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October 15–18	Atlantic Canada Water & Wastewater Association, Charlottetown, PEI
October 19–20	Northwestern Ontario Water & Wastewater Conference, Thunder Bay, ON
October 24	CsHm Grand Prairie, AB
October 24	CPECN Manitoba Process & Automation Show, Winnipeg, MB
October 24–25	Eastern Ontario Waterworks Association 60 th Annual Conference, Smith Falls, ON
October 26	CPECN Saskatchewan Process & Automation Show, Saskatoon, SK

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Our valued friends, customers and business partners

Dear Reader,

I truly hope you were able to schedule in some summer vacation and down time over the course of the third quarter of 2017. As Canadians, summer is one of our most notable and anticipated seasons and a somewhat quieter August is a testament to that fact. Now that we are fully rested it is time to push full ahead into the final quarter of the year and a wish of a successful year to everyone!

As I mentioned in the last issue, we have been actively working to improve how we serve our customers (that means: YOU!), and how we can streamline the process of serving you more effectively and efficiently, and in a sustained manner.

This ongoing journey has been an enriching, eye-opening learning experience for all of us at Endress+Hauser Canada. Nonetheless, our goal remains unchanged: eliminate any inefficiency or waste that does not add value to you and your success.

In our third issue of *Talkline* for 2017, we ask if the Water and Wastewater industry is ready for Industry 4.0. Our industry manager, Dean Rudd walks us through a bit of related history and then provides an overview of what the future will start looking like ... soon! There is no question that we are all living in yet another extremely dynamic and innovative phase in human history!

In the previous issue, we shared the news on the official inauguration of our Edmonton facility and Process Training Unit. In this issue, we delve a little deeper into the PTU and what it can provide, and the type and nature of courses offered. Have a read through and consider how we can help you meet your training and learning objectives in the coming months. We can also customize courses for specific learning objectives. Take advantage of the PTU and get state-of-the-art training.

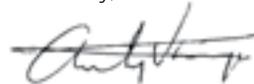
There are only 10 such facilities in the world and this is the only one of its kind in Canada!

Also in the pages ahead, we introduce you to some of our Services and Solutions. From Plant Asset Management (PAM) to Commissioning and Effluent Monitoring Solutions, gain more insight into the complete suite of competencies here at Endress+Hauser Canada.

As we enter the fall season, I'd like to remind you that there are many ways to engage with us. For those of you well-versed with social networks: connect with Endress+Hauser Canada on LinkedIn, Twitter, Facebook and Instagram. Keep up-to-date with our work, our customer events and various business developments. The future holds many successes that will be derived from developing working partnerships in industry. Look to Endress+Hauser when seeking a partner to help you become as efficient and competitive as possible.

On behalf of myself and colleagues at Endress+Hauser Canada Ltd, we thank you for your continued trust in choosing us to be your People for Process Automation and we remain more committed than ever to continually demonstrating our value.

Sincerely,



Anthony Varga
President and CEO





Is the Water and Wastewater Industry Ready for Industry 4.0?

By Dean Rudd, Industry Manager Water Wastewater, Endress+Hauser Canada Ltd

There has been a lot of talk around the water and wastewater industry about the future of our systems and how we can better provide services to the public. In the water sector, the focus seems to be on smarter systems that can eliminate water loss and automatically adjust to optimize the delivery based on true demand. On the wastewater side of the business, we want better treatment, more efficient use of energy and human resources.

To achieve these goals, I believe we need to embrace Industry 4.0, which is the next phase of the industrial revolution/digital age.

The effects of Industries 1.0–3.0

A person on horseback could travel about 40 km per day on a long journey, which was as fast as information and goods could travel. This time frame changed with the introduction of steam travel. People, goods and information got together much faster. Also, productivity soared as much more could be done with steam power than could be done manually. This is Industry 1.0 – the steam age.

Then came the introduction of electricity, which was more efficient, easier to use and less expensive than steam. Electricity led to increased productivity and the analog age, one device one function, and one piece of data. This is Industry 2.0 – the analog age.

In the sixties, we travelled to the moon, which helped spur the age of computers. This is Industry 3.0 – the digital age.

Where is the water and wastewater industry at?

Are we truly in the digital age in wastewater treatment? I would argue that we are still in the analog age. I have heard many people in the industry discuss the complexity of our systems, such as Supervisory Control and Data Acquisition (SCADA), and the mountain of signals and values we have to deal with on a daily basis. But is just having the data really enough?

The first *smart* instruments, such as HART protocol, were introduced in the 1990s and became the standard a few years later. Today, it is almost impossible to buy a measuring point without it or something even more sophisticated. When we say “smart,” what do we really mean? Even the simplest of devices have built-in microprocessors doing all the information gathering and number crunching. We can now get this information out of them using digital communications.

Let’s take a look at the data a simple pH sensor can provide. It can measure pH, mV, temperature, and glass impedance. Some can provide the last calibration date, extreme values, life timer, serial number and model number. This is a lot of information, but can it help us, or is it information just for information’s sake?

First, we have to examine the effect of data on regulatory compliance, be it federal, provincial or internal.

If we want to control or regulate something we need to measure it. Having a reliable measurement with a high degree of confidence makes control that much easier.

In Industry 4.0, or the digital information age, we can gain this confidence with the knowledge that all devices are continually running diagnostic tests internally and making this data available for study. Let the device tell you its status and when it needs to be looked at for support. Many of the current devices we are running in our systems today have this capability. If we look at the data in the proper way, we can quickly identify any issues and implement the remedy.

Dissolved oxygen (DO) levels in aeration basins are one of the most important analytical measurements in any wastewater plant. Only with the recent introduction of optical DO sensors have we had enough trust in the measurements to implement automated energy-saving strategies.

Let’s go back to that simple pH sensor with the nine pieces of data and look at the glass impedance. By following this



parameter it can give you a health indication of the measuring surface, helping us predict required maintenance. Think of the time and dollars that can be saved by only dispatching maintenance when it is really required. Many manufactures of equipment are incorporating global standards for information, (e.g. diagnostic NAMUR 107).

