICE OFFERING

- ✓ CALIBRATION
- ✓ VALIDATION
- ✓ COMMISSIONING
- ✓ FULL SERVICE & REPAIR
- ✓ INSTRUMENTATION SUPPLIER

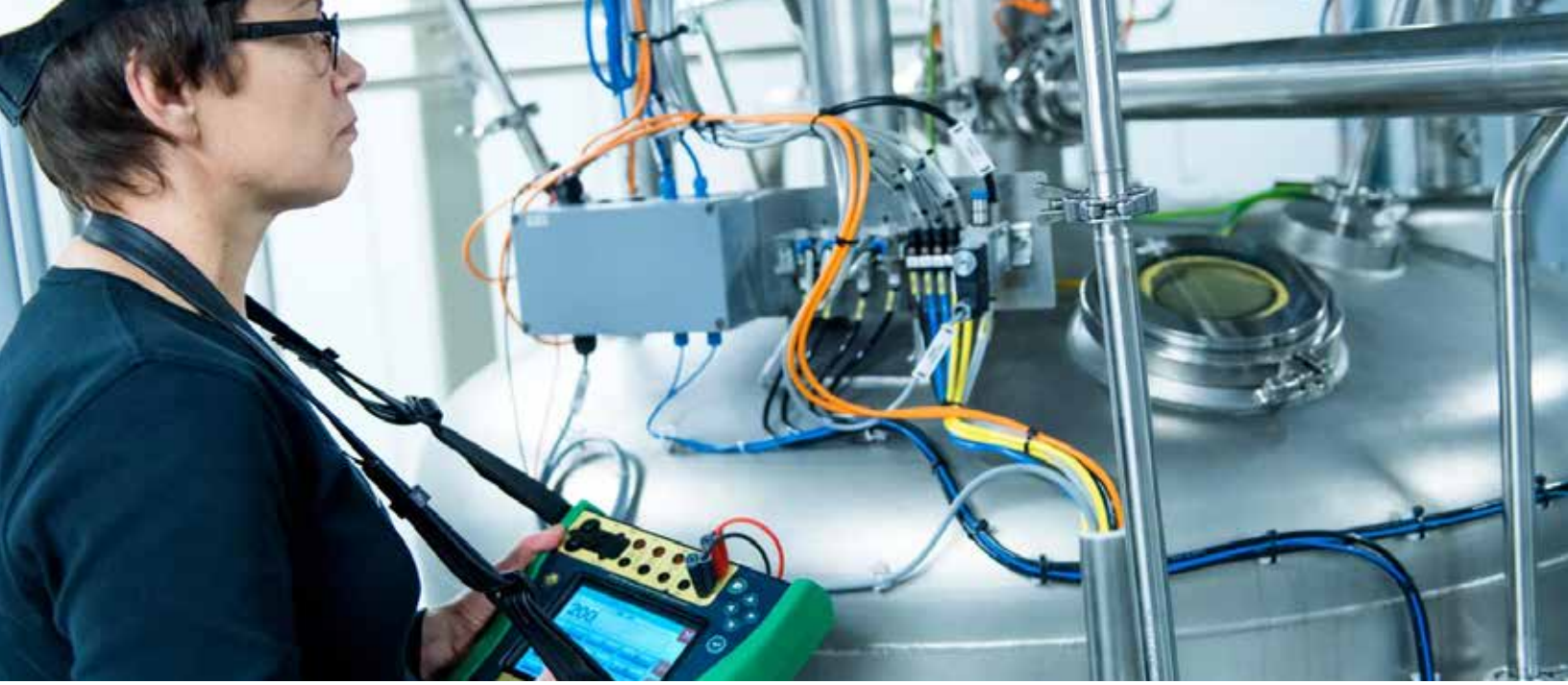
We are proud to be one of Canada's leading suppliers of measuring, sensing and controlling instruments.

