

talkline

4 Lab-Volt Training Units

Endress+Hauser instruments play a key role in preparing students for the workforce

5 New Product

Electronic Differential Pressure for Level Measurement
Deltabar FMD72

9 Devon Canada

Radiometric solution



Index

9 A Single-Source Solution for Devon Canada at Jackfish 2

Endress+Hauser Radiometric Density Profiling Systems



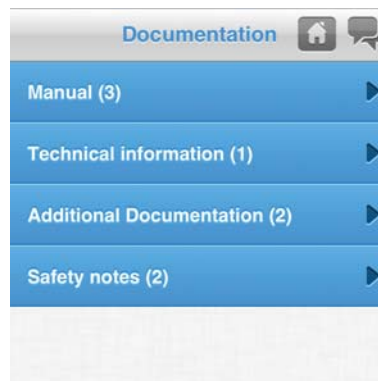
12 Device Performance Monitoring in the Dairy Industry

High equipment availability with Plant Asset Management



14 Endress+Hauser Operations App

Mobile access to information about your installed Endress+Hauser instruments



4 Endress+Hauser Instrumentation – in theory and in practice with Lab-Volt

When Lab-Volt, a global leader in portable educational laboratory provision, wanted to provide students with the best examples of what they may experience in the field, they involved Endress+Hauser.

5 Imagine Impulse Line and Capillary-Free Multivariable Level Measurement

Eliminate mechanical issues with Endress+Hauser's new Electronic Differential Pressure Systems.

15 Tradeshow schedule 2013

Please stop by our booth at these trade shows – we look forward to seeing you.

15 2013 Calendar

Order your's today!



Our valued friends, customers and business partners

Dear Reader,

As we prepare to bid farewell to another challenging and dynamic year, I want to thank each and every one of our customers and business partners for their continued trust and support. Your confidence in our services and products combined with a shared spirit of partnership, allowed us all to meet new challenges and realize even greater successes in 2012.

What's in store for 2013? You can count on Endress+Hauser to continue with significant R&D investments. We will continue to introduce state-of-the-art technologies, products, services and innovative, yet practical solutions. We will work tirelessly towards fostering deeper ongoing relationships with you ... for mutual benefit. We will continue our commitment towards helping you maximize your processes and product quality. When you are as competitive and efficient as possible, then our partnership is truly working. Ultimately, through serving your needs in a collaborative manner, we aim to deliver tangible benefits to your bottom line.

On behalf of all of us at Endress+Hauser Canada, thank you for your continued support and friendship this past year. To each and every one of you ... and your families ... we extend our best wishes for a safe and relaxing Holiday Season. We look forward to working and partnering with you towards the achievement of your 2013 goals.

Sincerely,

Richard

Richard Lewandowski
CEO



Endress+Hauser Instrumentation — in theory and in practice with Lab-Volt

When Lab-Volt, a global leader in portable educational laboratory provision, wanted to provide students with the best examples of what they may experience in the field, they involved Endress+Hauser.

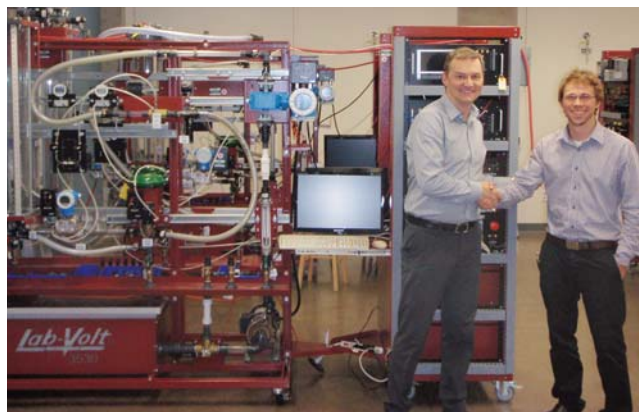
The same high standards that make Endress+Hauser a leader in process instrumentation in more than 4000 industry applications around the world made it the right choice when training future technicians and operators in the classroom.

With plants in Canada and the United States, and representation in more than 70 countries around the world, Lab-Volt is internationally recognized for the design and production of portable technical training units for public education, industry and the military. For more than 50 years, the Quebec-based company has built its reputation on providing cost-effective, state-of-the-art training apparatuses that simulate situations that would be found in industrial environments. And when Lab-Volt designs its successful laboratory units, Endress+Hauser instruments are a key part of the plan.