This means that no matter what device you have, regardless of the manufacturer, the messages are the same. Standards developed in other industries can enhance wastewater as well. In Industry 4.0, when confidence is lost in a device, it can talk to the maintenance system, check inventory, arrange for new parts to be ordered and schedule the replacement, once parts and people are available, ensuring a confident, compliant result.

When we talk confidence, we have to look at data security and what that means for our industry. Most systems have very sophisticated architectures for control, monitoring and data collection. There is a drive to put this information into the cloud and increase access and eliminate hardware. It is true that many devices can easily accomplish this feat today, using simple technologies like Bluetooth or WLAN, making information available without hooking up outputs. Security of this data must be designed right into the device.

Many of these devices are already in place, but are we taking advantage of the information they can give us? First, we must look at the design of our systems. Do we have the ability to communicate? Only a small number of waste treatment facilities run digital communication between the measuring devices and the SCADA. It is common to be able to see from plant SCADA to plant SCADA within a region. It is easy to see a remote pump station and look at all key variables (key as we see them today), like pumps on or off, levels high or low, and flow values.

Wastewater and water systems were some of the first networks designed and built to handle this type of communication. Some of the most detailed wireless communication systems were in our industry. With the ability to communicate to remote sites, we could now turn pumps on and off, without having personnel travel to them. This was a significant milestone.

Imagine now that we extended this communication into the measuring devices in those remote stations. Now, we

can not only look at the flow value, for example, but also know that the meter is working up to specification by reading its health indicator over our communication network. Let the pump give you its runtime and efficiency factor as a trended value. Moreover, have it communicate a wear issue directly, allowing the maintenance system to look for spares, examine personnel availability and eliminate any non-required travel and downtime.

Another dimension to Industry 4.0 is the ability to change the roles of the human element to the whole equation. Will we be eliminated? No, but many of us will have to develop new skills and be open to new opportunities.

Other aspects of Industry 4.0 are simulation and augmented reality. The wastewater industry has been a leader for many years in the use of simulation and modeling of processes. Almost all plants and regions use simulations to test for things like storms and population expansions. We are already in the future. Augmented reality is something that will be a standard in Industry 4.0 and it will open up a whole new world of efficiency.

A simple smart phone with a camera will be all you need to look at a device, define operating and maintenance procedures, and perform calibrations and more. Imagine a complex device that is down and the only maintenance person is several hours away. You will be able to open an App, point your phone at the device and then the App will walk you through the basics of how to get it back on line. This will save money and time. This type of technology will change our roles and it will be here soon.

We have seen that we have devices of all kinds already in our facilities that can save us time, money and help us meet our regulatory requirements. But are we using their capabilities? Are we communicating and getting the right data into our systems that make operations and maintenance better, faster and cheaper? Are we increasing the safety of our process and our employees by letting our smart devices tell us what they need when they need it? The answers are yes, no, and sometimes.



More information
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WHITE PAPER

How will Your Instrumentation Commissioning Strategy Impact Operations?

By Jason Riegert, Endress+Hauser Canada Ltd

A well-established commissioning and start-up plan works for you in reducing costs, maximizing manpower utilization and ensuring a time plan is executed throughout the highs and lows that occur from construction to operations. But are there more benefits that you need to be asking for?

Commissioning and start-up of a new facility/expansion offers a unique opportunity, as this is the only time each and every instrument is touched at least once. Information collected during this important phase of the plant's life-cycle significantly impacts operational excellence by ensuring that future operators and maintainers are equipped with valuable information that will enable them to make informed decisions impacting safety, yield/quality and process availability.

Take this methodology one step further and connect this information to your partners and now through collaboration the information on hand can be enriched.

DEFINITIONS

BPCS	Basic Process Control System
EWS	Engineering Work Station
OPS	Operator Station
SAGD	Steam Assisted Gravity Drainage
SAP	Systems Applications and Products in Data Processing
ERP	Enterprise Resource Planning

Through experience on oil sands projects with respect to commissioning and start-up activities, this paper demonstrates proven techniques that work!

Instrumentation is the measurement and final control equipment used to monitor and control processes throughout all modern oil sands facilities found in Alberta today. Instruments are the eyes and ears, for all that goes on inside plant pipes and vessels while the actuated control elements are the hands. In the grand scheme of all equipment that is purchased, instrumentation accounts for a relatively small portion of the overall capital spend. However, don't underestimate the value of properly commissioned instrumentation – instrumentation has the uncanny ability to impact start-up and operational success when it hasn't been commissioned properly!

This paper utilizes real project experience from a few SAGD oil sand projects Endress+Hauser has worked on in an all-encompassing instrumentation, commissioning and start-up role. This means every instrument (flow, level, pressure, temperature, analytical and gas detection) and every control valve including actuators, positioners and limit switches, regardless of manufacturer.

Over the last decade or so, modularization has proven to be the most efficient approach to project construction/fabrication versus the site-built method. Construction may be completed in the vendor's fabrication yard while other modules may be assembled in a module yard. Module yards are located near urban areas where resources are relatively

Having an asset information strategy can save time and money as up to 40% of equipment downtime is due to delays spent searching for asset information.

easy to come by thus providing for significantly reduced overall commissioning and start-up costs. This approach does come with its own challenges. Vendor fabricated skids may arrive with various equipment and instrumentation types from various suppliers. Quite often, the commissioning team are well aware of all the instrumentation being supplied however, it does happen that documentation packages or “data books” lag behind the shipment of the vendor skid. Early detection of issues from vendor/module packages, deviations from engineering drawings and the requirements of the automation system are key to success. Finding and solving the majority of issues in the module yard prior to dispatch of packages to site saves time, minimizes expense and eliminates a multitude of start-up delays. This approach succeeds over other approaches that rely on telephone support with the original equipment manufacturer for every step due to missing information, manuals and equipment familiarity.

