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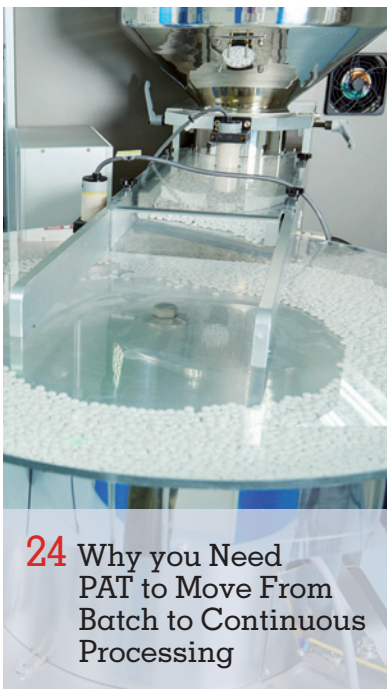
PCN^{Europe}

processing & control news

ADVANCES IN THE FIELD OF CHEMICAL INJECTION

In many applications the smallest amounts of a fluid must be measured with high accuracy

Page 12



14 EXCLUSIVE INTERVIEW:
Off to new Shores
With Joined Forces

22 PRODUCT FOCUS:
Pumps, Valves &
Compressors

24 Why you Need
PAT to Move From
Batch to Continuous
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Dear Reader,

The issue you are holding in your hands is already the last one of the year. We are happy that we are able to bring to you interesting news and solutions from the processing world. Our Measurement Technology focus - starting page 8 -



for example is introducing a new, non-invasive temperature measurement device that is easy to install, a flowmeter that helps boosting efficiency in production and a monitoring system for clean rooms.

But the contents not only concentrate on measuring, our exclusive interview in this issue comes with news from industrial players who joined forces to bring their extensive expertise together with the goal of smarter products for the field. If you are curious, read more on page 14.

As every November, sps is taking place in Nuremberg, the automation show in the heart of Franconia has changed its name to smart production solutions and this is for sure what will be presented there by more than 1600 international exhibitors. One thing that will not change is that we will be there to find new products and trends to report to you. If you are in Nuremberg yourself, visiting sps, we invite you to our stand for an exchange with the team in hall 3 549.

I hope you will have an interesting read with this issue and as usual: Please contact me if you have a feedback for us or an idea for a story to share with our readers.

Editor of PCN Europe

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Next Issue: March 2020

Hannover Messe Focus
Automation & Process Control Focus
Special: Food & Beverage

5
Industry News

6
New Products

Measurement Technology

8
Reduced Testing and Maintenance Efforts for Plant Operators with new Sensor Test Concept.

10
Non-invasive Temperature Sensors - a Better Method of Industrial Temperature Measurement.



12
Advances in the Field of Chemical Injection. Highly Accurate Coriolis Flowmeter.

16
Cleanroom Monitoring - Reliability for the Toughest Requirements

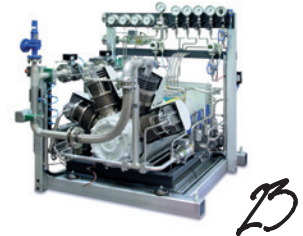
18
Product Focus: Oil & Gas

20
Why you Need PAT to Move from Batch to Continuous Processing.

22
Product Focus: Pumps Valves & Compressors

24
The Advantages of Cold Aseptic Filling

26
Index



Exclusive Interview

14
Off to new Shores With Joined Forces
Krohne and SAMSON decided to start a collaboration to develop new products that combine the expertise of both companies and help their customers solving problems the smart way. PCN Europe interviewed the two General Managers of the new company FOCUS-ON, André Boer (KROHNE) und Kavreet Bhangu (SAMSON).



Siemens and Grundfos Sign Digital Partnership to Tackle Global Water Challenges

Siemens and Grundfos have signed a digital partnership framework for strategic cooperation between the two companies. The new partnership focuses on the complementary products and solutions provided by both parties in three main areas: water and wastewater applications, industrial automation and building technology. Both parties are entering into this partnership with the aim of achieving sustainable global change by joining forces in digital solutions. "We are delighted to be further extending our collaboration with Grundfos," states Klaus Helmrich, Member of the Managing Board of Siemens AG and CEO of Digital Industries. "Siemens and Grundfos are combining the competences of both companies in order to support our joint customer base in their digital transformation and in the implementation of intelligent solutions." Mads Nipper, Grundfos-CEO adds: "Our purpose is to pioneer solutions that contribute to solving the world's water and climate challenges. To live up to that purpose, we are on a major digital transformation journey to supplement our pump solutions business by also becoming a digital solution and service provider. Partnering with Siemens is a big step in this direction."

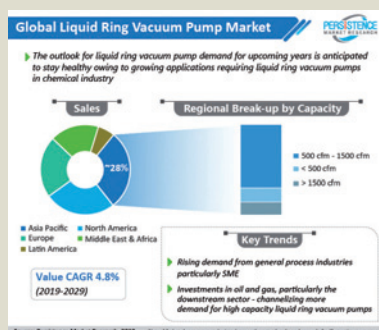


New Report on Liquid Ring Vacuum Pump Market by PMR

The global value of the liquid ring vacuum pump market reached ~US\$ 2 Bn in 2018, discloses the recent study from Persistence Market Research. As per the research, the liquid ring vacuum pump market is estimated to grow at ~5% CAGR during the forecast period to 2029. Growing demand for liquid ring vacuum pumps from chemical and general process industries is expected to drive the growth of the liquid ring vacuum pump market during the forecast period.

According to the analysis and detailed study, investments in oil and gas, particularly in the downstream sector, and rising demand from the chemical industry have positively impacted the growth of the liquid ring vacuum pump market. Furthermore, high demand for liquid ring vacuum pumps for chemical processing and oil & gas industry applications is directly contributing

to the expansion of the liquid ring vacuum pump market. Substantial demand for cast iron vacuum pumps is fueling the growth of the liquid ring vacuum pump market during the forecast period.



Collaboration on Secure IIoT

Skkyne Cloud Systems announces a cooperative agreement with Siemens Mobility GmbH to provide a highly secure Industrial IoT hardware and software combination. Siemens Mobility's Data Capture Unit (DCU) ensures one-way data flow will be connected to industrial and corporate software using Skkyne's DataHub real-time middleware, allowing secure access to plant data by corporate IT staff and cloud services in real time. The Data Capture Unit (DCU) from Siemens Mobility is a small, reliable and cost-effective hardware implementation of data diode technology designed for Industrial Internet connectivity. It is designed to eliminate any direct wired (optical or copper) physical connections. This allows the DCU to meet all major cybersecurity regulations for critical infrastructure and to operate in rugged environmental conditions. The Cogent DataHub from Skkyne has been extensively tested by Siemens Mobility to act as a secure and easy-to-configure One-Way Gateway (OWG) for the DCU. The DataHub software collects and filters data on the OT side, supporting protocols OPC UA, OPC DA, OPC A&E, and Modbus. The data is then sent via the DCU to a second DataHub on the IT side, which pushes it along by TCP or ODBC to IT applications, or by MQTT to Siemens' IoT platform MindSphere or other cloud services. The DataHub's secure-by-design architecture is fully compatible with the DCU's one-way model, and allows industrial protocols like OPC UA and others to function seamlessly with the DCU.



Technology for Sustainable Textile Fibres gets Investment for Commercial Scaling

With new growth capital of 11 million euros, the sustainable fibre technology company Spinnova is starting the commercialization phase of the world's most sustainable textile fibre. The company aims to revolutionize the raw material base of the textile industry with its cellulose-based fibre products in collaboration with major textile brands. Spinnova is a Finnish, sustainable deeptech company that has developed a disruptive technology for manufacturing cellulose-based textile fibres. Spinnova's patented method includes 0% harmful chemicals and 0% waste or side streams, making the fibre and the production the most sustainable in the world. Spinnova is beginning to plan for its commercial phase after passing its most important milestone so far; getting proof of concept from its pilot factory. The pilot line was completed in Finland last December and ramped up over early 2019. Now fully operational, the pilot is producing fibre for Spinnova's brand partners, while Spinnova scales towards a commercial facility.



POWER SUPPLY WITH SIL CERTIFICATION

Approval for use in potentially explosive environments



The new QUINT POWER power supply from **Phoenix Contact** enables you to achieve high operational safety, even for demanding applications. The Plus version with protective coating and ATEX/IECEx approval enables use in potentially explosive areas (zone 2). It has an integrated decoupling MOSFET and double overvoltage protection with

SIL 3 certification. The static boost, which provides up to 125% of the nominal current for a sustained period, enables easy system expansion. Heavy loads can also be started easily, thanks to the dynamic boost, which provides up to 150% of the nominal current for five seconds. With a mains failure buffer time of at least 20 ms and an integrated gas discharge tube for high electrical noise immunity up to 6 kV, the device has a robust input side. The comprehensive signaling with analog, digital, and relay contacts provides preventive function monitoring. It reports critical operating states before errors occur. Thanks to the wide temperature range from -40°C to +75°C, the Plus version is also suitable for use under extreme environmental conditions.