ACCREDITED

ISO 9001:2015 CERTIFICATION

Intertek

WWW.ALPHACONTROLS.COM



OPTIMAL CALIBRATION PARAMETERS FOR PROCESS INSTRUMENTATION

By Ned Espy

Many calibration technicians follow long-established procedures at their facility that have not evolved with instrumentation technology. Years ago, maintaining a performance specification of ±1% of span was difficult, but today's instrumentation can easily exceed that level on an annual basis. In some instances, technicians are using old test equipment that does not meet new technology specifications. This article focuses on establishing base line performance testing where analysis of calibration parameters (mainly tolerances, intervals and test point schemes) can be analyzed and adjusted to meet optimal performance. Risk considerations will also be discussed – regulatory, safety, quality, efficiency, downtime and other critical parameters. A good understanding of these variables will help in making the best decisions on how to calibrate plant process instrumentation and how to improve outdated practices.

Introduction

Calibration technicians often follow long-established procedures that have not kept pace with advancements in instrumentation technology. In the past, maintaining a performance specification of ±1% of span was challenging, but today's instruments can easily exceed that level on an annual basis. However, outdated practices and the use of old test equipment that does not meet new technology specifications can hinder optimal instrument performance. This article focuses on establishing baseline performance testing and analyzing calibration parameters to meet optimal performance, considering factors such as tolerances, intervals, and test point schemes. Additionally, we will discuss the risk considerations, including regulatory compliance, safety, quality, efficiency, downtime, and other critical parameters, which should be considered when making decisions regarding calibration practices.

Determining Calibration Frequency

One of the fundamental questions in plant calibration is how often a process instrument should be calibrated. There is no simple answer to this question, as several variables influence instrument performance and, consequently, the calibration interval. These variables include:

1. Manufacturer's guidelines: Manufacturer recommendations can be a starting point for determining calibration frequency.
2. Manufacturer's accuracy specifications: The accuracy specifications provided by the manufacturer offer insights into the instrument's performance capabilities.
3. Stability specification: Instruments may have different stability characteristics in the short term versus the long term.
4. Process accuracy requirements: The required accuracy of the instrument in relation to the process being measured.
5. Ambient conditions: The environmental conditions in which the instrument operates, including harsh environments or climate-controlled settings.
6. Regulatory and quality standards: Compliance with regulatory or quality standards may necessitate specific calibration frequencies.

7. Costs associated with failure: The potential costs incurred from instrument failure, including safety risks, quality issues, and operational inefficiencies.

Determining Pass/Fail Tolerance

Another crucial aspect of a good calibration program is determining the "Pass/Fail" tolerance. There is no one-size-fits-all answer to this question, as opinions vary widely on what is truly needed to operate a facility safely and efficiently while producing high-quality products. Conducting a critical analysis of the instrument can provide a starting point for setting the tolerance. Instruments with tight tolerances may require more frequent calibration using highly accurate test standards, while less critical measurements with more accurate instruments may not require calibration for several years.

Calibration Procedures

To determine and implement proper calibration procedures and practices, it is essential to review existing methods and ensure they align with advancements in measurement technology. Many calibration technicians continue to follow practices established years ago, even as measurement technology improves and becomes more accurate. A one-size-fits-all approach, such as the standard five-point up-down calibration with a small error tolerance, may not be applicable to today's more sophisticated applications. Calibration procedures should evolve alongside measurement technology, considering the specific characteristics of each instrument.

Optimum Calibration Interval

The only true way to determine optimum calibration parameters is to somehow record calibration in a method that allows performance and drift to be analyzed. Determining the optimal calibration interval requires an educated guess based on several factors. Best practices suggest setting a conservative interval based on the potential impact of a failure on safety, efficiency, and product quality. It is also important to consider calibration methods that minimize the impact on plant operations. By prioritizing the calibration of the most critical instruments first, an optimum schedule can be determined, allowing for less critical calibration when personnel availability permits. With good data and calibration equipment, the lowest, practical tolerance can be maintained while balancing that with an optimum schedule.

Since all instruments experience drift to some degree, it is challenging to compare performance specifications among different makes, models, and technologies. Suppliers often provide different specifications, making it difficult to establish a benchmark for comparison. To determine an optimum interval, collecting data and analyzing drift over time for specific makes and models of instruments is necessary. For example, by performing three calibrations on a particular RTD transmitter over six months, a calibration technician can establish a baseline performance and identify any noticeable drift pattern. Using this information, a technician can then estimate the optimal calibration interval to avoid exceeding the specified error tolerance.