Commissioning preparation work actually starts well before this. Utilizing the instrument index, the first step is to prepare for the commissioning, the vendor packages and the module yard work. Compiling asset information, vendor specific test equipment, and tools prior to commencing work in the module yard is a very critical step. Manuals, data sheets, checklists and P&IDs need to be

available while commissioning, as it is too late to be searching for asset information when you are already in the module yard. This is where Endress+Hauser’s approach differentiates. Utilizing a web-server based software suite installed on a local server, we prepare for all known assets prior to dispatching our team to the module yard. The approach taken allows for the commissioning team to leverage experience, knowledge and information collected – even from past projects. Asset information from previous projects may prove helpful for the odd pieces of equipment that were not preplanned. All of the data collected during the preparation is loaded into a web-enabled asset-information management suite. As the work continues the asset information within grows. All asset information is collected in a robust and reliable format that makes the information future ready after start-up regardless of the systems to be utilized later.

Upon receipt of each vendor fabricated skid or newly constructed module, function testing is initiated and documented. This eliminates many equipment issues that can go undetected for long periods and quickly derail a project timeline. With this approach, more than 90% of the post-fabrication, validation and pre-commissioning efforts for the vendor fabricated skids and module yard construction is completed prior to dispatch to site.

If we evaluate the cost of commissioning and starting-up instrumentation without asset information versus an approach that proactively invests in preparation and accessible documentation, a savings of 10% of the assets’ investment value can be achieved. Plus an additional 5% in time savings can be realized. These savings are recovered as early as the commissioning phase of the plant. Each time the information is quickly retrieved and utilized again and again to operate and maintain the plant’s instrumentation; even further savings are achieved, over and over again across the entire life-cycle of the asset. This leads to a higher-than-average savings on the total cost of ownership. Quite simply put: without a proactive approach to asset information, the losses can be compounded year over year (figure 1). The immense pressures surrounding start-up and operational success suffocate even the most skilled maintenance teams with the burden of seeking and identifying missing asset information. Getting ahead of the increased asset operating costs requires a lot more effort while the plant is operating than it does during the commissioning preparation phase.

Commissioning offers a unique opportunity that normally occurs only once in a plant’s life time: to document and archive all asset information whether it’s initial factory

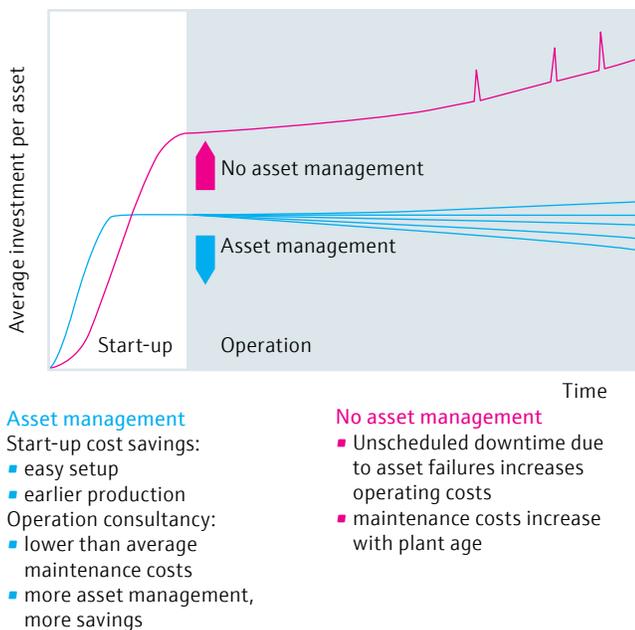


Figure 1: Average investment per asset from cradle to grave

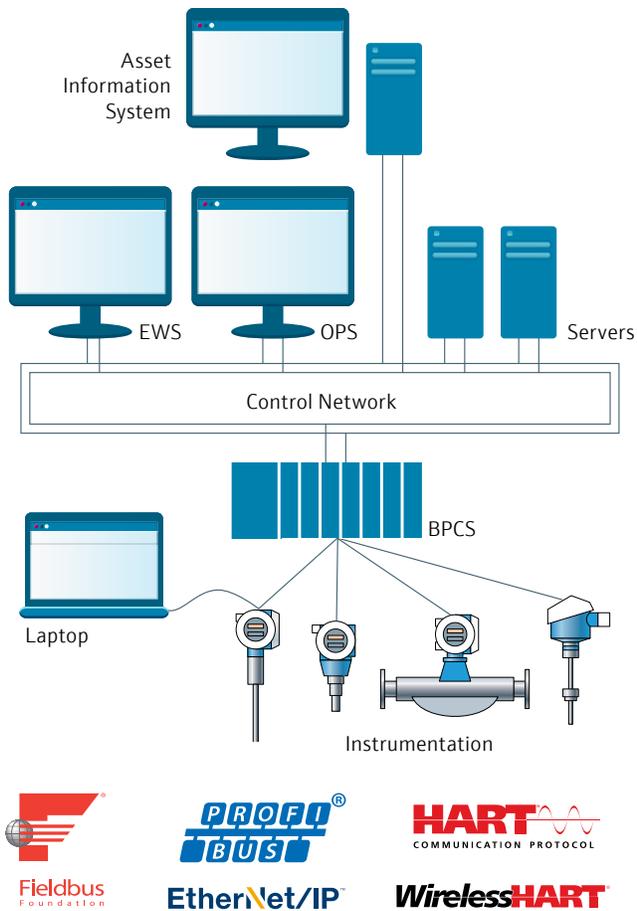


Figure 2: Typical plant structure regardless of smart technologies employed

calibration, test plans and inspections, operation and maintenance manuals or baseline configuration, verification and status. Even for plants that have standardized on a specific manufacturer or main instrumentation vendor, the vast diversity of instrumentation vendors is concerning.

The easiest method to collect, validate and retain asset information is digitally over intelligent automation networks or over fieldbus segments utilizing an intelligent software installed on a server, PC, laptop or tablet.

Figure 2 is a typical automation architecture where device configurations can be quickly accessed centrally or at the device – enabling precise records of all intelligent device parameters in 90% less time than it takes to perform this task manually. The final step of commissioning and start-up should include a finger print of the final as left device configuration. Changes in the device configuration over the device’s life cycle will be almost always compared to this baseline.

An open and transparent asset information strategy for all assets is the real key to success, especially where manual



Figure 3: View the Manufacturer Tree for a plant with more than 2,000 instrument tags.

View Location Tree and browse through the plant areas to find a particular asset.