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MASS FLOWMETER WITH SANITARY DESIGN

FDA-certified for use in food and beverage processing



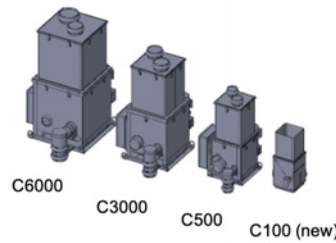
AW-Lake offers a sanitary design of its TRICOR PRO Plus Coriolis Mass Flowmeters with 3-A Sanitary Certification for use in food & beverage. Recognized by the USDA and FDA, the 3-A certification serves as proof that AW-Lake TRICOR PRO Plus Coriolis Mass Flowmeters meet sanitary standards necessary for

food and beverage processing. Offering a compact and high-performance flow measurement solution for sanitary environments, the mass flowmeters incorporate a sensor with their DSP transmitter in a compact configuration for simple installation in a variety of applications with limited space. Units are capable of multivariable measurement including flow, density and temperature and provide fast updates for process control in the food & beverage industry. The PRO Plus offer very high measurement accuracy, low pressure drop, very stable zero point, and first-class data update rate with fast 100 Hz signal transmission. A high oscillating driver frequency provides greater immunity to process noise, more reliable measurement and higher resolution. The high natural frequency ensures these digital meters are safe in plant operations with high vibrations. The Series is available in three flowmeter sizes including ½", 1" and 2".

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FEEDER FOR SMALLER FEED RATES

Extension of series for use in masterbatch applications



With ProFlex C 500, 3000 and 6000, **Schenck Process** already offers three feeder sizes with a total of five extension hoppers. Now the new ProFlex C100 is added to fit on small extrudes. It comes in low weight. Up to five feeders can be grouped

around an inlet of a lab or small size extruder. A quick change hopper option in the ProFlex line for fast and clean change over without disassembling of the feed screw. By keeping several hoppers including screw in stock, a wide range of additives and color pigments can be provided for in a highly flexible manner. The asymmetric design prevents bridging and plugging of sticky material. The new C100 is equipped with an integrated gearbox for turndown ratios of up to 1:120. Flexible wall liner is massaged at eight points, which allows a constant and accurate filling of the screw feed element. With its NEMA drive ready for compounding and masterbatch, the units are prepared to enter the US market. The ProFlex C feeding system is used for the continuous feeding of bulk materials such as powder, granulates, pellets or fibers. Optimized design, flexible hopper walls and flexible installation options make the ProFlex C a tailored solution for the compound and masterbatch industries.

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WEARABLE CAMERA & THERMAL IMAGER

Intrinsically Safe Camera for Hands-Free Collaboration



With the Cube 800, the Pepperl+Fuchs brand **ecom** has launched a portable and explosion-proof infrared and HD video camera for Zone 1/21 and Div. 1. ecom developed and distributes the Cube 800 in cooperation with Librestream. Both companies are meeting the increasing demand

for a peripheral device that provides HD digital and thermal imaging technology for inspections and maintenance in potentially hazardous areas. In combination with the intrinsically safe ecom smartphone series Smart-Ex or tablet series Tab-Ex, workers can remotely control the camera, view HD video and thermal imaging, or capture and annotate pictures or recordings from a safe distance in real-time. Critical areas on the plant can thus be identified much quicker and repair measures initiated immediately. The integrated thermal imaging camera of the Cube 800 with long-wave infrared (8-14µm), a thermal sensitivity of <50mK and automatic flat field correction (FFC) indicates potentially critical, overheated areas. The optical HD camera with 13 megapixels and 3x digital zoom records high-resolution videos and pictures. A light ring and a class 1 laser target pointer ensure high image quality. Simultaneous recording and display of HD and infrared video is also possible via a Smart-Ex or Tab-Ex mobile device.

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Automated Monitoring of Sensitive Bioreactor

Thermal Mass Flow Meters and Controllers Ensure Greater Accuracy for CO₂ Monitoring in Bioreactor Process

A biotech company producing highly nutritious, all-wild algae replaced inaccurate sight meters with Vögtlin red-y smart High-Precision Thermal Mass Flow Meters and Mass Flow Controllers to more accurately monitor gas flow within the very sensitive bioreactor process that cultures the algae. As biotechnology is a sensitive science, small differences in process conditions make a substantial difference in results.

Sight glass meters were susceptible to temperature and pressure deviations, resulting in value variations by 10% or more. The red-y smart Thermal Mass Flow Meters and Controllers offered a highly reliable and automated solution for CO₂ onboard totalizing and flowrate indication to support greater process results. With repeatability of less than 0.2%, the Vögtlin Thermal Mass Flow Meters and Controllers ensure the same value every time gas is added to the bioreactor process.



Automation for faster and better results

By providing an electronic output, the red-y smart Thermal Mass Flow Meters and Controllers eliminate the need for operators to manually read meters.

Automating processes is critical to modern biotechnology research to reduce error and costs while providing faster results. Other capabilities of the Thermal Mass Flow Meters and Controllers include onboard totalizing, flowrate indication as well as the ability to adjust the flow on the fly to accommodate process variables.

Utilizing MEMS sensor technology, Vögtlin meters and controllers are extremely fast, accurate, and highly repeatable, making them ideal flow devices for any bioreactor process.

The Vögtlin mass flow instruments guarantee flexibility with a turndown of over 1:100 (large turndown helps cover huge gas mix ranges with fewer mass flow controllers and simplifies systems and reduces costs). With their strong valves they handle a range of inlet and outlet pressures. The meters can be programmed with up to 10 different gases.

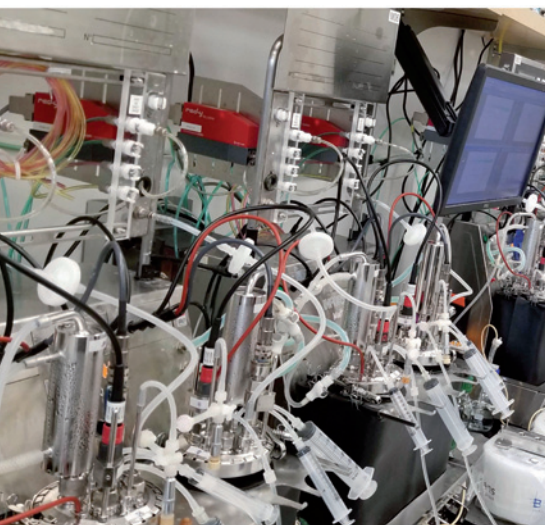
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Reduced Testing and Maintenance Efforts for Plant Operators

Sensor test concept based on FDT saves time and money

Regular testing of electrical systems is a rather unpopular task in many industrial companies, not least because regular proof tests often result in a costly process interruption with subsequent recalibration and reparameterization. That's why many companies often react only when a malfunction occurs. But not only is proof testing required by law. It helps to provide more protection and safety and, in terms of predictive maintenance, can also save costs in the long run.

PROOF TESTING ACCOMPLISHED WITH MINIMAL EFFORT

For many VEGA sensors, the cost of such tests can be effectively reduced. Once triggered by the VEGA DTM, the field instruments run through the mandatory tests during system operation and the final results are displayed in the VEGA DTM. This provides maximum safety and fulfills all legal requirements. The latest DTM generation now goes one step further than its predecessors: It offers the op-

tion of printing the complete results report or saving it as a pdf document. This makes work easier for plant operators because the documentation is automatically done for them. The required documents are ready to go in a jiffy. Just sign them and you're done.

TEST PASSED? OR NOT?

Especially in SIL applications, clear visualization of the results of the self-test reduces the workload considerably. The DTM effectively issues a "report card" for the level and pressure sensors VEGAFLEX 80, VEGAPULS 60 and PROTRAC. The document certifies the exact condition of the instruments. Just like in school, a glance at the first page of the report is enough to see the most important thing immediately: "Passed" or "failed"!

COMPLETE DATA HISTORY SAVED

VEGA has been using the VEGA DTM for years to document the parameter settings

of its level and pressure sensors. The DTM also forms the basis for reliably diagnosing the instruments at any time and storing the entire data history on a laptop for longer periods.

The intelligent test concept of VEGA instruments ensures that all self-test results are permanently available in the event memory. On this basis, it takes only one further small step to consolidate the valuable instrument data into a test document in the DTM – and present it in a clever, as well as clear and legally compliant form. Over 40 individual parameters are noted as checked and, in an ideal case, marked with "ok" and a "green tick".

A RELIABLE DIAGNOSTIC DUO

The test concept is based on a service-proven duo: A diagnostic unit integrated in the sensor, which collects diagnostic information continuously, and the universal adjustment software PACTware. PACTware allows all instruments to be accessed, while the associated detailed information is provided by the DTM, the Device Type Manager.