“Endress+Hauser is a world-renowned leader in process instrumentation products,” says Stéphane Casse, Eng., Engineering Team Manager at Lab-Volt. “They offer a complete line of products, compared to some other manufacturers who only offer a limited line. Moreover, they invest in new product development in order to stay at the forefront of technology, and they provide excellent service, which has always been a priority at Lab-Volt, so we can in turn maintain our quality service to our clients.”

Since Lab-Volt serves clients around the world and communications protocols vary on different continents, they need instruments and transmitters that can work within the HART, Foundation Fieldbus, and Profibus PA communication protocols. The versatility that makes Endress+Hauser a leading solution in a number of industries provides a full range of the options Lab-Volt required for its clients.

The Lab-Volt Series 3530 Instrumentation and Process Control Training System, in particular, includes a number of Endress+Hauser smart transmitters and detectors, such as: differential pressure transmitters, flow transmitters, level transmitters, temperature transmitters, analytic transmitters, and metering pumps.



“Thanks to the modular construction of the instruments, the students can better understand them as they can study them individually,” says Jean Fortin, Professor and Discipline Manager in Technology of Industrial Electronics at the Institut des Procédés Industriels, Collège De Maisonneuve (Institute of Industrial Processes, College of Maisonneuve) in Montreal, a Lab-Volt client. “Further, the instruments can be set up in different layouts to show their impact according to each specific layout. For example, a magflow meter must be set vertically. The Lab-Volt equipment will show the results of a bad placement of the instruments.”

The clear and easy-to-read displays of Endress+Hauser instruments also provide a benefit to students, according to Professor Fortin: “The students must be able to draw the connection between a reading and the signal sent by the transmitter. Without a display, the student must read the signal with an ammeter in order to validate the reading. With a display, this inconvenience is excluded and one can understand faster what is going on.”

Providing students with quick and understandable feedback, Endress+Hauser instruments can help them better recognize the circumstances and react, just as they would in a stressful job site situation. Then, when Professor Fortin’s students leave the classroom and enter the workforce, they will likely find the same accurate, reliable and operator-friendly Endress+Hauser instrumentation in the field that they trained on with Lab-Volt laboratories.



Imagine Impulse Line and Capillary-Free Multivariable Level Measurement

Eliminate mechanical issues with Endress+Hauser's new Electronic Differential Pressure Systems



Reliable
Safe
Cost Effective

Electronic Differential Pressure
for Level Measurement
Deltabar FMD72





Endress+Hauser – Working with You Every Step of the Way

Endress+Hauser has the expertise, products, services and tools to support our customers from the time they identify a need for measurement and automation to the maintenance of the resulting solution.

Endress+Hauser has served its customers with innovation for more than 50 years. And, during that time, Endress+Hauser has accumulated a vast knowledge of process applications.

With that knowledge and experience we help you:

- Choose the best sensing technology for your applications using state of the art instrumentation with ever-increasing diagnostic information availability
- Manage your project timeline and budget
- Design your system architecture
- Plan the fieldbus network that best suits your plant and its topology
- Procure products in the most convenient, cost-effective way
- Maintain and operate your plant by providing configuration tools, training, calibration, startup services and more – customized to your needs

We are where you are with our network of sales and service personnel to support your needs – every step of the way.

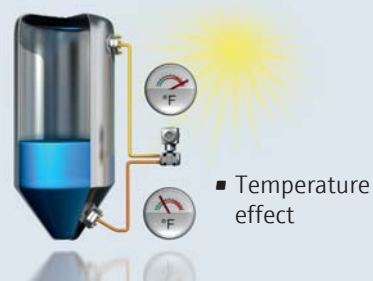
Electronic Differential Pressure for Level Measurement

Differential Pressure measurement is often used to measure the level in pressurized and vacuum tanks. Traditional differential pressure measurement using impulse lines and capillaries have issues that can lead to less accuracy, process safety risks and greater total cost of ownership. This can be especially true in tall distillation towers or other vessels with varying ambient temperatures.