Asset Information System - AT-80213

TAG: AT-80213
Order code: OCX88C-11-10-1-1-H3-02-01
Device type: Oxygen & Comb. Gases Monitor
Manufacturer: Rosemount

Environment conditions: Not defined
Criticality: Not defined
Risk of maintainability: Not defined

Order code details:
 OCX88C = O2/Combustibles Transmitter - Flameproof
 11 = 18 in. (457 mm) 316 SST up to 1300°F (704°C)
 10 = (ANSI 2 in. 150 lb) 6" dia. flange, 4.75" BC with 4 x 0.75" dia. holes
 1 = New Installation - Square weld plate with studs
 1 = Probe Only (ANSI)
 H3 = Communications with Calibration Solenoids(2)
 O2 = Remote Electronics and no cable
 01 = Flow meters & Ref. Air Set

Figure 4: All devices are well supported in the Asset Information System

Asset Information System - PT-30003

TAG: PT-30003
Order code: PMC71-VBC1S2RDAAU
Device type: Pressure, Process
Manufacturer: Endress+Hauser

Environment conditions: Not defined
Criticality: Not defined
Risk of maintainability: Low

Device location information:
Location: Diluent Building
Location details: P-300A diluent discharge

Product status: Available

Maintenance advice(s)	
New alternative	<input type="radio"/>
Phase out date	Open
Order stop	Open
Spare sensor availability	Open
Calibration until	Open
Spares availability	Open
Repair until	Open

Figure 5a: Click through data tabs for all assets

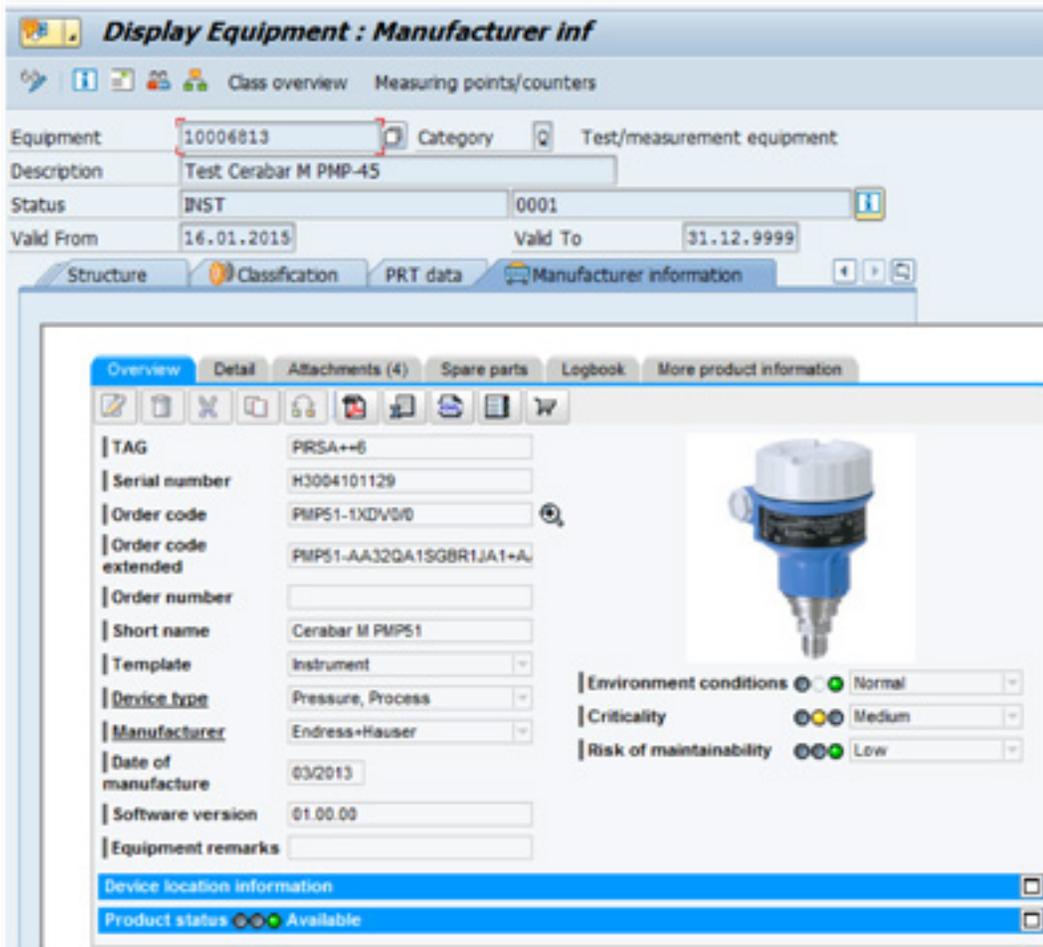


Figure 6 - Integration solution in the SAP Asset Viewer

efforts can be minimized or eliminated. As the installed base ages, finding the manuals that relate to the version of device you have installed will become more and more difficult. Having the right information from cradle to grave reduces the all too common risk of up to 40% of equipment downtime due to delays spent searching for asset information. Figures 3 to 6 demonstrate the level of information that can be collected throughout commissioning and start-up. This information is available to other applications already employed by the producer company using standard and open interfaces, to systems like SAP. Most of the world's energy companies utilize SAP over any other Enterprise Resource Planning (ERP) system. In the figure 6 example SAP has written a technical note (#1636398) delivering cost savings and reduced

complexity to integrate the asset information into a single authoritative database.

Starting out on the right foot by ensuring your commissioning team has integrated asset information collection into their processes ensures that operations and maintenance will be best prepared to take ownership. Our experience demonstrates that operational success depends on a collaborative approach toward asset information. Developing collaboration is about commitment. When you have the option to select an experienced commissioning and start-up partner with field-proven experience, who can deliver asset information from all instrumentation vendors to your tools in ways that work, select Endress+Hauser.