This combination ensures continuous diagnosis of all field instruments in use. It notifies the user of irregularities and documents the results of the required proof tests.

EXTENDED SERVICE LIFE OF THE SYSTEM

The VEGA DTM not only simplifies proof tests. It transforms a corrective maintenance concept into an intelligent preventive maintenance concept. This minimizes the risk of failure of the system and extends its service life.

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NON-CONTACT RADAR MEASURING DEVICE

Level measurement for challenging hygienic applications



Those facing challenges in measuring fluid levels in hygienic applications should be aware of Bürkert's new Type 8139 non-contact radar measuring device. Designed to provide highly accurate, continuous measurement for specialised tanks that contain difficult to measure fluids, the Type 8139 is optimised to meet the needs of the pharmaceutical, food and beverage and water industries. The Type 8139 is suitable for bioreactors, ultra-pure water storage tanks, clean agent

storage, beer and raw milk tanks, as well as containers for liquid foodstuffs, water treatment tanks, mixing and equalisation ponds, intake channels and flocculant storage tanks. What differentiates the Type 8139 from competitive solutions is how it applies its radar signals. Delivering a radar frequency at 80 GHz with a dynamic range of 120 dB ensures continuous radar measurement of the medium. Higher frequency translates to short radar wavelengths, improving the accuracy of received signals. As a result, the Type 8139 delivers a measuring accuracy of +/- 1 mm, regardless of temperature or pressure in the tank. Another challenge that the Type 8139 overcomes is the interference by equipment installed in the tank, such as heating coils and agitators.

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OVAL GEAR FLOWMETERS

Accurate Flow Rate Measurement of Viscous Liquids



Titan Enterprises' OG range of Oval Gear flowmeters provide the perfect solution for accurate measurement of the flow of viscous liquids and lubricating fluids. Unlike other flowmeters, measurement accuracy with oval

gear devices actually improves as the liquid viscosity increases, from a nominal 1% to around 0.1% of flow rate at higher viscosities. The OG range of oval gear flowmeters are compact, rugged and deliver unprecedented performance at a low cost of ownership. Available as standard with stainless steel or aluminium bodies, the flowmeters are bidirectional and available in sizes from 1/4 to 2-inches (6 to 50 mm), for flows between 1ml/min and 500l/min. For applications involving measurement of corrosive or caustic fluids, versions of flowmeters with completely non-metallic wetted components (ceramic, PEEK and a choice of elastomer) are available. Over recent years, Titan Enterprises has expanded its flowmeter range and has supplied special application optimised OEM versions for use at elevated temperatures (200°C) or high pressure (950Bar). Models are also available certified as suitable for use in hazardous areas. The standard inlet and outlet options for OG flowmeters are BSP or NPT, though alternative versions are available with flanges and female threads. The electronic pulse output signal is transmitted via TTL or contact closure.

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Non-invasive Temperature Sensors - a Better Method of Industrial Temperature Measurement

Many industrial processes depend on maintaining the correct temperatures. Ensuring that these processes remain efficient, produce goods and materials of the right quality and above all remain safe, demands accurate temperature measurement. In fact, taking temperature readings at many different points is necessary if we are to get a complete picture.

Author: Steve Gorvett, Product Manager DP Flow and Temperature, ABB Measurement & Analytics

The conventional method of measuring temperature in industrial applications involves opening up the containment vessel or pipework to insert a temperature sensor. This method often requires the addition of flanges or fittings to help maintain pipeline integrity and satisfy safety requirements. Despite offering accurate and reliable performance, installing these invasive temperature sensors carries a penalty of time, cost and disruption. These inherent drawbacks have sometimes tended to discourage process owners from measuring temperature more widely.

COUNTERING ABRASIVE FLUIDS

One important factor is the characteristics of the medium being measured. Depending on the needs, temperature ranges and pressures in the process, substances can be in many different forms - liquid, gaseous or in viscous or semi-viscous states, or a combination of these, possibly with different flow rates. They can also range from benign liquids such as water, through to corrosive or toxic chemicals or abrasive mixtures. This makes it imperative to choose a temperature device that can withstand these conditions so that it can continue to provide reliable and safe operation. A major option for protecting temperature sensors from abrasive or corrosive fluids is to encase them in a thermowell. These must also be

able to resist the challenges posed by the medium being measured to ensure the temperature sensor is not subjected to undue or excessive chemical and mechanical stress. One of the dangers is posed by abrasive components suspended in a fluid. When moving through piping at high speeds, these particles can lead to the thermowells becoming worn over time, with the risk that the life of the thermowell is reduced significantly. While special thermowell materials can be used to counter this, they tend to carry a premium cost that can substantially increase the total purchase price.

Thermowells must be regularly inspected and replaced if necessary, adding to the costs. These inspections also require at least a partial shut-down, usually requiring a complete emptying of the system. Use of thermowells in a pipeline can also increase the cost of cleaning.

There is also a safety implication, as a thermowell placed in flowing media can experience vibration effects due to the formation of vortices. In extreme cases, this vibration can lead to failure of the thermowell, which can have serious consequences for the whole process.

Because of these risks, the standards governing the stability of thermowells, such as ASME PTC 19.3 TW-2016, have become ever more restrictive, increasing engineering costs and restricting the ability to use conventional thermowells in some cases.

MEASURING FROM OUTSIDE IN

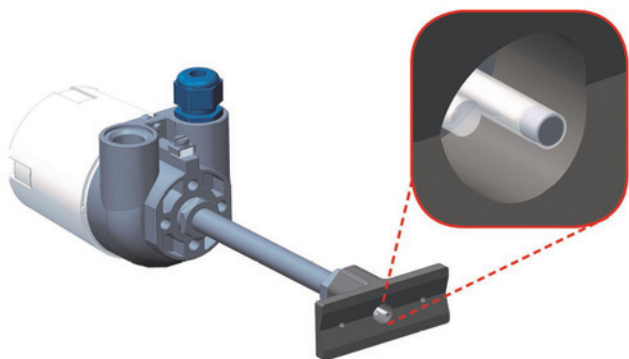
An alternative method is to measure the temperatures of the fluid from outside the containment vessel or pipe, which removes all the safety risks and cost factors. This non-invasive methodology is used by ABB's new non-invasive temperature sensor. Designed to suit low viscosity, liquid media with medium to high flow rates, including turbulent flow, the sensor can be used in a variety of industrial applications from -40°C to 400°C (-40°F to 752°F) on pipelines up to DN2500 (2,500mm). The sensor is designed to be mounted on the surface of a pipe, avoiding the time, cost and disruption involved in fitting a conventional temperature sensor. There is no need to drill into the pipelines as the sensor is attached to the pipe through the use of two clamp collars.

The device has two temperature sensors, one measuring the surface temperature at the measuring point and the other measuring the ambient temperature around it. The transmitter firmware calculates and out-

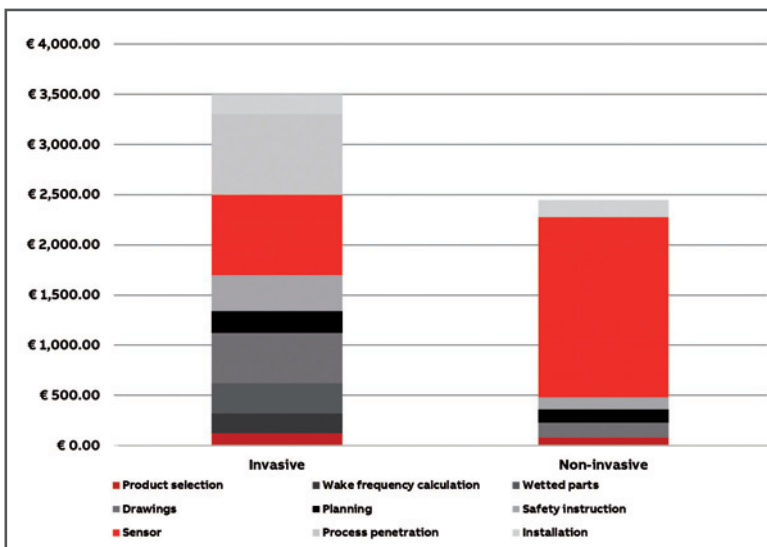


Installing a measuring point in 10 minutes with clamp-on sensor design.





Above: Sensor detail. On the right: Capex comparison between invasive and non-invasive sensors



puts the process temperature in real time. By taking account of the ambient conditions during the measurement, the transmitter significantly increases the accuracy of the surface measurement. Avoiding the need for an invasive device means that impaired performance or increased costs of installation are no longer significant issues. With a fitting time less of than ten minutes, the non-invasive temperature sensor greatly reduces the time and effort needed to set up a measuring point.

The use of non-invasive devices is also very useful for processes that involve potentially hazardous, high pressure or high velocity media, as there is no need to shut down processes and interrupt pipelines. It is also ideal for applications in the food and beverage and pharmaceutical industries, where it is vital for quality and safety to maintain hygienic conditions throughout the production process.