Disadvantages of Impulse Lines



Disadvantages of Capillaries



Reliable

- Eliminate measurement drift due to ambient temperature changes – up to 95%
- Differential pressure, head pressure and sensor temperature from one system – available via HART®
- Continuous health indication of the entire system via HART® diagnostics
- Faster response time than traditional capillary systems – up to 10 times faster!
- Standard cabling connections provide flexibility

Safe

- Eliminate tubing and connection leaks often seen with traditional systems
- Eliminate line condensation or evaporation events (dry/wet leg inconsistencies) and plugging events
- Reduce field personnel safety exposure risks

Cost Effective

- Use existing wiring when installing replacement systems
- No system recalibration or reconfiguration required with any component change
- Water tight, quick disconnect between sensors
- Fewer spare parts – replace individual components of the system as needed
- No need for varying lengths of capillary systems
- Use industry standard cable
- Just one technician to install entire system
- No need for freeze protection/heat tracing



Watch the movie

www.youtube.com/watch?v=cgHC_oKfcU4

The **Deltabar FMD72** system uses proven pressure sensor technology in a new and innovative way. The system consists of two sensor modules and just one transmitter. One sensor module measures the hydrostatic level (high pressure) and the other one the head pressure (low pressure). The level is calculated out of these two values in just one transmitter.



Sensors

- Intuitive, menu-driven installation
- Screw terminals for easy connection
- Color coded wiring
- Ample space for installation
- NEMA 4x/6P (IP66/IP68) housing and cable
- Preconfigured at the factory with user defined settings
- Tether on sensor lids