Proline Prowirl C 200

Carbon steel vortex meter for higher process safety and controls



Compliant

- Higher process control – unique inspection concept allowing visual assessment of primary element in compliance with AER Directive 017 guidelines
- Heartbeat Technology™ – continuous self-diagnostics and device verification which complies with AER Directive 017 guidelines

Robust and reliable

- Patented differential switched capacitor sensor for high resistance to vibration, temperature shocks and water hammer
- Carbon steel for high resistance against inter-granular stress corrosion cracking
- Best long-term stability thanks to lifetime calibration factor
- Prowirl 200 vortex meters successfully installed in over 300,000 applications worldwide



The Prowirl C 200 vortex meter is the preferred measuring principle for wet/saturated/superheated steam with high chloride content in steam-assisted gravity drainage (SAGD) applications. It offers higher resistance to inter-granular stress corrosion cracking.

It has been designed specifically in line with AER Directive 017 guidelines for the Canadian oil and gas industry.

With its unique inspection concept for Prowirl C 200, Endress+Hauser has developed a solution that makes it possible to make a visual inspection of the sensor and perform maintenance on an installed device to comply with the requirements of AER Directive 017.

Your benefits

- Maintenance cost savings with inspection port eliminating the need to remove flowmeter
- Effortless inspection procedure complying with regulatory requirements
- High resistance to intergranular stress corrosion cracking thanks to the carbon steel body
- Unmatched long-term stability in operation with patented DSC sensor
- Convenient device wiring with separate connection compartment

Technical data

Maximum measured error	Mass flow (steam and gas) $\pm 1.7\%$ - o.r.
Line sizes	2" to 6"
Turndown	50:1
Process pressure	Class 600 and 900
Process temperature	From -40°C up to $+400^{\circ}\text{C}$
Process connection	Flanges
Communication	HART®, PROFIBUS PA, FOUNDATION Fieldbus
Ex approvals	CSA C/US and SIL 2/3

Available in compact and remote versions



Plant Asset Management

Reduce capital and operating expenditure on assets by optimizing workflows and business processes

All field devices in a production process are assets. Each has to be configured, maintained and calibrated. The associated asset information must be managed and kept up to date throughout the plant life cycle. NAMUR recommendation NE 129 outlines a strategy for managing plant assets that envisages three areas of action:

1. Continuous evaluation of asset health throughout the life cycle of the plant
2. Provision and archiving of plant information, with seamless transfer of data from the engineering and start-up phase to the operations phase
3. Interaction with users, ensuring that operators and maintenance staff are always aware of any actions required to keep the plant running

This three-fold approach provides a solid foundation for continuous improvement of operation and maintenance workflows:

- Having asset information – identity, calibration certificates, configuration history, spare parts, etc. – at your fingertips allows you to react quickly to current issues and plan improvements for the future
- Planning, data acquisition and archiving tools allow your maintenance staff to work faster and more efficiently

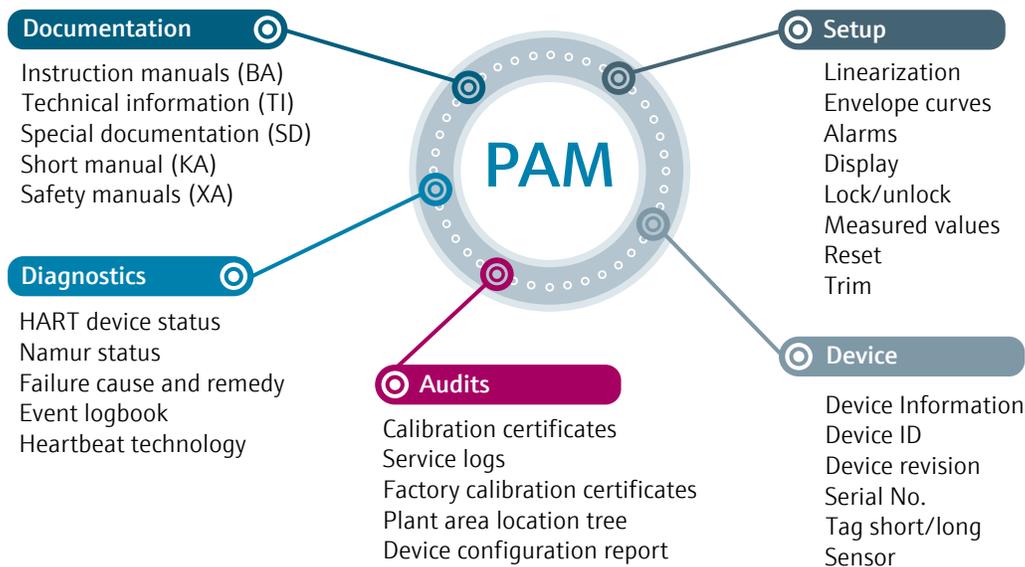
Endress+Hauser's offering in Plant Asset Management (PAM) reflects the NAMUR criteria as well as other de-facto standards and best-practice recommendations. We support you with our asset management solution and services, optimizing your ability to produce, improve quality and reduce operational costs.

Benefits

In addition to our instruments, we offer asset information as well as the solutions to access and manage it over the plant life cycle.

- Current life cycle management information for entire Endress+Hauser installed base
- ERP integration
- Partner with unparalleled knowledge of the integration, set-up and maintenance of field instrumentation
- Full support in planning and executing Plant Asset Management projects

The Value of Endress+Hauser's Plant Asset Management Software



Asset Information Portal (W@M)



Endress+Hauser can help!

Knowing your assets and keeping them healthy is essential to optimizing maintenance and production. With Endress+Hauser, you have a partner who understands field devices and who can help you get the most out of them in both start-up and operational phases.

Endress+Hauser helps you to optimize workflows and processes related to your plant assets:

- Bring your field instrumentation quickly into operation
- Ensure that it performs correctly when your process is up and running
- Minimize downtime with full access to asset information

The right data, where and when you need it

Often the most challenging aspect of a quality audit is finding calibration certificates for the specific devices and assets being audited. Over 70% of a team member's time can be spent investigating the whereabouts of such asset information.

Having a central location for all your asset calibration certificates is integral in the process of organizing your audit process. A well-organized online asset information portal allows the user to easily navigate their facility in a virtual space and quickly find any asset information necessary including calibration certificates.

Endress+Hauser's Service Department delivers sophisticated calibration certificates upon successful completion of all device calibrations and automatically uploads them to your Asset Information Portal (W@M). This means that without any effort, your calibration certificates are where you need them, when it counts the most, saving you time, effort and stressful situations.