Furthermore, the mechanical factors restricting the performance or application of invasive devices are also no longer relevant. Because the device is outside the pipeline, there is no risk of damage or deteriorating performance from contact with abrasive or high particle flows. This enables non-invasive devices to offer greatly reduced maintenance, with no wear and tear due to stress, no need to remove and exchange damaged sensors, and no risk of the medium being contaminated with abraded particles from the sensor or thermowell.

There is also the option to move the sensor to other places when needs change, providing new opportunities for plant optimisation. This is particularly useful when seeking to identify areas of the plant where energy savings might be made.

COST SAVINGS MEANS NON-INVASIVE REALLY ADDS UP

A key benefit of non-invasive temperature sensors is their significantly lower CAPEX costs compared to a conventional sensor. Because much of the time and effort required to plan, design and install a conventional invasive temperature sensor is either minimised or even completely eliminated, savings of at least 30 percent can be achieved.

The availability of a universal sensor option removes the need to select from multiple models for different pipe sizes and temperature ranges, cutting effort during the specification and planning stage.

Further cost savings arise from removing the sensor from direct contact with the measured medium, the need to purchase and install special pipe fittings, or shutting down the pipeline to install the sensor.

A NEW ROUTE TO PROCESS AND EFFICIENCY IMPROVEMENTS

The restrictions of conventional temperature measurement techniques have traditionally placed challenges in the way of measurement and process engineers, limiting its widespread use. Offering both high performance and the ability to be deployed anywhere, non-invasive temperature sensors are an easy route to improving the efficiency of process plants.

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Advances in the Field of Chemical Injection

In many applications the smallest amounts of a fluid must be measured with high accuracy, e.g. when injecting chemical substances into a system. The Endress+Hauser Coriolis flowmeter Proline Promass A is dedicated for such applications with a precision and reliability unmatched worldwide.

Author: Dr. Daniel Persson, Senior Expert Coriolis Flowmeters, Endress+Hauser

The purpose of a chemical injection skid is to inject a precise amount of chemicals into a system either continuously or intermittently to protect its mechanical integrity by preventing corrosion and formation of foam, wax or scale. This ensures optimal operations.

The skid consists of a chemical storage tank, pumps, valves and various kinds of process instrumentation, e.g. for level, pressure and flow measurement. Skids are mainly built by specialized OEM companies on request by end-users who utilize them in their operations.

Proline Promass A - Coriolis single-tube flowmeter with highest accuracy for lowest flow rates.



AVOIDING OVER-INJECTION

To create an optimal balance between protection of the system where the chemical gets injected and OPEX it is essential that the skid performance is reliable and repeatable, i.e. it must be able to operate in a tight tolerance band with respect to the amount of chemicals being injected. Injected chemicals must be just enough for asset protection, but no more than this as it would only result in unnecessary use of expensive chemicals.

In the past it has been common practice to over-inject chemicals to be on the safe side; on the

one hand to avoid costly downtime and repairs, and on the other hand to compensate for the increasing measurement uncertainty provided by conventional flow technologies as they wear out during operations. Today, the modern technology of Coriolis flowmeters enables end-users to both optimize their productivity and minimize their OPEX safely and long-term thanks to reliable performance. In addition, the absence of non-moving parts provides significant savings in reduced maintenance and corresponding efficiency gains compared to conventional flow measurement technologies.

For the above-mentioned reasons, there is an increasing preference by end-users to use Coriolis flowmeters for chemical injection.

The savings accrued by avoiding over-injection of chemicals can be substantial. The ROI of a Coriolis based chemical injection skid can be reached in just a few months thanks to the highly accurate measurement of the expensive chemicals used, thereby avoiding costly over-injection.

DEDICATED FOR CHEMICAL INJECTION

The recently released Proline Promass A from Endress+Hauser was developed with chemical injection in focus. It comes in three different sizes covering the various flow rates needed. Thanks to its lightweight and space-saving design, Promass A assists in keeping the skid compact and light. Actually, the smallest measuring device (size DN 1 [1/24"]) is no larger than a wallet.

A multitude of threaded and flanged process connections are available in different pressure ratings up to a maximum of 430.9 bar (6250





The innovative sensor design makes it possible to achieve previously unattainable accuracy levels for the lowest flows.



Chemical injection skid featuring six Proline Promass A 200.

psi). The Promass A is offered either with a 4-wire compact or remote transmitter (Promass 300 & 500) or as a loop-powered 2-wire device (Promass 200). Promass A can be used at process temperatures between -50 to $+205$ °C (-58 to $+401$ °F) and its wetted parts made of stainless steel 316L or Alloy C22 are NACE MR0175/MR0103 compliant.

Not only the wetted parts of the Promass A provide high corrosion resistance, but also the 316L sensor housing is especially suited for harsh ambient conditions in the offshore and onshore sectors where aggressive, salty air is present. The design and complete fitting options of Promass A are complemented by an unprecedented measuring performance, a result of its innovative sensor concept.

In contrast to traditional Coriolis sensor designs, the measuring tube geometry of Promass A is formed centrosymmetrical in relation to the ex-

citer. Furthermore, the measuring tube is excited to oscillate at a significantly higher frequency than usual. This leads to a symmetrical oscillation and perfectly balanced measuring tube movement. The measuring performance of Promass A is also not affected by external influences. This is ensured by a vibration-compensating base plate, which acts like a "shock absorber" that effectively shields the entire sensor system from external interference factors.

As a result, even the smallest flow rates of just a few grams per minute can be measured with previously unreachd zero-point stability and accuracy.

OEM SKID MANUFACTURER STATEMENT

Promass A is a Coriolis flowmeter that meets the majority of the various specifications defined by our customers. The enhanced low-flow performance has improved the accuracy levels

we can offer to our customers for the most challenging applications. Generally, we prefer to use two-wire instrumentation on our skids since it reduces cost, complexity and weight as no external power supply is needed. With the introduction of the Promass A 200 we finally have a loop-powered Coriolis flowmeter that meets our demands. In addition, we also appreciate its intrinsically safe Ex concept and the corresponding safety gains.

END-USER STATEMENT

With the newly purchased skids containing the Promass A we see a significant savings potential in the overall chemical usage as we now can operate with significantly tighter tolerance bands. This will support our competitiveness in a challenging market.

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PROCENTEC

Permanent monitoring solutions for downtime prevention

Infrastructure architects are not able to allow for every unforeseen factor. While the list of possible causes is endless, the result is always the same. Network disputation and downtime.

Unfortunately, there is still a very large number of companies unwilling to invest adequately in technologic insurances and back-ups ready to react to an imminent or actual network failure. They believe their system will never fail. A very daring risk to take.

PROCENTEC presents the engineer with an opportunity to fix or exchange a failing component before the network collapses. The available diagnostic tools will allow quickly identification of the problem. The PROCENTEC experts are at the end of the phone 24/7, eager to help find a solution as fast as possible.

And of course, there's also the PROCENTEC Academy, which has certified over 4000 engineers to implement and maintain their PROFIBUS and PROFINET networks to the highest standards available.

Would you like to know what PROCENTEC can offer your company? Visit www.procentec.com or contact our sales engineers at +31(0)174-671 800.

Off to new Shores With Joined Forces

Krohne and SAMSON decided to start a collaboration to develop new products that combine the expertise of both companies and help their customers solving problems the smart way. PCN Europe interviewed the two General Managers of the new company FOCUS-ON, André Boer (KROHNE) und Kavreet Bhangu (SAMSON).

PCN Europe: In September you have announced the start of a joint venture at a press conference in Frankfurt. At first glance this seems unusual for companies that could be seen as competitors in some fields. What were the reasons to start a collaboration?

Boer & Bhangu: The process industry, as any other today, is facing a new challenge in the digital age. This is not only around increasing productivity, reliability, and safety of plants, but also concerns creating transparency on equipment and process performance. SAMSON and KROHNE have been actively pursuing their strategy on creating smart field devices that can help all stakeholders in a plant to gain better understanding of their equipment, thereby contributing to more reliable processes. Both companies have been working intensively in many areas since years and have a complimentary portfolio and business model. Being family owned gives them both a similar DNA - freedom to operate and financial independence - and an acceptance of their core strengths and the fact that the essence of Industry 4.0 lies in Collaboration. We both do not compete in the market and a clear dedication to realizing our Strategy 2025+ made such a joint venture possible. FOCUS-ON will bring more value to our customers by combining the best of technologies, competencies, and people.

PCN Europe: Was there already a concrete idea at the start of the collaboration in which direction the product or service should be developed?

Bhangu & Boer: Disruption was the only idea that we had on the table to start with. We



André Boer (left) and Kavreet Bhangu (right) introducing Focus-1 at the press conference

understood early on the benefits of bringing flow measurement and control valve together, even though the shape or form of a product was not clear.