Process Tolerance Limits

Process tolerance limits should be determined by collaborating with control engineers, who can provide input regarding the process performance requirements. The more critical the measurement, the tighter the tolerance. However, tighter tolerances often result in higher calibration costs. To meet tighter toleranc-

es, calibration standards with better performance specifications may be required. This is particularly relevant for industries with stringent regulatory requirements, such as pharmaceutical or aerospace sectors. The best approach would be to set as high a tolerance as possible, collect some performance data and then decrease the tolerance based on a proper interval to achieve optimum results.

Reviewing Calibration Parameters

A subtle yet important detail is to review calibration procedures to see if further efficiencies can be gained without impacting the quality of the data. Instruments often come with adjustable calibration parameters that allow technicians to customize the calibration procedures. Technological advancements have made it possible to simplify calibration procedures, reducing the number of test points while still detecting hysteresis or other performance issues. Technicians should review the calibration parameters for each instrument to identify opportunities for efficiency without compromising data quality. By optimizing calibration parameters, time and resources can be saved without sacrificing accuracy.

Risk Considerations

When determining calibration parameters, it is vital to consider various risk factors, including regulatory compliance, safety, quality, efficiency, downtime, and cost. Failure to calibrate instruments adequately can result in safety hazards, regulatory non-compliance, compromised product quality, inefficient processes, increased downtime, and higher maintenance costs. By implementing an optimized calibration program, the risks associated with inadequate instrument performance can be mitigated.

Conclusion

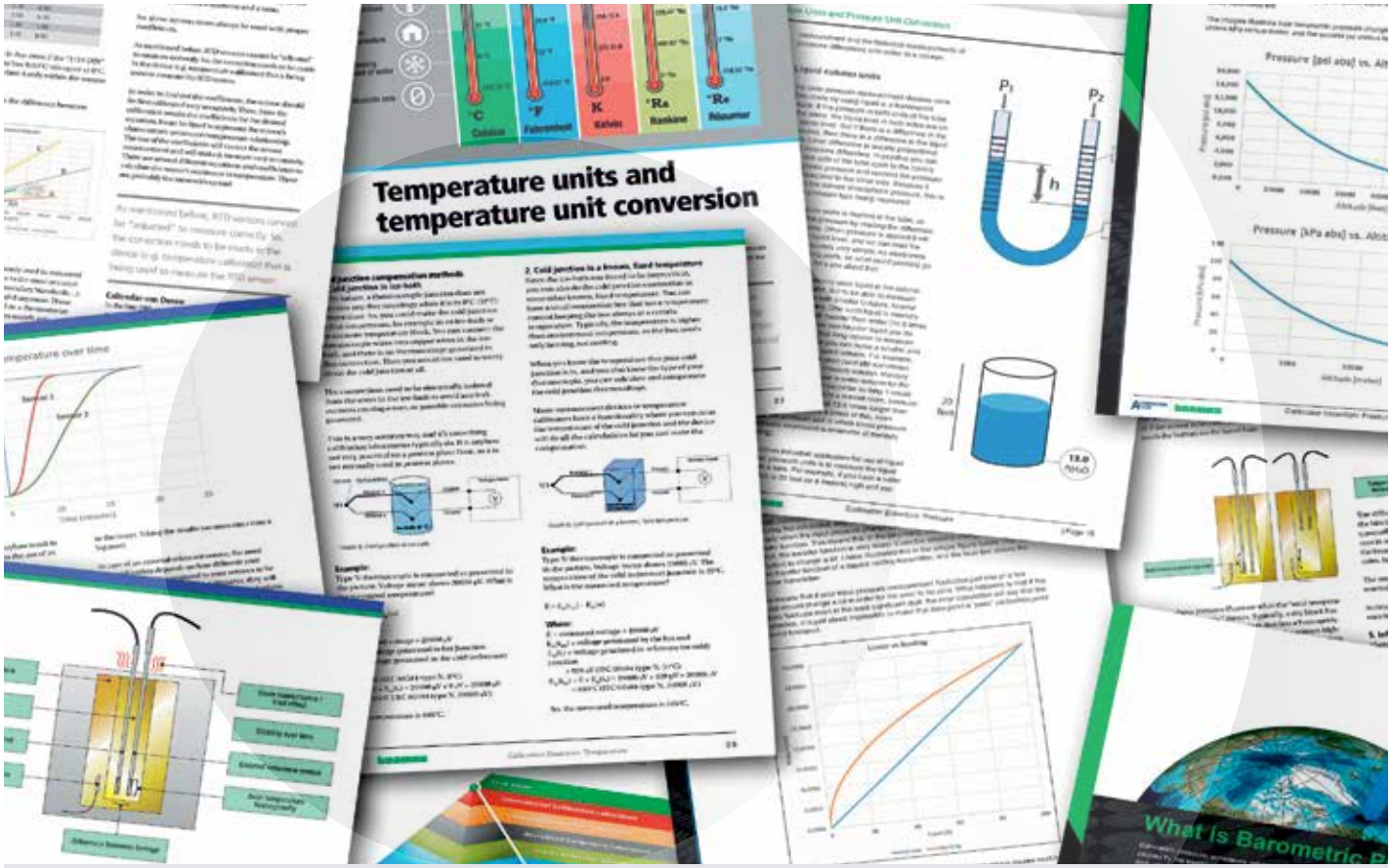
Establishing optimal calibration parameters for process instrumentation is a complex task that requires considering multiple factors. Calibration frequency, pass/fail tolerance, calibration procedures, optimal calibration intervals, process tolerance limits, and calibration parameters all play a crucial role in ensuring accurate and reliable measurements. By aligning calibration practices with advancements in measurement technology and considering risk factors, industries can achieve optimal performance, comply with regulatory standards, improve safety, and enhance operational efficiency. Establishing best practices for calibration should be a continuous evolution. Technology is changing and calibration should evolve along with it. It is recommended to consult industry standards, guidelines, and experts in the field for comprehensive guidance on calibration best practices for specific applications. Smart decisions can be made (and modified) to operate at optimal levels when it comes to calibration.