Commissioning

Get your process up and running – on time and budget

The ideal start-up solution for instruments with common features and functionality in standard applications.

Includes:

- Visual inspection of installation
- Configuration
- Output value check
- On-site instruction
- Service report
- Extended warranty

Benefits

Instrumentation commissioning by factory trained technicians means:

- Cost and time savings
- Efficient transfer of knowledge
- Peace of mind
- No investment in tools and training necessary
- Conformity to federal and provincial health & safety and environmental standards
- Timely submission of documentation package based on project schedule and required approvals

Cost and time savings Optimum set-up by qualified technicians means less effort and potential reduction of time loss for your teams.

Efficient transfer of knowledge On-site instruction during commissioning is a quick and practical method to pass on information on how to set-up and operate instrumentation.

Extended warranty Choose Endress+Hauser to commission your instruments and open the door to extended warranty!

Peace of mind Optimization and confirmation of the performance of the measuring point in order to minimize breakdown potential.

No investment needed Provision of specific tools and software provides traceable reference and ensures optimum performance and functionality.

Conformity to the internal and external standards Detailed reports and backup files for every device guarantee traceability. All Endress+Hauser Canada technicians are trained in the latest federal and provincial health & safety and environmental regulatory standards.



Skills, tools, qualification – Endress+Hauser has it all

With more than 50 years' experience in process instrumentation and a global team of experts at your disposal, you can rely on us for all your commissioning needs.

Endress+Hauser Canada service technicians perform the set-up of instruments according to defined Standard Operating Procedures (SOP). This ensures constant performance quality wherever the location and whoever the technician. Technicians are trained to application-specific regulatory requirements and are keen to share their application know-how with your staff.

Our teams use special tools designed to ensure quick and efficient commissioning of instruments and confirm the function of the device through the delivery of standardized reports. For larger projects, Endress+Hauser also offers on-site supervision and management of the complete commissioning phase.

Continuous measuring points such as:

- Level
- Flow
- Pressure
- Temperature
- Analytical

As well as commissioning of registration, displays and industrial networks.

Don't forget the last piece of the puzzle!

Correct commissioning of process instrumentation is of paramount importance for optimum performance. What's more, with the demands on your engineering and maintenance staff higher than ever before, time, human resource and specific skills become critical factors when a project is nearing completion.

What is W@M – Life Cycle Management?
W@M provides document traceability 24 hours a day, 365 days a year.



W@M – Life Cycle Management is a secure internet portal which provides each account holder with online access to a database of information containing all of their installed instruments. For example, it provides constant access to all Endress+Hauser device-relevant documentation throughout the complete life cycle of an instrument, from engineering and procurement to installation, commissioning and operation.

Click on a serial number and a detailed description of the instrument appears. W@M also allows you to trace the main events since the instrument production date (maintenance, calibration, parts replacement, etc.) and provides you with the latest information on obsolescence.



Reliable measurement results up to the system level

Complete multi-point check from sensor to the system ensures the correct signal integration into the system, including conformity statement.

Loop validation included in the individual device report and the backup files.

Installation qualification of your device

Experienced and qualified service technicians support your requirements.

Effluent Monitoring Solutions

Avoid Unnecessary Fines

The Challenge

Between 1991 and 2009 the average quantum of environmental fines and penalties issued by all federal and provincial regulators in Canada was \$1.4 million per year. Ontario alone issued a total of \$3.2 million in fines and penalties, amounting to a 290% increase in 2015 versus the long-term historical average.

The increased pressure from government to decrease biochemical oxygen demand (BOD) effluent loads and to reduce the risk of spikes in pH in effluent has been quite evident. Ensuring your plant has an accurate and available pH measurement is more important than ever.

Ensuring the accuracy and stability of a pH point has long been a challenge of the industry and something which takes effort and resources to achieve.

The Solution

Endress+Hauser has developed a redundant pH system capable of self-monitoring to ensure continual operation. The system can operate with pH alone or with the addition of product loss detection and total suspended solids sensors.

pH Redundancy

Three pH measurements are analyzed in tandem within Endress+Hauser's CM44P Liquiline transmitter. The two

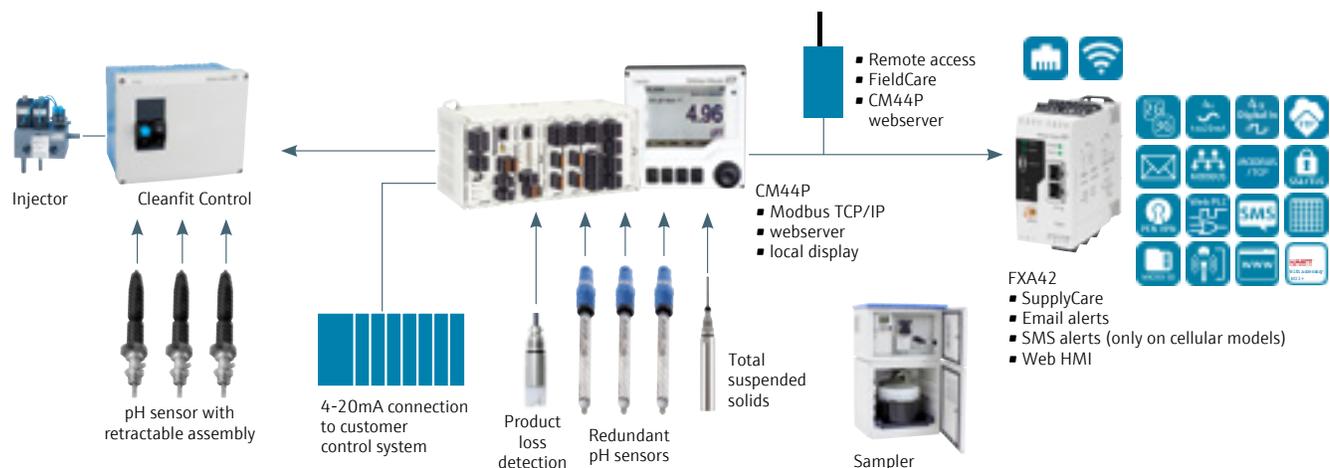
Benefits

Monitoring and trending your plant's effluent ensures:

- Your plant meets all relevant discharge regulations in order to avoid fines
- Availability of historical data of your effluent for traceability
- Gain transparency of effluent leaving your facility to identify the processes and activities in your facility which lead to product losses
- You can trust in your pH measurements and receive immediate email and SMS notifications for pH spikes
- Peace of mind, knowing your effluent discharge is compliant

closest pH values are averaged by the CM44P and are taken as the most accurate measurement.