But as it is with any innovation, we had to start from scratch. It involved bringing R&D teams from both companies together through intensive workshops to first understand each other's technologies before we could even initiate any integration plan. Input from mar-

keting teams, voice of the customer, was critical in keeping the focus on applications and product functionalities. The real key to disruption is not to get lost in creating detailed product specification sheets or scope documents, but to fail first, early, and keep continue moving forward. This scrum approach allowed us to quickly define the route of development, milestones, and overall goal of the collaboration.



The FOCUS-1 device integrates the control functionalities of a globe valve with measurement sensors for flow based on ultrasonic principle, pressure, and temperature.



PCN Europe: Can you please describe the new product and the most innovative features for our readers?

Boer & Bhangu: The revolutionary FOCUS-1 device integrates the control functionalities of a globe valve with measurement sensors for flow based on ultrasonic principle, pressure, and temperature. Such integration allows the product to operate based on valve setpoint, specific flow value, downstream pressure (p2), or even in some special applications, temperature control. Powerful computing unit sits above the bonnet combining positioner and sensor electronics with application modules that are loaded with smart algorithms for various control and diagnostic functions. Seamless connectivity via a Bluetooth/Wi-Fi antenna capable of operation in ATEX Zone 1 and Zone 2, easy coupling of actuator air supply for both air-to-open and air-to-close modes, innovative LEDs for visual communication of health status complying with NAMUR NE107 standard, and a clean but robust industrial design are the special features of our FOCUS-1 product. However, there are many more features under the hood that were made possible due to the design innovation and range from innovative manufacturing methodologies to cabling concepts. All these features allow FOCUS-1 device to provide superior performance and a compact size, considering there is so much innovation on board.

PCN Europe: The complete product development was done in less than 2 years. This is really fast, especially if you consider the complexity of the components. Did you have external specialists to support your team in the development process?

Bhangu & Boer: We are very proud of the speed of innovation setting a benchmark, at least in our companies. This was made all possible due to motivated individuals working diligently together for 18 months. Communication was the key in defining

goals, planning work package milestones, and keeping everyone abreast of the project progress. This was especially critical, considering technical contribution came from team members sitting in Frankfurt and Munich (both SAMSON) and Duisburg, Minden and Dordrecht/NL (KROHNE) who are working closely on all mechanical, electronics, software, testing, and calibration topics. However, as the name of the company suggests, it was important that we focus on our core competencies while identifying external partners who bring with them aspects that have been ignored by traditional equipment manufacturing companies. One of these areas was industrial design and integration, where we are fortunate to work with our strategic partners located in Rotterdam/NL, Spark Design and Innovation. Their team of product designers and brand experts worked alongside our project team to create the concept of FOCUS-1 product and FOCUS-ON brand.

PCN Europe: As a new company Focus-On probably cannot tackle all industry sectors where your new product would fit. What sectors do you start with and what are the main benefits for users there?

Boer & Bhangu: As the name of our joint venture suggests, we intend to focus on those markets and applications that form a good fit with the product functionalities and features. With our first offering, the FOCUS-1 product, we are targeting applications with liquid as the medium across utilities in food & beverages and pharma & biotechnology, and many areas in the chemical and petrochemicals industry. The compact footprint of this product due to integration of four components into one powerful device allowing for superior process control quality and additional benefits of reduced investments in engineering simulation, piping length, number of flanges, and installation man-hours are the key benefits on the CAPEX side. Bet-

ter control quality leading to higher plant utilization and reduced variances of components will allow our customers to have lower OPEX costs and thereby overall faster return on their investments. The main industry sector where we fastest adoption is in the skid building, whereby all the above-mentioned benefits can be exploited quite quickly.

PCN Europe: The full product launch of the intelligent process node is expected for the first quarter of 2020? What will be the next steps, when this big goal will be achieved?

Bhangu & Boer: Our main target in the next months is to showcase the full potential of FOCUS-1 device through extended field tests. This will be followed with a full product launch in Q1/2020. However, we will continue to work on the device and process diagnostics capabilities that this product has to offer, in close conjunction with our customers. We consider our first product just a starting point on our exciting journey, whereby we look to integrate many other measuring principles available within SAMSON's and KROHNE's portfolio today and further being developed as part of their innovation roadmap.

PCN Europe: Thanks for sharing these insights with us.

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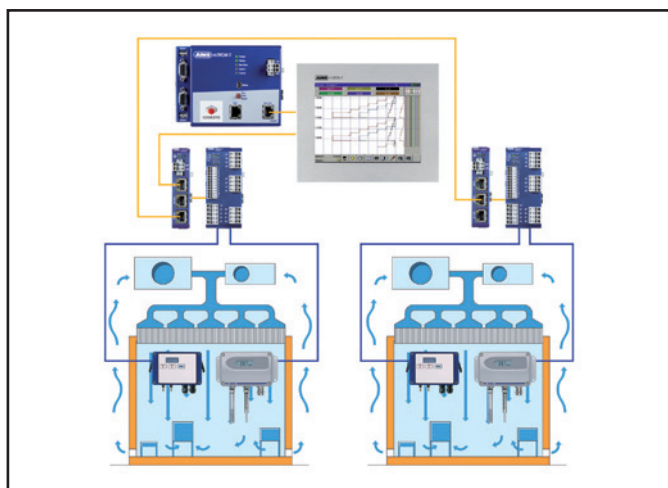
Cleanroom Monitoring - Reliability for the Toughest Requirements

Clean and ultra cleanrooms are required for special production methods – especially in medicine and pharmaceutical technology, since particles in ordinary ambient air would have an adverse effect. Other applications are in semiconductor technology, optical and laser technology, aerospace technology, the biosciences, medical research/treatment, research, and germ-free production of food and pharmaceuticals in nanotechnology.

In a cleanroom, selecting the correct measuring devices for achieving optimum measurement results is paramount. As a rule, particle content, temperature, moisture, and pressure are monitored and recorded. The above stated measurands have a significant influence on quality and productivity. As a result, regular calibrations with measuring devices based on traceable standards are essential. Manufacturers of pharmaceutical products usually have a large number of cleanrooms. The control and recording of temperature, pressure, and humidity have to comply with the stringent rules of GMP (Good Manufacturing Practice).

ONE CONTROLLER FOR EVERYTHING

The JUMO mTRON T is the ideal solution for controlling, regulating, and documenting the measured values of temperature, pressure, moisture, and particle content in one or several rooms. The various system input and output modules permit a flexible and decentralized system configuration. In particular, the universal configurable analog input modules for resistance or standard signals such as current or voltage set benchmarks here. The integrated CODESYS V3 PLC, in conjunction with the modules for regulation, measured value recording, and data recording form an optimum combination for highly di-



Pressure, moisture, and temperature measurements in cleanrooms with the JUMO mTRON T automation system



verse cleanroom applications.

The networking and data communication for the individual components is performed using EtherCAT - a fast, Ethernet-based system bus that is widespread in measurement and automation technology. The JUMO mTRON T system can be used to operate, control, and regulate several individual cleanrooms while the process measured values are logged for quality assurance. In the past, this required individual control systems.

The multifunction panel (HMI) comprises nine registration groups, including batch reporting, to ensure assignment of the recorded process data. The documentation of the process values measured is tamper-proof, which is very important in cleanrooms. Special integrated functions such as email notification in case of emergency or a web server represent cost-effective and reliable alternatives to complex visualization systems. Suitable PC software tools for extracting and evaluating recorded data round out the system.

With its modular system concept and integrated PLC, the JUMO mTRON T automation system can be adapted optimally to applications for controlling and regulating cleanrooms. Since the control tasks are handled independently in the multichannel controller modules, the PLC is available above all for individual control tasks. The integrated CODESYS PLC V3 is key to the system's flexibility. Plant



engineers have the option, for instance, to program functions that are adapted to the existing tasks and visualize user-specific process screens on the HMI. In this way, manufacturers can provide custom screens for basic status, automatic or manual mode, system images, and even configuration screens for their customers. Freely definable user rights can be issued through a user management system with up to 50 users. This prevents operating errors and ensures reliable equipment operation.

VISUALIZATION AND RECORDING FOR OPTIMIZED SECURITY

The TFT touchscreen and integrated recording function allows the historical trend to be viewed directly on the system next to the current values, status/alarm messages. This gives the user a high degree of transparency and the option to directly optimize and/or adjust running processes. In this manner, irregularities can be detected at the outset and the corresponding measures can be taken.

The recorded data can be extracted, archived, and evaluated via the interface or USB flash drive using the JUMO PCC and PCA3000 software. These program functions also offer an automatic print-out of the measurement data as a PDF or CSV file. Upon request, this data can be sent directly as an email.

More detailed documentation is possible with the JUMO SVS3000 visualization software. It supports batch-related reporting following the input of corresponding data at the relevant system as soon as the program is started. The software can also operate all connected units. This data can be filtered and extracted by date and time as well as by up to three entered batch information units. The reports generated during this process can be printed and/or exported automatically at batch end. They can also be printed and/or exported manually at any time.