To learn more about Beamex calibration management software visit: https://www.beamex.com/calibration-software.

If you'd like to get advice about calibration strategies, solutions, implementation, or training, contact a Beamex calibration expert at https://resources.beamex.com/en-us/expert-request.

About the author:

Ned Espy, Technical Director, Beamex, has been promoting calibration management with Beamex for over 20 years. Ned has helped develop best practices for calibration, with a focus on pressure, temperature and multivariable instruments. He is a consistent editorial contributor to leading industry publications, and has received significant recognition within the automation industry. Today, Ned teaches calibration best practices and provides technical support to end users and the Beamex sales team in North America.

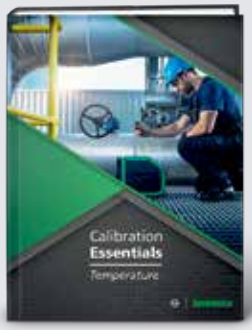


CALIBRATION ESSENTIALS: **PRESSURE**

Unlock the secrets to calibrating your pressure instrumentation with our comprehensive 40-page guide. **PACKED WITH EXPERT STRATEGIES AND RESOURCES**, you'll gain access to everything you need to ensure accurate and reliable pressure measurements in your process. Download your copy today.

CALIBRATION ESSENTIALS: **TEMPERATURE**

In 64-pages this eBook is designed to help you understand the importance of accurate temperature measurement and provide practical tips for successful calibration. **FROM BASIC CONCEPTS TO ADVANCED TECHNIQUES**, our eBook covers everything you need to know about temperature calibration. Download your copy today.



Experience a better way.
To run your business.
To calibrate.

beamex

UNDERSTANDING WHEN AND WHERE TO CALIBRATE YOUR FLOWMETERS

It's a simple enough conundrum: Failure to calibrate flowmeters can negatively impact performance, while calibrating too frequently can result in excessive costs without providing a benefit. So, when and how do you calibrate to best effect? The answer is, with planning and understanding so that you can make informed, proactive decisions rather than being reactive.