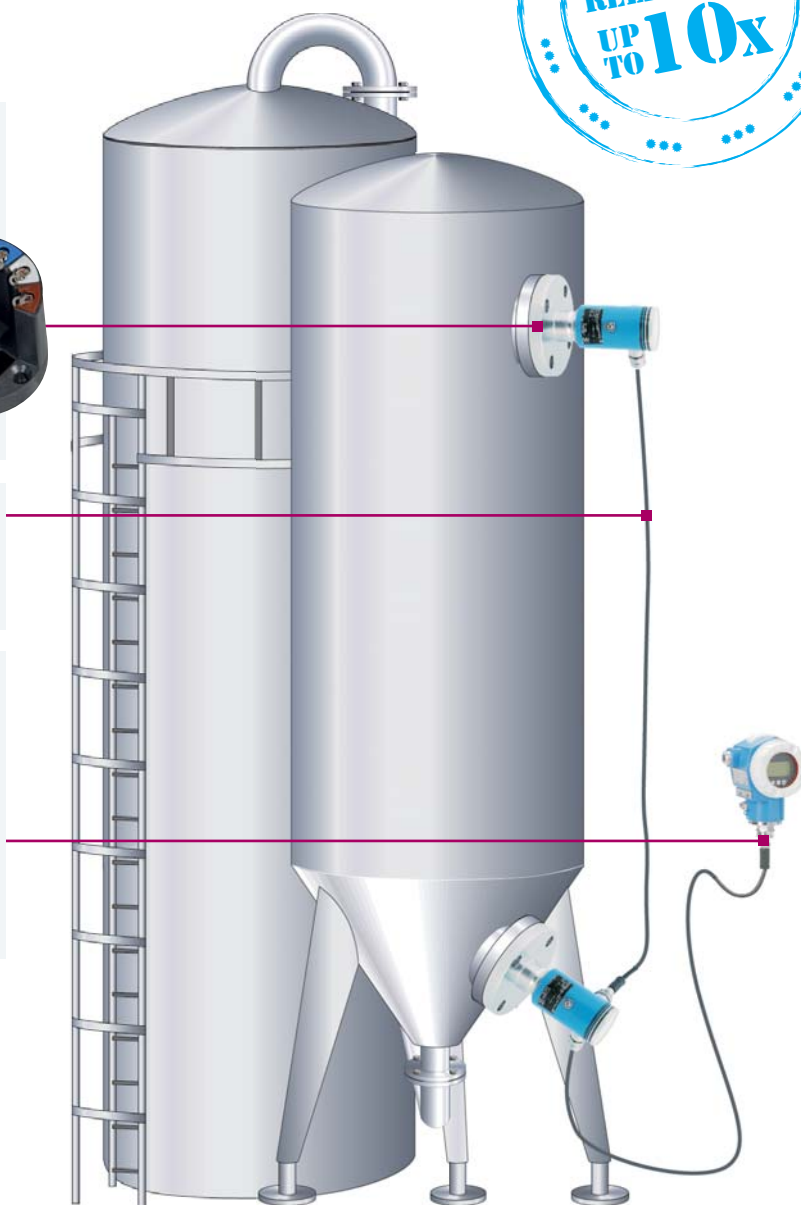


Cable

- Field adjustable cable
- Uses industry standard cable

Transmitter

- Performance independent of transmitter position
- Transmitter can be installed in convenient personnel safe area
- Local operation compliant with hazardous area classification (via external push buttons)



Your advantages at a glance:

Reliable

New electronic differential pressure system eliminates traditional mechanical issues resulting in greater process availability and reliability.

Safe

Safety risks are minimized with the new electronic differential pressure system architecture and design.

Cost Effective

Lowest total cost of ownership due to reduced installation time, maintenance, downtime and spare requirements.

Additional benefits

- Multivariable level measurement – differential and head pressure, as well as sensor temperature
- Easy product selection and sizing via Online Applicator software
- W@M – Life Cycle Management compliant

Technical data

- Loop powered, 4...20mA HART®
- Supports 12VDC powered installations
- Replace individual components of system as needed
- Seamless integration into existing systems– no need to change power supply or cable

Select the optimal technology for your Level Measurement

Electronic dp level measurement

Accuracy: single sensor $\pm 0.075\%$
system $\pm 0.1\%$

Option: single sensor $\pm 0.05\%$
system $\pm 0.07\%$

Measuring range:
-6...6psi to -15...150psi
(-400...400mbar to -1...10bar)

Process temperature:
-40...257°F (-40...125°C)



Advantages

- Proven, established technology utilized in a new innovative way
- Quick & easy engineering
- One standard transmitter for level, differential pressure, pressure and sensor temperature
- Eliminate issues with mechanical differential pressure systems

Contact Endress+Hauser

- Process temperatures $> 257^\circ\text{F}$ ($> 125^\circ\text{C}$)
- Ratio level to head pressure $> 1:6$

Conventional dp level measurement

Accuracy (sensor element): 0.075%

Option (sensor element): $\pm 0.05\%$
system depends on installation conditions

Range: -15...150psi (-1...10bar)

Process temperature: -40...+660°F
(40...350°C)



Advantages

- Proven technology
- One standard transmitter for level, pressure and differential pressure

Contact Endress+Hauser

- Large temperature fluctuations with long capillary systems and small process connections
- Mechanical issues with impulse lines

Non-contact radar

Accuracy: $< 32\text{ft}$: $\pm 0.12"$ ($< 10\text{ m}$: $\pm 3\text{ mm}$),
 $> 32\text{ft}$: $\pm 0.03\%$ ($> 10\text{ m}$: $\pm 0.03\%$)

Option: $\pm 0.04"$ ($\pm 1\text{ mm}$)

Measuring range: 1...229ft (0.3...70m)

Process temperature: -76...+752°F
(-60...400°C)



Advantages

- Non contact measurement
- No influence by density variations
- Top or bypass mounted

Contact Endress+Hauser

- Big obstacles in radar beam
- Heavy foam
- Dielectric constant < 1.4

Guided radar

Accuracy: $< 49\text{ft}$: $\pm 0.08"$ ($< 15\text{ m}$: $\pm 2\text{ mm}$)
 $> 49\text{ft}$: $\pm 0.4"$ ($> 15\text{ m}$: $\pm 10\text{ mm}$)

Measuring range: 0.7...148ft (0.2...45m)

Process temperature: -321...+842°F
(-196...450°C)



Advantages

- No influence by density variations
- No influence by tank baffler
- Top or bypass mounted

Contact Endress+Hauser

- Heavy build-up
- Dielectric constant < 1.4
- Strong loads



For more information:

www.endress.com/electronic-dp



A Single-Source Solution for Devon Canada at Jackfish 2

Endress+Hauser Radiometric Density Profiling Systems

After successfully building its first Steam Assisted Gravity Drainage (SAGD) project, Jackfish, Devon Canada sought to find opportunities to continuously improve its operations. Today, working with Endress+Hauser and adapting some new technology, Devon Canada has set a new standard for its Thermal Heavy Oil operations.