SAVE TIME AND COSTS THANKS TO PERFECT MOISTURE AND TEMPERATURE MEASUREMENT

To be able to ignore external influences when producing sensitive products, reproducible climatic conditions are required in the cleanroom. With the capacitive hygothermal transducers of the 907027 series from JUMO, moisture and temperature can be determined by just one device. The devices have intelligent interchangeable probes with internally stored calibration data and performance logs. When required, these probes allow the user to carry out a sensor exchange in seconds without any loss in accuracy.

Precision calibration procedures and the latest microprocessor technology guarantee reliable measuring accuracy across the entire temperature operating range. The exceptional long-term stability is based on many years of experience gained from proven humidity sensors.

ADAPTED TO THE PROCESS

Reproducible or standardized climatic conditions can be ensured in cleanrooms through measurement, controlling, and monitoring of temperature, moisture, and pressure. Use of the automation system offers the user time and cost benefits, since the modular system opens up all possibilities.

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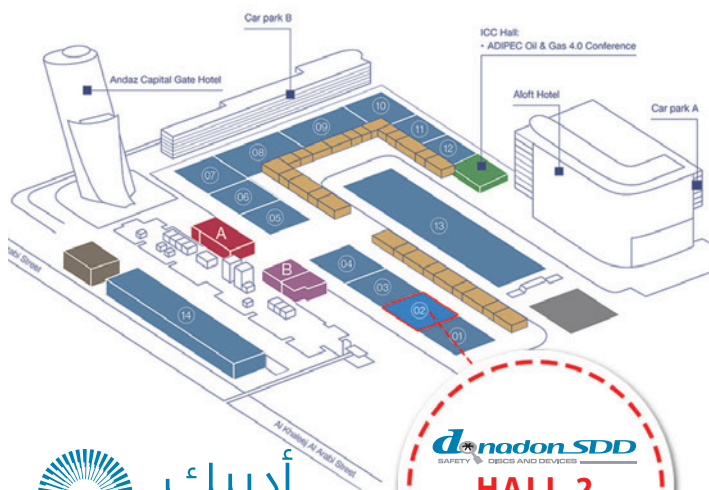


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INTEGRATED WARNING DEVICE ASSEMBLIES

Corrosion-proof housings for harsh environments



E2S Warning Signals is featuring its new range of integrated signalling assemblies. Providing system designers and installers with pre-configured solutions, the new E2S range eliminates the associated cost of on-site assembly operations whilst guaranteeing the connections and cabling between devices meet the relevant hazardous area approval requirements and ensuring all signals are fully tested and certified. Class I/II Div 1 and IECEx/ATEX Zone 1/2/1

approved signals are available in multiple configurations of up to seven devices. Featuring products from the D1x, GNEx and STEx families with marine grade aluminium, corrosion proof GRP or 316L stainless steel enclosures - a solution for any environment. Status light type configurations of high-power LED or Xenon beacons (or a mix of technologies) can be assembled where each device is sealed with a line bushing, the integral cable loom providing one single point of installation either in the last beacon or optionally in a junction box. Lens colours include Amber, Blue, Clear, Green, Magenta, Red and Yellow. For complete audio visual signalling the assembly can also feature a multi-stage high output alarm horn with a flare horn or the innovative E2S omni-directional horn.

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MODULAR WIRELESS IOT SOLUTION

Intrinsically safe development kits for Oil & Gas



Aegex Technologies introduces its globally certified intrinsically safe IoT sensor solution, NexVu, which collects and analyzes diverse contextual operations data and legacy equipment data.

NexVu is a modular array of intrinsically safe IoT sensors, configurable in thousands of combinations of more than 60 different sensor nodes to allow users to monitor conditions of their choice surrounding their offshore operations. NexVu arrays are wireless and can connect an organization's legacy sensors or other equipment along with NexVu sensors in combinations of up to 32 simultaneous nodes per array to gain contextual data. NexVu data can be viewed safely in hazardous environments on Aegex tablets and shared among teams in offshore operations, or can be viewed offsite in data centers, eliminating the need for physical field inspections. Detecting gas leaks along with vibration, temperature or other conditions in context can give detailed insight into operations, helping operators prevent issues before they happen, or mitigate problems before they worsen. Better contextual data and meaningful insights via NexVu can help organizations devise preventative maintenance schedules, alert about anomalies or predict potential emergencies. The Developer's Kit includes an aegex 10 intrinsically safe tablet, docking station, several sensor nodes and communication equipment.

▶▶ 57863 at www.pcne.eu

HANDHELD PRESSURE CALIBRATOR

Intrinsically safe mobile process control verification



AMETEK Sensors, Test and Calibration (STC) introduces the intrinsically safe HPC50 handheld pressure calibrator, with high accuracy and ease of use for process control applications in the oil and gas industries. The new pressure calibrator is part of the company's Crystal line of pressure products. The calibrator offers deadweight tester accuracy along with user-friendly features to

deliver laboratory accuracy to an on-site, field usable instrument. The versatile HPC50 calibrates pressure from vacuum to 1000 bar with accuracy up to 0.035% of reading. It is ideal for process control applications, such as verification or calibration of pressure gauges, transducers, transmitters, pressure switches, and safety valves. Units are available in single and dual pressure models, and users can equip each with one or two new, intrinsically safe external modules: APMi pressure modules provide flexibility to read up to four pressure inputs with a single device. ATMi temperature modules allow users to read pressure using the installed modules, while simultaneously reading both static and ambient temperatures. Common applications include maintenance and troubleshooting of gauges, switches, transmitters, valves, pumps, and filters. The HPC50 can also replace a deadweight tester.

▶▶ 57810 at www.pcne.eu

OPTICAL GAS IMAGING CAMERA

Improves safety inspections by visualizing invisible leaks



FLIR has announced the industry's first high-definition (HD), handheld optical gas imaging (OGI) camera, the FLIR GF620. Designed for oil and gas industry professionals, the GF620 camera sets a new standard for detecting and visualizing invisible

leaks of hydrocarbons, such as methane, and common volatile organic compounds (VOCs). With four times the pixels of previous models, the HD resolution GF620 helps inspectors survey for fugitive hydrocarbon emissions from further, safer distances than possible with lower-resolution OGI cameras. The new GF620 is FLIR's highest resolution OGI camera. Equipped with a 640x480 infrared detector, the camera is calibrated to measure temperature, allowing the user to assess the thermal contrast between the gas and the background scene, and adjust it to improve visibility. The FLIR GF620 also features the company's unique high sensitivity mode, which accentuates plume movement to improve detectability in low-contrast scenes. The GF620 additionally introduces Q-Mode, an automatic preset for use with the optional QL320 gas quantification system by Providence Photonics. This system quantifies hydrocarbon leaks with mass or volumetric measurements and colorizes emissions for easier assessment. The GF620's Q-mode streamlines the workflow from the camera to the QL320 software, so users can download videos from the field.

▶▶ 57971 at www.pcne.eu



Guided Wave Radar Level Transmitter

Optimised separation performance detects thinner top liquid layer

Emerson announced the enhancement of the Rosemount™ 5300 Guided Wave Radar Level Transmitter to optimise separation process performance and prevent costly product ingress by accurately measuring a thinner top liquid layer in interface applications. The Rosemount 5300 guided wave radar can now also perform measurements to the top of a tank, enabling increased throughput and profitability. Additional new features provide greater ease-of-use, increased safety and enhanced performance in the most challenging level and interface applications. Operators have long struggled to obtain the most accurate level interface measurements to increase the efficiency of separators and maximise profits. In addition, with large tanks able to contain millions of gallons of liquids, even a small volume inaccuracy can translate into millions of dollars in lost revenue.



DETECTING REDUCED THICKNESS OF LAYERS

In interface measurement applications such as separators, the top product layer must be of a certain minimum thickness for a guided wave radar transmitter to distinguish between the echoes from the two liquids. Previously, this minimum detectable thickness would be between 50 and 200 millimetres. Emerson's unique patented Peak in Peak interface algorithm now enables the Rosemount 5300 to detect a top liquid layer of just 25 millimetres. This further prevents unwanted product ingress and enables the performance of a separation process to be optimised, helping users maximise operational efficiency and profitability.

The Rosemount 5300 can provide accurate and repeatable measurement to the very top of a tank when used with a large diameter coaxial probe, enabling users to optimise tank

capacity and increase throughput. These probes provide the strongest return signal, have no upper dead band and are not affected by obstacles on the tank wall. High amplitude noise created as microwaves pass through the process seal between transmitter and probe has traditionally affected measurement accuracy at the top of the tank. Enhanced process seal design has enabled Emerson to eliminate this noise, facilitating accurate measurement to the top of the tank during both filling and emptying phases.

ELIMINATING DOUBLE SIGNAL BOUNCE

To increase measurement reliability and ease-of-use in upstream oil and gas applications, the Rosemount 5300 features a new factory-configured threshold setting, where the echo below the threshold is assumed to be oil and the echo above the threshold is assumed to be water. This eliminates double signal bounces that can be mistaken as an interface level measurement and enables more predictable behaviour. This creates a true plug-and-play device that simplifies installation and operation.