With flow measurements, the industry standard is to calibrate annually, even though that might not be necessary. Often, it's a ritual with no scientific basis behind it, other than it being as long as operators are willing to tolerate the risk of a potential problem. Some flowmeters require calibration only once every 3 to 4 years. In other circumstances, more frequent calibration, possibly even monthly, may be required to maintain a safe, efficient, or regulatory-compliant operation. Calibration intervals might also fluctuate based on usage or historical performance.

New instruments and technologies, combined with careful planning and study, can allow plants to calibrate flowmeters at an optimum frequency, resulting in improved operations and cost savings.

So, when to calibrate? Step 1 is developing a flow calibration plan that follows best practices. Our Endress+Hauser whitepaper, "Best Practices for Flow Calibration Management" covers the issues in developing such a plan, including performing a plant wide assessment of all instrumentation, including flowmeters, ranking the latter according to four levels of interest from highest to lowest – product-critical, process-critical, safety-critical and non-critical – and establishing acceptable tolerances for each device.

Download the Endress+Hauser whitepaper, "Best Practices for Flow Calibration Management". CLICK HERE

When to Calibrate?

Setting up such a flow calibration plan often requires assistance from the flowmeter manufacturer and/or a qualified service pro-

vider to identify the optimal calibration frequency. The end-user must use this advice and apply it based on particular service conditions, functions of the meter and their own experience.

Calibration frequency depends on the criticality and maximum acceptable tolerance, as well as the nature of the product being measured, normal usage pattern (continuous or intermittent), any clean-in-place (CIP) considerations, the severity of process impacts, the type of flowmeter (contact or non-contact), and the unit's accessibility for calibration. In some cases, it may only be possible to access a flowmeter during a complete process shutdown; in other cases, a flowmeter might be readily accessible.

In a new plant, the flowmeter calibration frequency is usually based on expected operational parameters and advice from the flowmeter manufacturer. In an existing plant, the frequency can be based on historical experience and previous documented calibration performance and processes that yield better results. In either case, quality, regulatory or safety requirements may override the manufacturer's advice or historical data.

Once a calibration plan has been in effect for a few years, the instrument management software used in formulating the plan and storing performance data takes on a bigger role. Each time calibration is done, new data is recorded and stored in the database. This data shows the status of the flowmeter before and after calibration, and it may indicate it does not require calibration as often as previously assumed.

Where to Calibrate?

For calibration, flowmeters may be removed from the process and shipped to a calibration lab. Calibration can also be done at the user's site, using a portable flow rig. A portable rig does not provide the same accuracy as a lab, but does offer convenience and speed. Depending on plant topology, many measuring points can be quickly calibrated with minimal process downtime.

Calibration labs typically handle larger size flowmeters with larger flowrates. Portable flow rigs can handle those up to a maximum of 2 in. (rig), but larger sizes can be calibrated in-line with master meters. The results of on-site flow calibration are still traceable to recognized national standards and the turnaround time is reduced to hours versus days or weeks.

For a comprehensive overview of the capabilities of third party providers of calibration services, download our Endress+Hauser whitepaper, "Instrument Calibration as a service". CLICK HERE.

Endress+Hauser Canada's on-site flow calibration is accredited in accordance with ISO/IEC 17025. Flowmeters up to 2 in. can be calibrated on site and up to 4 in. in our labs.

Endress+Hauser Canada's ISO accreditation now covers the entire spectrum of flow, temperature, pressure and liquid chemicals instrumentation, whether performed onsite at the customer or in our own laboratories.

Recent additions to the company's already extensive coverage of calibration needs are:

- ***conductivity*** from 100 µS/cm to 200,000 µS/cm
- ***pH*** calibrations from 0 pH to 14 pH
- ***pressure calibration range*** increased to 1,500 PSIG
- ***flow capabilities*** increased to 1,000 L/min ; 1,000 Kg/m
- ***temperature (RTD)*** up to ±0.2°C (for -30° to +660°C, either on-site or in our laboratories; ISO 17025 accredited scope is -15° to 110°C, 50° to 350°C.)

We perform flow, temperature and pressure calibrations of third party as well as Endress+Hauser instruments in our labs. The company now has one of Canada's most advanced calibration laboratories with the opening of the new Customer Experience Centre in Burlington, ON. It boasts the most advanced equipment to assure extremely precise calibration every time.