“Incorporating radiometric density profiling has helped us reach desired production levels quicker and minimized the amount of plant upsets that occurred along the way.”

Douglas Burnett, Instrumentation Coordinator,
Thermal Heavy Oil, with Devon Canada.

Devon Canada, headquartered in Calgary, is an oil and gas exploration and development company with land holdings encompassing nearly 5 million net undeveloped acres in Western Canada, including a significant stake in the oil sands.

Historically, the company has had significant experience with conventional oil and gas wells. The thermal heavy oil extraction process involved in the oil sands provided new challenges when Devon Canada initiated the Jackfish 1 project. The sand and solid content of the fluid is higher than in conventional reservoir extraction. The water/oil



fluid extracted using steam-assisted gravity drainage (SAGD) processes in the oil sands is at an elevated temperature, well above the boiling point. Additionally, the water and oil are molecularly bonded in an emulsion, requiring the addition of chemicals and diluent prior to the emulsion entering the primary separation vessels.

Devon Canada overcame these challenges and started up its SAGD operations at Jackfish 1 in late 2007. While Jackfish 1 is a proven success, the company identified potential areas of improvement in the operations. The nature of the oil sands means the chemistry of the extracted fluids changes when new wells are brought on line, requiring time-consuming hand-drawn sampling and leading to a great deal of maintenance and cleaning. As well, measurement of the fluid levels in the separation tanks can be inaccurate.

Devon Canada has made a corporate commitment, in policy and practice, to the principles of water conservation and reuse. At Jackfish, the company committed to using only saline water for its steaming operations – the first commercial SAGD facility to do so. Based on the results at Jackfish 1, Devon Canada was interested in improving its performance; to decrease the steps involved in producing pipeline-quality oil and reduce the time, costs and any environmental considerations of the process.

When Jackfish 2 was initiated, Endress+Hauser became a supplier for the Jackfish 2 team. One of the key solutions Endress+Hauser helped Devon Canada implement was radiometric density profiling for its free water knockout vessel (the primary separation vessel for the production fluid from the wells) and treater vessels (used to bring the diluted bitumen to pipeline quality, so it can be shipped to market). The goal was to provide accurate measurement of oil, water and rag layers in order to increase accuracy and minimize downtime.

“It takes 12-18 months from the first time we introduce steam into the reservoir on a facility of this size to be able to achieve desired production levels,” says Burnett.

More commonly used in other applications, radiometric density profiling offers an excellent solution to SAGD level measurement challenges. The Gammapiot M FMG60 model used by Devon Canada delivers operators at Jackfish 2 with a real-time graphic depiction of the fluid levels in the vessels. Using a single radioactive source inside the tanks and several receivers in different positions outside them, a precise profile is created of the level of the heavy oil, the water, and the emulsion “rag” layers. With an accurate understanding of what is happening in the FWKO and treater vessels, Devon operators can adjust flows on the fly and ensure outputs meet the required specifications with much greater efficacy.

“The radiometric solution is one of the key tools that helped us increase performance at Jackfish 2,” says



Burnett, indicating that the technology has reduced labour and resources for both operational and maintenance groups. “Because the technology is non-intrusive, it is far less of a burden on our maintenance team. Operationally, there has been more time spent focusing on data from the control system and less time analyzing hand-drawn emulsion samples. We are now able to be more proactive than reactive.”

The radiation levels involved in radiometric profiling are similar to those used in the medical, mining and energy industries and the technology has proven to be safe, reliable and cost-effective in thousands of cases around the world.

“Technically we are very confident that we are being supplied with the best possible solution each and every time we make a choice. These decisions are not made in haste,” Burnett explains. “Endress+Hauser was also able to present case studies that were very similar to our situation and were functioning well in very similar applications, albeit different sectors of industry. We were just presented with various solutions and the pros and cons of each of them.”