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Why You Need PAT to Move From Batch to Continuous Processing

The future of many processes within complex manufacturing industries lies in continuous production, as opposed to batch manufacturing, because it can lead to greatly increased productivity and enhanced product quality.

Author: Martin Gadsby, Director at Optimal Industrial Technologies.

As opposed to batch production, where goods are produced in multiple, separated unit operations - interspersed with downtime for quality controls; continuous manufacturing is characterised by connected operations, where each unit immediately feeds the following one without any interruption.

PARADIGM SHIFT IN QUALITY MANAGEMENT

The first step in implementing a continuous manufacturing strategy requires the adoption of an appropriate product quality management system. The traditional Quality by Testing (QbT) approach involves testing the material being processed after every manufacturing stage

to ensure that the critical quality attributes (CQAs) are in line with specifications. Therefore, production needs to stop to collect samples and conduct testing in off-line analytical laboratories. As such, lengthy pauses are inherent to QbT and, as a consequence, it is impossible to implement a continuous manufacturing process.

Only by adopting a holistic, quality centric approach to product development and process design is it possible to transition from batch to continuous processing. This is known as Quality by Design (QbD) and it relies on the principle that product quality should be designed into the process, rather than tested in stages and

corrected afterwards. Indeed, increased testing in a QbT paradigm does not improve product quality per se, it can just as easily introduce quality issues with increasing the likelihood of false positives and false negatives. And as there is no clear process understanding, it is more difficult to rule out anomalies.

Conversely, a responsive system, featuring real-time monitoring of product CQAs and adjustment of critical process parameters (CPPs), allows plant operators to obtain consistent and quality compliant products while reducing the likelihood of re-work or rejects. In practice, QbD requires a scientific yet pragmatic approach that takes into account both the process and product to enable the design of effective, real-time quality control strategies. In this way, it is possible to achieve a predefined quality objective, i.e. delivering products that consistently meet or exceed the required quality standards. A key enabler for QbD is PAT, as it provides a systematic structure for measuring product quality in real time, facilitating process understanding and ultimately controlling the process to ensure product quality.

More precisely, PAT typically uses a range of spectral (multivariate) and univariate data sources together with prediction engines to make real time product quality predictions. These are at multiple points within a continuous process in order to achieve a holistic, QbD quality system. In the short term, the quality predictions available can be used by plant operators to make changes to the CPPs so as to maintain product quality at all times. In the medium to long term, quality-based control



For many pharmaceutical, biotech, food and chemical producers continuous operations can lead to greatly increased productivity and enhanced product quality.



can be achieved by means of closed loop automated control systems. In this way, analytics are performed on-line and in real-time, as the process takes place, so there is no need to stop production to perform quality testing.

A SEAMLESS TRANSITION TO CONTINUOUS PRODUCTION

While QbD and PAT are normally necessary for continuous processing, they can also be applied to batch manufacturing, where they can still deliver substantial benefits. Consequentially, the adoption of these quality management tools doesn't force or rush batch manufacturers into a new realm; but allows them to consider a continuous production plant after they have experienced the gains that PAT can deliver in a batch production process.

Therefore, manufacturers can select a small and not too complex first process to start learning and applying QbD and PAT, in order to gain experience before shifting progressively to more complex processes and ultimately from batch to continuous process development and manufacturing. We have found that the most successful QbD and PAT deployments start in a modest way. After the benefits have been proved in a timely manner, the adoption of QbD and PAT within the organisation grows over time to provide a firm basis for wider adoption.

CONTINUOUS MANUFACTURING MEANS BIG DATA

The key aspect of QbD and PAT lies in their ability to unlock the power of Big Data. As a prerequisite for success, the large volumes of data being generated need to be processed, presented, stored and turned into knowledge in a regulatory compliant way. A comprehen-



sive tool to address this challenge is provided by PAT data and knowledge management software products.

These are centralised or distributed software platforms used to continuously make quality predictions in both batch and continuous processes and enable the development of science-based knowledge by presenting the data in a digestible manner to the different subject matter experts (SMEs). By doing so, knowledge management solutions ultimately enable the running of closed loop control algorithms that are based on process understanding and product quality.

One of the most advanced PAT knowledge management platforms on the market is Optimal's syntQ. This software is currently used by over half of the top ten global pharmaceutical manufacturing companies. This comes as no surprise when production cycle times on some critical drugs are being reduced from

weeks to hours - with a corresponding leap in productivity and a decrease in the production footprint.

The latest syntQ 5.3 version contains features that improve both the user experience and the platform capability with regards to optimising quality. For example, a real-time Multivariate Statistical Process Control (MSPC) viewer and user-configurable Control Charts can be used to detect when a process is moving out of its optimum operating window and act to correct the situation.

Every implementation path towards continuous processing is different. However, flexible platforms like syntQ are suitable across different industries, production lines and transition strategies; as they unify the necessary information to enable real-time control of batch and continuous processes like never before.

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LEAK-FREE MAG-DRIVE PUMPS

For safe handling in hazardous environments



Reliable, leak-free pumping is essential in many fluids handling applications and absolutely critical when the process involves corrosive, toxic, explosive or any other type of hazardous liquids. Magnetically coupled centrifugal pumps, are by design, one of the safest and most reliable options and the **DICKOW** KM Series of pumps. The Series is a range of seal-less, single-stage, volute casing pumps with a maximum flow rate of 70m³/hr

maximum differential heads to 65 metres and maximum operating temperature up to 200°C. Key benefit of the magnetic coupling design is that it results in a seal-less pump and because mechanical seal failure is sometimes regarded as the 'Achilles heel' of other types of pump, these potential problems are eliminated. This minimises the potential for downtime and lost production along with no cross contamination of the pumped liquid, less wastage, no environmental hazards due to leaks and increased operator safety. These robust, reliable pumps can handle liquids with viscosities between 0.1 cP and 200 cP and are available in either horizontal or vertical configuration and in a choice of wetted materials of either cast iron, cast steel and stainless steel.

►► 57966 at www.pcne.eu

CERTIFIED PROGRESSING CAVITY PUMP

Innovative designs for long term reliability



The EHEDG (European Hygienic Engineering & Design Group) was founded in the last century at the end of the 90s to develop reliable standards in the hygiene sector. Just four years

later, in 2002, **NETZSCH** obtained the certificate named after the Group for the NEMO Aseptic pump SA as a result of it passing the cleanability test. This pump with a flexible rod and an interior layout with no dead space has a fluid engineering design that prevents any product deposits. The cleaning ports are arranged tangentially and the pressure port eccentrically for residue-free self-emptying. The pump handles flow rates up to 140m³/h at pressures up to 24 bar. **NETZSCH** pumps with a flexible rod have been in use for more than 45 years in industrial applications, with this year making it 30 years in the hygiene field. **NEMO** pumps with a flexible rod have therefore been around for considerably longer than the EHEDG certification, because **NETZSCH** has always worked on the market-oriented development of the progressing cavity pump, thus also identifying the growing hygiene requirements and addressing them. Because the wear-resistant and maintenance-free flexible rod with no dead space is suitable for highly sensitive and abrasive products. The re-certification pending in 2019 in line with the new EHEDG standard EL class 1, therefore is a normal process without the need to develop a new product.

►► 57967 at www.pcne.eu

MODULAR ELECTRIC VALVE ACTUATORS

Ready-to operate solution in IP68 for harsh environments



Rotork has increased the versatility of the CK range of modular electric valve actuators with the introduction of the CK Atronik, an intermediate level integral control option, providing a ready-to-operate actuation solution to meet the standard requirements of many plant specifications. The CK Atronik control

module houses a reversing contactor starter with mechanical and electrical interlocking, a proven and reliable Rotork design for electric actuation. Connection to a suitable power supply is all that is required for local operation of the actuator. Digital microprocessor driven functionality delivers reliable motor control for isolating, regulating or modulating valve duties. Configuration is simply achieved with on-board dual in-line switches. Integral local control selectors are provided, together with clear LED status indication of valve open, valve closed, valve moving and alarm. Mechanical valve position indication is also provided on the actuator gearcase. Options include analogue control for positioning, analogue feedback, additional relay and network bus connectivity. All CK modular actuators are environmentally sealed to IP68 (8 metres for 96 hours) as standard for long-term reliability in harsh operating conditions. Plug and socket connections for power, control and between modules assist swift site wiring and maintenance.