These are key considerations in opting for lab versus on-site calibration.

Laboratory calibration

- Best accuracy
- Turnaround in days or weeks
- Suits larger calibration range – 1/24 to 12 in. and larger
- Usually costs more than on-site calibration

On-site calibration

- Good accuracy
- Faster turnaround than a lab, usually in hours
- Suitable for 2 in. and smaller, using a calibration rig – or 3 to 4 in. with in-line calibration with master meters
- Usually costs less than laboratory calibration

Thanks to advances in flowmeter diagnostics and instrument management software, the increasing availability of nearby calibration labs and portable rigs, and the willingness of instrument vendors to assist users with calibration, it's easier than ever to set up a flow calibration plan based on best practices. Such a plan will not only establish the proper intervals, but all flowmeter data can be stored in the calibration management software solution, including calibration data, history and certificates.

Such solutions can help find that Goldilocks balance — calibration intervals that are not too frequent or infrequent, but just right.

Proper calibration of flowmeters is an important defence against downtime and even product recalls. An expert partner like Endress+Hauser Canada can help you determine the best calibration approach, on-site or off-site. The differences are explained in this whitepaper. To download, CLICK HERE.

We understand how leading-edge products and process improvements are critical in your business.

INNOVATE + ACCELERATE

You are enabled to achieve a faster time to market, improve plant productivity and reduce risk.

iTHERM TrustSens TM37x: The world's first self-calibrating compact thermometer

- Increases process safety and uptime with fully automated, fully traceable inline self-calibration
- Offers 100% compliance with automated audit-proof documentation
- Eliminates the risk of undetected non-conformities with Heartbeat Technology

Do you want to learn more?
www.eh.digital/3oVflnM

Endress+Hauser
People for Process Automation

WHAT IS A SCOPE OF ACCREDITATION AND HOW DOES A SCOPE EXTENSION BENEFIT OPERATIONS?

To properly address this question, we need understand the concepts of calibration, the crucial role played by calibration laboratories, and the significance of a scope of accreditation.

Calibration

The calibration of test and measurement devices enables customers and end users to make informed decisions, optimize processes, maintain compliance, and ensure safety. The calibration will provide accurate measurements, boost reliability, aid troubleshooting, and contribute to overall process efficiency and effectiveness.

A calibration laboratory plays a vital role in supporting end users by providing professional calibration services for their test devices.

Choosing the Right Laboratory

When choosing a calibration laboratory, it is crucial to evaluate their competence to carry out calibration activities.

You need to ensure the laboratory has a quality system, has high level primary calibration standards, has appropriate operating procedures, has a training program and training records for their staff, can evaluate calibration uncertainty, and maintains traceability to national standards. You may carry that that evaluation yourself or choose an accredited laboratory.

Choosing an accredited laboratory means choosing a laboratory that has been evaluated by a formal third-party authority named Accreditation Body. The assessment criteria are based on the international standard ISO/IEC 17025 which is used for evaluating laboratories worldwide. In Canada, the accreditation of calibration laboratories is the shared responsibility of the Standards Council of Canada (SCC) and the National Research Council of Canada (NRC) Calibration Laboratory Assessment Service (CLAS). The measurement experts from National Research Council of Canada will assess the technical capabilities of the laboratory.

The accreditation reduces risk for business and its customers alike by assuring that the accredited laboratory is compe-

tent to carry out the work they undertake within its scope of accreditation.

The Scope of Accreditation

The scope of accreditation of a calibration laboratory is the formal statement issued by an Accreditation Body. This statement describes the specific calibration activities which the laboratory is accredited for and hence competent to perform.

Laboratory Accreditation Bodies publish the scopes of accreditation for their accredited laboratories.

The requirements for that statement are harmonized worldwide and set out in ILAC policy P14. ILAC is the global association for the accreditation of laboratories, inspection bodies, proficiency testing providers and reference material producers, with a membership consisting of accreditation bodies and stakeholder organizations throughout the world.