With Gammapilot instrumentation incorporated in Devon Canada’s plans, Jackfish 2 had first production in June 2011. Devon Canada operators received training from an embedded Endress+Hauser team to adapt to the new technology and Endress+Hauser continues to provide a dedicated support team to assist and troubleshoot as required.



“Operations have reported that vessels have seldom been off-spec since operation commenced,” says Burnett. “This is stellar.”

With the impressive results coming from Jackfish 2 and the instrumentation guidance of Gammapilot technology, Devon Canada has moved forward with the next phase of its Jackfish development and radiometric density profiling technology is an integral part of the Jackfish 3 plan.

! Which radiometric option is right for you?

There are three standard radiometric density profiling systems available in the marketplace:

Motor-driven scanners:

A radiometric source and receiver are installed inside the vessel, moving in unison through the vessel to deliver complete density information.

Multiple source-multiple detectors:

Radiometric sources are placed at a number of depths through the vessel, with corresponding receivers providing spot density information to operators.

Single source-multiple detectors:

A single radiometric source is installed inside the vessel with several receivers outside the vessel, each drawing data through multiple layers. The information is then correlated to provide an accurate profile of density levels.

Devon Canada decided to move forward with a single-source system for its Jackfish operations. Here’s why:

“We did entertain other options, including multiple-source solutions,” explains Doug Burnett, Instrumentation Coordinator, Thermal Heavy Oil with Devon Canada. “Our vessel size and shape were well within the capabilities of a single-source solution. We did not see an advantage in a multiple-source solution in this application as there are challenges in eliminating cross talk.

“Secondly, the single-source solution truly represents a cross-sectional average and is based on very fundamental geometric principles. It is also quite easy to modify and expand the system, if required. One source is also advantageous when it comes to containment and licensing, simplifying the whole situation.”

Device Performance Monitoring in the Dairy Industry

High equipment availability with Plant Asset Management

Introduction

Ten years ago, the end user – a leading company in the dairy industry – installed the first PROFIBUS network in its plant. Since then, the company has worked continuously on the development and optimization of process automation. In 2010 they introduced PROFIBUS diagnostic modules and in 2011 the company commissioned our Plant Asset Management system that included the Condition Monitoring module. In a further step, two Plant Asset Management servers were added:

- One for Device Configuration, Maintenance and Life Cycle Management (FieldCare Plant Asset Management + W@M Enterprise)
- One for Device Performance Monitoring (FieldCare PAM + Condition Monitoring)



Procedure Dairy processing companies are more or less in constant operation. Production hold-ups must be avoided at all costs, so that very high demands are set on the availability of technical equipment.

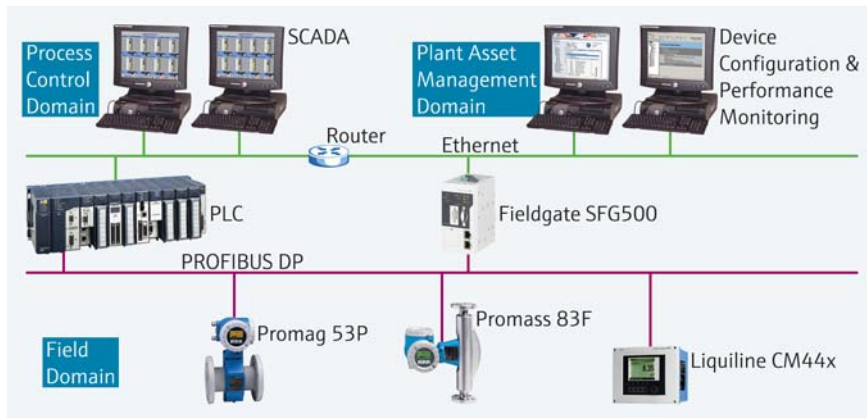
For this reason, our end user has chosen PROFIBUS. One of the most important jobs of their technical department is to ensure uninterrupted production. It is fully operational 24/7/365 – in other words, it never stops. When they opted for PROFIBUS in 2001, an industrial communication standard with optimum functionality was the target. In 2006 frequency inverters were integrated into their PROFIBUS system, mainly for pumping and stirring operations, and two years later the first PROFIBUS instruments were added.

In 2009 Ethernet/PROFIBUS Fieldgates were installed for communication with FieldCare, used for maintenance and administration. The installation continued to grow and with 48 PLCs and PROFIBUS DP

networks they decided for a permanent diagnostic facility.