►► 57522 at www.pcne.eu

NEW GENERATION OF POSITIONERS

Reliable and rugged no-contact sensing system



SAMSON introduced two new positioners from the Series 3730 - TROVIS 3730-1 and 3730-3. The new positioners for 4 to 20 mA applications combine the latest techno-

logical developments with the proven device base known from the Type 3730-1 and Type 3730-3 predecessor models. Both positioners are particularly rugged thanks to their no-wear, non-contact travel sensing system. Two inductive limit contacts are available to reliably indicate both valve end positions. At the same time, the positioners' air consumption has been reduced considerably by upgrading the pneumatics block. Operation continues to rely on the rotary pushbutton taken over from the successful Series 3730. TROVIS 3730-3 communicates over the HART 7 protocol and comes with the proven EXPERTplus valve diagnostics with optimized features. To facilitate operation, the positioners are fitted with a plain-text display that indicates the condensed state according to NAMUR, measured values, start-up settings as well as messages in English or German. TROVIS 3730-3 is additionally ready for interconnection with SAM CHEMICALS, the cloud-based business application for the process industry. The Series 3730 Positioners, which have been on the market for 15 years, includes several positioner models with varying electronic components and the associated different features.

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Oil-free and Gas-tight High-pressure Compressor

The completely dry-running and hermetically gas-tight solution is designed for applications that require absolute process safety and purity. With final pressures of up to 450 barg, the compressor offers oil-free compression of virtually any gas.

With the integration of the former HAUG Kompressoren AG, Sauer Compressors has significantly extended its portfolio to include solutions by the industry's leading expert in oil-free air and gas compression. The HAUG.Sirius NanoLoc marks the latest addition to the product range and is the first compressor that combines high pressure with oil-free compression.

OIL-FREE FOR HIGHEST GAS PURITY

Both the crankcase and the compressor stages operate without any oil. This ensures highest gas and process purity. Therefore, the compressors are an ideal choice for sensitive applications such as industrial gases, medical applications and bio technology as well as the chemical, pharmaceutical and food industries.

FINAL PRESSURE OF UP TO 450 BARG

With its hermetically gas-tight construction, the HAUG.Sirius NanoLoc achieves extremely low leakage rates of <math><0.001\text{ mbar l/s}</math> and enables 4-stage compression of almost any gas. The com-

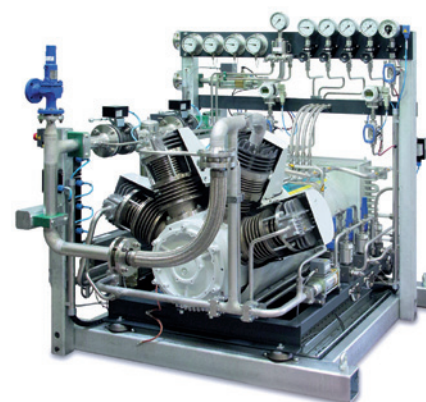
pressor delivers a flow rate of max. 66 Nm³/h and a final pressure of up to 450 barg with an inlet pressure of up to 30 barg. Depending on the configuration, it comes with a motor power of 11-30 kW. In addition, the HAUG.Sirius NanoLoc is ideally suited for booster applications of gases such as helium, natural gas or hydrogen.

GAS-TIGHT MAGNETIC COUPLING

The well-proven magnetic coupling drive adds to the machine's exceptional gas-tightness both at standstill and during operation. The technology is a core feature of the HAUG.Sirius series. Due to the newly developed and unique NanoLoc[®] piston design's friction-free sealing, wear and friction losses in the cylinders have been reduced significantly. Likewise, all the compressor's components are designed for a particularly long service life.

LOW-MAINTENANCE, HIGH RELIABILITY

Even in operations with long standstills, frequent interruptions and cold starts, the HAUG.



Sirius NanoLoc is highly dependable. The absence of oil serves to significantly lower operating and maintenance costs. Due to its unparalleled process purity, the compressor reduces the need for gas treatment and filtration after compression to a bare minimum. Often, treatment and filtration are not required at all, resulting in significant time and cost savings.

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The Advantages of Cold Aseptic Filling

In recent years, aseptic technology has become well established in the food and drink sector as a filling technique. Yet some businesses are still unaware of its benefits or do not believe that it can be used with their products.

As consumers have become more health conscious, the demand for food and drink products without preservatives has increased. However, traditional methods combining sterilisation with hot filling have not been suitable for products which are increasingly sold on their 'fresh' and 'natural' characteristics, due to the effect on product quality. In most cases, hot filling sterilises the container as the product (which is still hot from cooking or sterilising) is filled. However, the temperatures required often have unwanted effects on the quality of the product, and the heat imposes restrictions on the type of container which can be used: for example, hot filling of lightweight plastic drinks bottles can lead to distortion of the plastic.

Consequently, cold aseptic filling has become a common technique with drinks manufacturers for products including UHT milk, fruit juices, and sports and energy drinks. Its flex-

ibility means that it is suitable for a wide range of products from fresh fruit dices and purees to marinades and dairy products. This diversity has also seen the development of a wide range of fillers and packaging types, from pouches and lidded trays through to bulk bags and intermediate bulk containers (IBCs). Aseptic filling systems generally combine a number of elements into a single integrated production line. This integrated approach helps to ensure microbiological safety throughout the process from initial treatment through to the sealing of the finished product. The steps included in an integrated aseptic filling line (such as the HRS Asepticblock) typically include:

1. Thermal treatment

Although in theory this can be any thermal treatment which reduces harmful bacteria (pasteurisation, sterilisation or cooking),

in practice the types of product which are most likely to benefit from aseptic filling are those which are pasteurised or sterilised. This step usually comprises a suitable tubular heat exchanger, such as the HRS MI, DTA or AS Series.

2. Cooling (where necessary)

Depending on the product, the production process and the packaging used, it may be necessary to cool the product following pasteurisation or sterilisation. In some situations (such as the production of cooked items like soups and sauces), this step may actually form the first part of the integrated aseptic line, receiving hot cooked product from elsewhere in the factory. In such cases another heat exchanger will be used, such as the AS Series. If cooling the product is likely to increase its viscosity, then a scraped-surface unit, such as the patented Unicus Series or R Series heat exchanger, may be used.

3. Sterilisation of the packaging

Prior to filling, packaging is normally sterilised using thermal or chemical methods (such as peroxyacetic acid or hydrogen peroxide), although in many production environments the packaging is supplied pre-sterilised in aseptic packaging that can be put into the filling line without contamination. However the packaging is sterilised, it is vital that aseptic conditions are maintained between sterilisation and sealing, and this is another reason for adopting an integrated aseptic processing solution. Read on at: www.pcne.eu/bingo/57862



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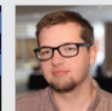
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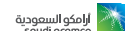
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B	BOSCH INDUSTRIEKESSEL	9	N	NETZSCH PUMPEN UND SYSTEME	22
	BÜRKERT	9	O	OPTIMAL INDUSTRIAL AUTOMATION	20
C	CO.RA	2	P	PENTAIR MANUFACTURING	11
D	DICKOW PUMPEN	22		PEPPERL + FUCHS	19
	DMG EVENTS	25		PHOENIX CONTACT	6
	DONADONSDD	17		PROCENTEC	13
E	E2S WARNING SIGNALS	18	R	ROTORK	22
	ECOM INSTRUMENTS	6	S	SAMSON AKTIENGESELLSCHAFT	22
	EMERSON PROCESS MANAGEMENT	19		SCHENCK PROCESS	6
	ENDRESS + HAUSER	12	T	TINTOMETER	7
F	FLIR SYSTEMS TRADING	18		TITAN ENTERPRISES	9
	FOCUS-ON	14	V	VEGA GRIESHABER	8
H	HANNAY REELS	23		VÖGTLIN INSTRUMENTS	7
	HRS HEAT EXCHANGERS	24			

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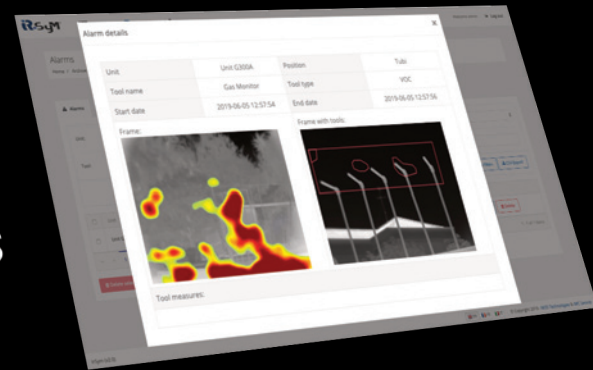
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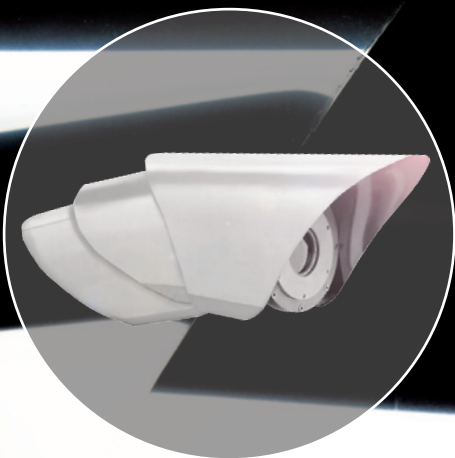
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