In order to provide functional feedback and ensure an accurate and consistent measurement, if any pH measurement drifts outside of a predefined bandwidth, the system alarms via SMS and email to key stakeholders within the plant and Endress+Hauser's service team.





“You can’t manage what you can’t control, and you can’t control what you don’t measure.”

Traceability

All pH measurements are recorded within the CM44P transmitter and captured by the Endress+Hauser service team and delivered as a report each month. This historic data can be used for analysis, trending and in the case of federal or provincial audit.

This data can also be uploaded to your W@M Endress+Hauser asset management portal so that it may be stored in one central location.

Identifying Product Loss

As the data captured is readily available, it is possible to trend spikes daily, weekly and monthly to show trends during these periods. Having access to the time and size of these spikes gives a layer of transparency to the possible processes or activities which are ran at these times. This helps you to trend and identify key ways in which to reduce product losses and effluent spikes.

Remote Monitoring

Using our Endress+Hauser FXA42 FieldGate, your pH redundancy system communicates via SMS and email to both key stakeholders within your organization, as well as highly trained Endress+Hauser technicians. Instant notice of spikes in pH in your effluent load allows you to take the necessary action when it counts.

Our Endress+Hauser factory-trained technicians immediately log remotely into your system to see what is happening within the process and ensure the spikes recorded are being addressed.

When a pH probe measures outside of tolerance, Endress+Hauser’s service department schedules a service visit to replace the probe to ensure the system is functioning as it should. This way, your pH system is always accurate and reliable.

More than Meets the Eye

The system may be equipped with product loss detection and total suspended solids measurement, Endress+Hauser Cleanfit retractable cleaning system and an Endress+Hauser CSF34 Sampling System to ensure you have more information and insight into your effluent process.



Real World Hands-on Training

Courses offered at our PTU[®] (Process Training Unit)

Our process instrumentation schools are designed to teach fundamental, theoretical and practical knowledge about instrumentation and application technology – with an emphasis on service and maintenance of instrumentation. Each course contains a balanced mix of lecture, discussion and opportunities to take a hands-on approach to learning.

Hands-on learning is facilitated by working instruments as demonstration units on the bench, in actual working conditions installed in a PTU or in portable training stands designed to simulate actual operating conditions. All instructors are seasoned professionals with years of real-world experience in measurement.

Stay current with the right training for you



Coriolis Flow Fundamentals FC103

Two-day (16 hours)
[Course outline online](#)



Certified Profibus Training CC201

Three-day (24 hours)
[Course outline online](#)



Electromagnetic Flow Fundamentals FC104

Two-day (16 hours)
[Course outline online](#)



Certified FOUNDATION Fieldbus Training CC202

Three-day (24 hours)
[Course outline online](#)



Vortex Flow Fundamentals FC105

Two-day (16 hours)
[Course outline online](#)



Industrial Ethernet Training CC203

Two-day (16 hours)
[Course outline online](#)



Ultrasonic Flow Fundamentals FC106

Two-day (16 hours)
[Course outline online](#)



Certified EtherNET/IP Training CC204

Two-day (16 hours)
[Course outline online](#)