In 2010 the installation of PROFIBUS diagnostic modules for 29 of those networks were selected. These report irregularities in critical process instruments. The diagnostic capability with the implementation of Device Performance Monitoring was completed in 2012.

Objectives What does the end user aim to achieve with device and network performance monitoring? In the first place they want to be informed by email of any irregularities. 100 flow transmitters, 700 pressure transmitters and 1,000 temperature transmitters are involved – a huge number, calling for an automated approach. They must be able to monitor all their networks online. Specialists from the Technical Department can then access the network from a remote location by means of a VPN connection and lend their support to colleagues who are working in the field.



Network schematic of the Plant Asset Management System



A glimpse inside the production area

Device Performance Monitoring

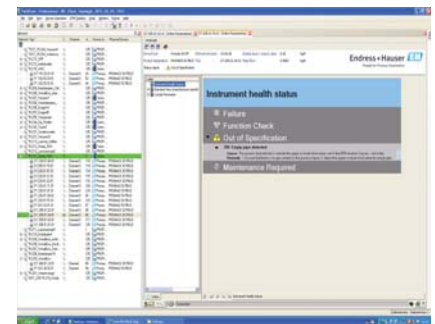
With FieldCare Diagnostics and Device Performance Monitoring, Endress+Hauser offered a perfect tool that enables our end user to configure PROFIBUS equipment fast and faultlessly. Nowadays, modern instrumentation is so intelligent that the configuration of instruments is best done from a central location. For example the mass flow meters were configured to measure the volume and mass flow of lactose simultaneously.

Another end user objective was preventive maintenance. Performance monitoring allowed the identification of slow responses from measuring instruments or valve positioners at an early stage. Just as important is the finding and tracking of changes in the network. Using the Audit Trail it is possible to trace who has done what

and when. The system also provides secure storage of device parameters with records of previous settings. Finally all manuals are available electronically so that the end user's staff can consult the documentation anywhere and anytime.

Benefits of Plant Asset Management

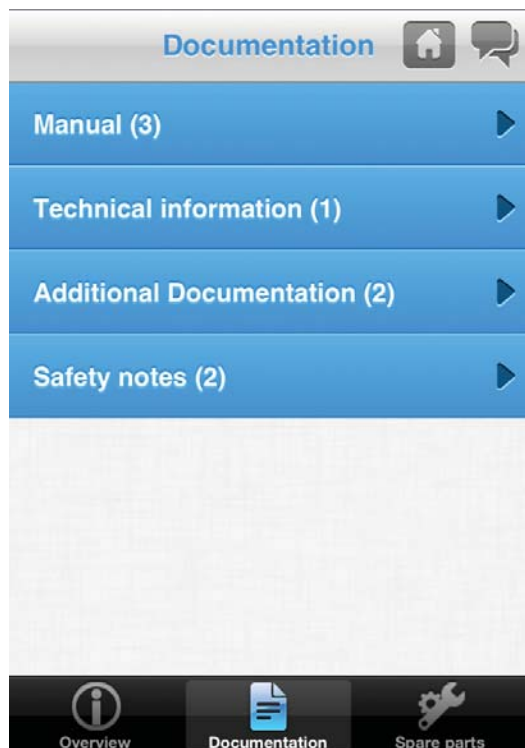
- Remote maintenance
- Securing device parameters
- Identification & tracking of changes
- Email notification for irregularities
- Monitoring device & network performance
- Supporting preventive maintenance