According to ILAC-P14 9/2020 [4], "The scope of accreditation of an accredited calibration laboratory shall include the calibration and measurement capability (CMC) expressed in terms of:

a) measurand or reference material;
b) calibration or measurement method or procedure and type of instrument or material to be calibrated or measured;
c) measurement range and additional parameters where applicable, e.g.frequency of applied voltage;
d) measurement uncertainty."

ILAC-P14 9/2020 [4] also states that "The uncertainty covered by the CMC is expressed as the expanded uncertainty having a coverage probability of approximately 95%." and "The CMC quoted shall include the contribution from a best existing device to be calibrated such that the CMC claimed is demonstrably realizable."

This definition of calibration measurement capability implies that within its accreditation, a laboratory is not entitled to claim a smaller uncertainty of measurement than the calibration measurement capability.

The reported uncertainty of measurement is never smaller than the calibration measurement capability.

The SRP Control Systems Added Value

The laboratory of SRP control systems Ltd. is accredited by the Standards Council of Canada and certified by the National Research Council of Canada (NRC) Calibration Laboratory Assessment Service (CLAS).

With over 40 years of calibration experience, we use state of the art calibration standards, highly trained personnel, and internationally recognized calibration methods.

SRP control system is also an ISO 9001-2015 registered company. We're proud to be representing many excellent manufacturers, equipping our customers with an extensive selection of quality products.

Extending the Scope of Accreditation at SRP Control Systems

A calibration scope exclusively lists the calibration areas for which the laboratory has obtained accreditation, and it is within these specified areas that the laboratory is authorized to provide accredited calibrations.

The scope extension allows our laboratory to offer a wider range of measurement capabilities. The laboratory can accommodate the evolving calibration requirements of our various customers.

Pressure Calibration Scope

Our pressure capabilities are unique. Our state-of-the-art primary reference standards includes piston gauges with multiple pistons like the Ruska 2465, pressure balances and digital deadweight testers. These are complemented by the inclusion of secondary standards like high accuracy pressure controllers and indicators.

The pressure calibration scope was extended by lowering the calibration and measurement capabilities uncertainties.

This has been achieved through a meticulous analysis of calibration data spanning over the past 18 years. Additionally, we have conducted rigorous proficiency testing to ensure our measurement systems perform consistently and accurately.

With CMC uncertainties now as low as 0.0025 % of Reading plus 0.7 Pa for specific ranges, our calibration services can accommodate even the most precise and sensitive pressure equipment.

Our comprehensive range of accredited calibration services extends to various types of pressure equipment such as air data and test sets, pressure controllers, pressure gauges, indicators and calibrators, transmitters, barometers etc.

Our range of capabilities spans from low pressure differential -30 to 30 inH2O to relative and absolute pressure reaching up 40000 psi.

Electrical Calibration Scope

We have significantly enhanced our electrical capabilities by incorporating the state-of-the-art Fluke 5730A high-performance multifunction calibrator. By using this calibrator in conjunction with our set of 8.5 digital reference multimeters, we can now calibrate multifunction field calibrators with unparalleled precision and better test uncertainty ratios. This substantial improvement instills greater confidence in our testing processes. The list of instruments our laboratory can calibrate also includes multimeters, dataloggers, loop calibrators and many more.

Temperature Calibration Scope

Our temperature calibration was extended to include the calibration of thermocouples up to 1200°C.

From temperature indicators and thermometers to Platinum Resistance Thermometers (PRTs), Resistance Temperature Detectors (RTDs), thermocouples, temperature baths and dry block, we can accurately calibrate instruments spanning over a temperature range of -40° to 1200°C.

We now offer calibration service for thermocouple/RTD indicators and simulators using electrical simulation and measurement techniques.

The Benefits for SRP Customers

New test and measurement devices are developed by manufacturers, with ever-decreasing accuracy specifications. Additionally, an increasing number of features are continuously being incorporated into these devices. The new scope allows us to meet the requirements for the calibration of these instruments.

By partnering with our SRP calibration laboratory, our customers can rest assured that their devices are calibrated according to the latest standards, maximizing their accuracy and reliability.