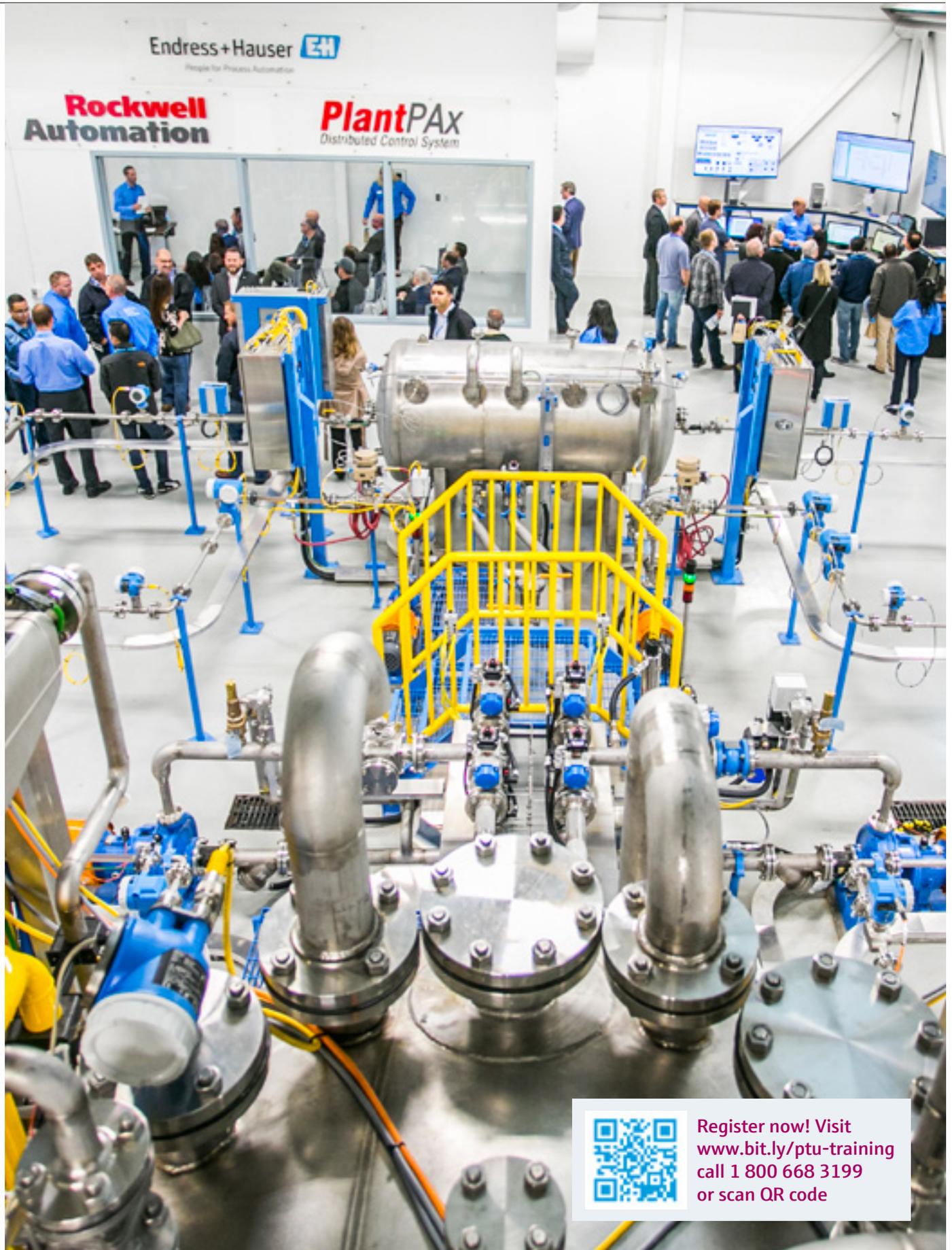


Time of Flight Level Fundamentals LC103

One-day (8 hours)
[Course outline online](#)



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- With a wide range of topics, you're sure to find a subject to suit!



Wednesday, October 25, 2017; 10 to 10:45 a.m and/or 3 to 3:45 p.m. EST

Heartbeat instrument verification across all measuring technologies

Learn about our range of instruments with integrated Heartbeat Technology that offer the advantages of advanced diagnostics, inline verification and condition monitoring – all helping to achieve documented proof testing and confirmation of measurement accuracy.

 bit.ly/heartbeat-verification



Tuesday, November 28, 2017; 10 to 10:45 a.m and/or 3 to 3:45 p.m. EST

Increase efficiency by implementing our new products with basic functionalities to operate your plant

Join our webinar for more information on our range of cost-effective instrumentation designed specifically for the food & beverage industry. Despite the lower price tag, these devices still meet the strict hygienic requirements and applications demands. What's more, they're easy to use without the need for any additional tools! Sounds good? Then find out more.

 bit.ly/increase-efficiency



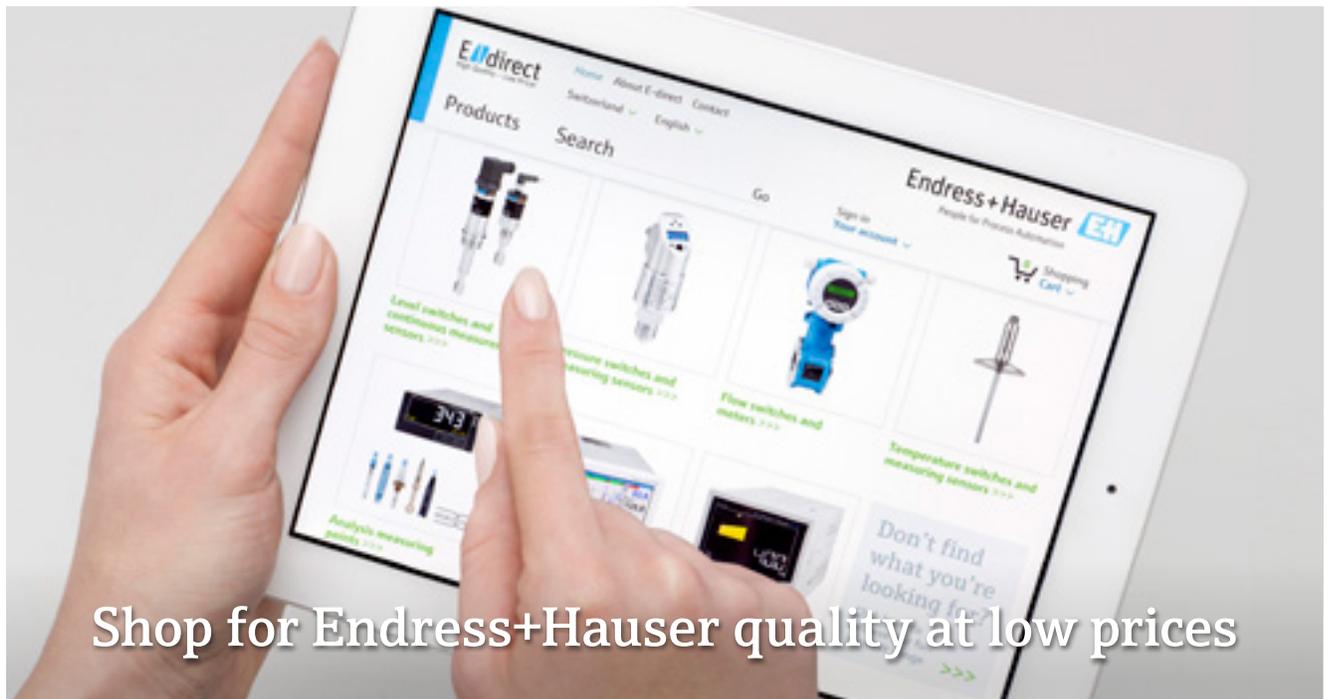
Monday, December 4, 2017; 10 to 10:45 a.m and/or 3 to 3:45 p.m. EST

Efficient calibration ensures your product quality

In regulated industries such as the food & beverage and life science sectors, consistent quality and compliance are of the utmost importance. We offer a range of measurement solutions to help you achieve your goals with our robust, proven-in-use product portfolio. Better still, we can ensure all your instruments stay on track and offer the best accuracy and product yield with our traceable and accredited calibration services.

 bit.ly/efficient-calibration

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What is E-Direct? E-direct complements the traditional range of products from Endress+Hauser. Certain instruments do not require a vast amount of consultation in terms of application and price – that's where E-direct can help. It's a product portfolio that offers simple product selection and fast delivery at an affordable price. What's better? Your confirmed order ships within 48 hours of receipt!

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