Screenshot: FieldCare instrument health status

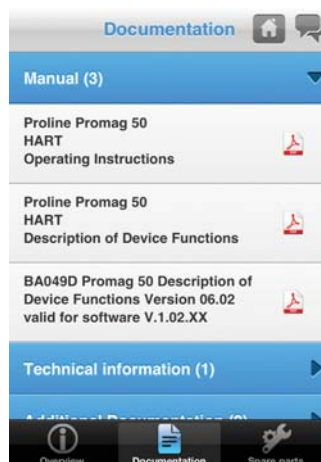
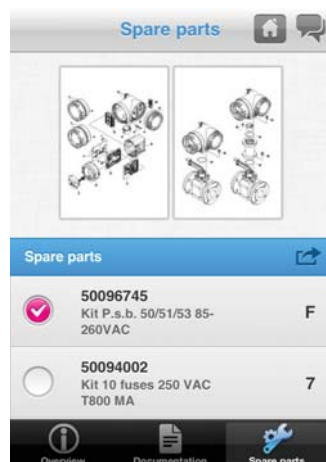
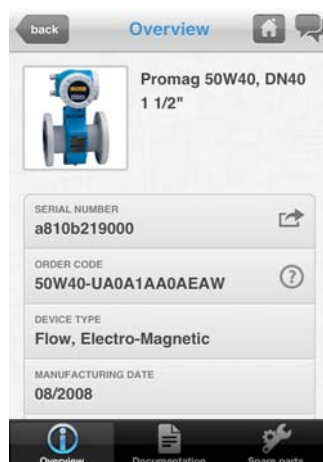
Endress+Hauser Operations App

Mobile access to your device information



Scan the QR-Code to download the Endress+Hauser Operations app and get mobile access to information about your installed Endress+Hauser instruments – wherever you are, whenever you need it. (Available for iPhone and iPad on the App Store)

The Endress+Hauser Operations app offers fast access to specific documentation such as operating instructions and technical information of your Endress+Hauser field instruments e.g. order code, availability, spare parts, successor products for old devices and general product information. Simply enter the serial number or scan the data matrix code on the device to download the information. Moreover, you can share the information and documents with your colleagues by email.



Tradeshow schedule 2013

MWWA	February 3-6	Victoria Inn, Winnipeg, MB	www.mwwa.net
Eau Potable, QC	February 7	Hôtel Plaza Québec, QC	
ISA Sarnia	February 26	Holiday Inn, Sarnia, ON	www.isasarnia.com
AWWOA	March 11-12	Banff Park Lodge, Banff AB	www.awwoa.ca
CsHM	March 19-20	Hyatt Regency, Calgary AB	www.cshh.ca
Americana	March 19-21	Palais des congrès, Montreal QC	www.americana.org
ISA Hamilton	April 3	Royal Botanical Gardens, Hamilton, ON	www.isahamilton.com
WEAO	April 7-9	Toronto Congress Centre, Toronto, ON	www.weao.org/annual-conference
OPCEA	April 7-10	Toronto Congress Centre, Toronto ON	www.opcea.com
ISA Calgary	April 17-18	Stampede Park, Calgary, AB	www.isacalgary.com
BCWWA	April 20-24	Kelowna, BC	www.bcwwa.org
MPWWA	April 21-24	Moncton, NB	www.mpwwa.ca
CIM	May 5-8	Metro Convention Centre, Toronto ON	web.cim.org/toronto2013
Atlantic Canada Petroleum Show	June 19-20	St. John's, NF	www.atlanticcanadapetroleumshow.com
Western Canada Water	September 17-20	Edmonton, AB	www.wcwwa.ca
SWWA	November 6-7	TCU Place, Saskatoon, SK	www.swwa.ca



Endress+Hauser 2013 Calendar

If you haven't received our 2013 wall calendar, please place your free order at info@ca.endress.com



Update your Talkline subscription:

www.ca.endress.com/talkline

info@ca.endress.com

Issue 62

Contact

**Endress+Hauser
Canada Ltd**
1075 Sutton Drive
Burlington, ON L7L 5Z8

Tel: 905 681 9292
1-800 668 3199
Fax: 905 681 9444

**Endress+Hauser
Canada Ltée**
6800 Côte de Liesse
Suite 100
St-Laurent, QC H4T 2A7

Tél: 514 733 0254
Téléc.: 514 733 2924

**Endress+Hauser
Canada Ltd**
4th floor, 805 - 10th Avenue SW
Calgary, AB T2R 0B4

Tel: 403 777 2252
1 888 918 5049
Fax: 403 777 2253

**Endress+Hauser
Canada Ltd**
Edmonton, AB
Tel: 780 486 3222
1 888 918 5049
Fax: 780 486 3466

Vancouver, BC
Tel: 604 925 7600
Fax: 604 925 7601

PHOTO DE COUVERTURE : Jackfish 1, Devon Canada, © Devon