By becoming a one-stop solution for calibration services, we can simplify the calibration process for our clients. Rather than dealing with multiple providers for different instrument types, our customers can rely on a single laboratory to calibrate a wide range of equipment.

By offering lower uncertainty pressure calibration services in Canada, we provide a quick turnaround. Our efficient calibration process ensures a prompt turnaround time, minimizing the downtime of the customer's equipment.

We eliminate the need for long-distance international transportation. This reduces the risk of damage during transit while saving the client from potential repair or replacement costs in addition to saving on shipping costs.

Working with us ensures invoicing in local currency and simplifies the payment process, reducing administrative complexities.

Our scope of accreditation is public and published by the National Research Council of Canada (NRC) Calibration Laboratory Assessment Service (CLAS).

There are never any surprises as your instruments will return accurate, compliant, and with the proper documentation.

SRP control systems ltd. was founded in 1980 providing sales, service, calibration, and technical support in the field of temperature, pressure, electrical, humidity, fuel cells, and dewpoints. We offer a full range of services to a variety of industries including, aerospace, pharmaceutical, oil and gas, power, food industry, transportation, water, automotive, pulp and paper. Visit the SRP website at www.srpcontrol.com to learn about the company and book your next calibration. SRP can be reached at 1-800-268-2605 and is located at 19 – 5155 Spectrum way, Mississauga, ON, L4W 5A1.

SRP control systems ltd.

Providing Instrumentation & Calibration Instruments since 1980

We Also Offer A Full Range Of Repair & Calibration Services

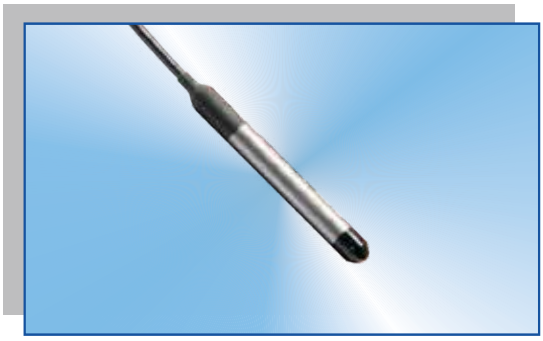
AN ISO 9001:2015 REGISTERED COMPANY

ISO 17025:2017 ACCREDITED LABORATORY

PMC Engineering VL2000 Series
Wastewater Level Transmitters

- Range: 0-300 PSI
- Accuracy: ±0.1% FS (BSL) or ±0.25% FS (BSL)
- Operating Temperature Range: -20° to 80° C
- Electrical: 2-Wire, 4-20mA, 10-35 VDC Power
- FMC Intrinsically Safe
- Cable: Polyurethane Molded, Vented with Kevlar, 4 Conductors, or FEP
- Housing Material: 316SS or Titanium 5-year Corrosion Warranty

PMC Engineering VL4500 Series
Submersible Transmitters



- Range: 0-300 PSI
- Accuracy: ±0.1% FS (BSL) or ±0.25% FS (BSL)
- Operating Temperature Range: -20° to 80°C
- 2-Wire, 4-20mA, 10-35 VDC Power
- 0.725" Diameter Welded Titanium
- Molded Polyurethane Cable
- 5-year Corrosion Warranty

Unimeasure HX-P420 Series
Linear Position Transducers

- Operating Temperature: -40°C to 95°C
- Measurement Ranges: 0 to 2000 inches
- Analog Output: 4-20mA
- cUL Intrinsically Safe

Additel *227*
Multifunction Process Calibrator

- Sourcing, simulating & measuring pressure, temperature & electrical signals
- Built-in full Hart Communicator (ADT227-HART)
- Intrinsically Safe models available (Ex)
- IP67 Rated
- High Voltage Measurement Capability (±300V AC)
- Dual channel pressure module ports

www.srpcontrol.com

#19-5155 Spectrum Way, Mississauga, Ontario L4W 5A1
Tel: 905-238-2880 ◆ Toll Free: 1-800-268-2605
sales@srpcontrol.com ◆ www.srpcontrol.com

40 YEARS 1980-2020

Alberta: Tel: 403-736-0508
Fax: 403-736-0509

BC: Tel: 604-451-7300
Fax: 604-451-7310