

PCNE

Europe

processing & control news



EXPLOSION PROTECTION & SAFETY

Fit for the Industrial Internet of Things:
Mobile Solutions for Hazardous Areas

Page 12



PCNE Offers you
a Free Ticket
to Hannover Messe:
Scan the QR Code



14 Smart Equipment
Digitisation and Networking
in a Traditional Brewery

22 Food & Beverage
A Hygienic Doubles
Team: Ultrasonic Sensor
and Cable Gland in
Hygienic Design

www.pcne.eu

HANNOVER MESSE

HOME OF INDUSTRIAL PIONEERS

1–5 April 2019

Hannover • Germany

hannovermesse.com #HM19

 Sweden
Sverige
PARTNER COUNTRY 2019



►► 56406 at www.pcne.eu



Deutsche Messe

Get new technology first



ASSOCIATE PUBLISHER	Marco Marangoni m.marangoni@tim-europe.com
EDITOR	Kay Petermann k.petermann@tim-europe.com
ORDER	Margherita Stallone
ADMINISTRATION	m.stallone@tim-europe.com Francesca Lorini f.lorini@tim-europe.com
WEBSITE & NEWSLETTER	Carlo Cucchi c.cucchi@tim-europe.com
MARKETING MANAGER	Marco Prinari m.prinari@tim-europe.com
PRESIDENT	Orhan Erenberk o.erenberk@tim-europe.com

ADVERTISING SALES OFFICES

EUROPE

AUSTRIA, SWITZERLAND

• Monika Ailinger
Tel: +41 41 850 44 24
m.ailinger@marcomedia.ch

BENELUX, NORWAY, SWEDEN

• Nadia Liefsoens
Tel./Fax: +32 (0)11 22 43 97
Cell: +32 (0)475 59 31 96
n.liefsoens@tim-europe.com

FRANCE

• Sylvie Seurin
Tel: +33-(0)1-34 15 63 92
s.seurin@tim-europe.com

• A2 Développement,

Céline Garcia
Tel: +33-(0)4-78 42 01 01
a2d.celine@gmail.com

GERMANY

• Karin Weisshaupt
Tel.: +49-(0)6131-32 91 444
k.weisshaupt@tim-europe.com

• Simone Ciolek

Tel: +49-(0)9771-1779007
s.ciolek@tim-europe.com

ITALY

• Andrea Rancati
Rancati Advertising
Tel: +39-02-7030 00 88
Fax: +39-02-7030 00 74
arancati@rancatinet.it

TURKEY

• Onur Dil
Tel: +32 (0)15 45 86 79
Fax: +32 (0)15 45 86 37
o.dil@tim-europe.com

UNITED KINGDOM, DENMARK, FINLAND

• Dave Harvett
Tel: +44-(0)121 705 21 20
daveharvett@btconnect.com

NORTH AMERICA

• John Murphy
Hamilton-Murphy Global, LLC
Tel: +1 616 682 4790
Fax: +1 616 682 4791
john@hamiltonmurphymedia.com

JAPAN

• Ichiro Suzuki
Incom Co. Ltd.
Tel: +81-(0)3-3260-7871
isuzuki@INCOM.co.jp

OTHER COUNTRIES

• Cristian Son
Tel: +39 027030631
c.son@tim-europe.com

Digital File Requirements available at:
<http://www.pcne.eu/technical-guidelines/>



© 2018 TIMGlobal Media bvba
Production by Design3, Milano, Italy
Printing by CNS Srl
Ciserano (BG), Italy
POSTMASTER: Send address changes to:
Processing & Control News Europe,
Marco Prinari - m.prinari@tim-europe.com



FREE DIGITAL SUBSCRIPTION



Kay Petermann
k.petermann@tim-europe.com

Let's get cyber-physical

Dear Reader,

I want to welcome you back for the first PCN Europe in 2019, even if the first months are already gone. During the last weeks and months, I heard several times the phrase "Software is taking over" mostly with positive connotation in



connection with digitization of production and Industry 4.0. And if you look at the speed of changes and the numbers, they seem to confirm it. Only in Germany, from 2015 to 2018 Bitkom, the German association of digital industry stated a rise of Industry 4.0 related software and services from 4,06 billion € to nearly 7,2 billion per year. And the expectation is that the growth over the next years will go on with similar speed.

But as important as it is, and for sure the importance of software will still grow, if you want (or have) to produce something and get it to the customer, software can only be a part of the process. Hardware is still important for that, even if it gets more connected and intelligent. Only the balance between hard- and software can make the modern manufacturing and production processes efficient and profitable. The combination of both into modern, cyber-physical devices and systems will create in the short term some things that will astonish us and in the long term some we can't even imagine now.

Some of the smaller marvels and news you can find in this issue, hopefully.

As publishing a magazine is always for and about the community, I am appreciating any feedback, comments and ideas for your editorial work from your side.

If you want to visit us in person, we are at Hannover Messe: hall 9 stand H 81

Editor of PCN Europe

FREE
Digital
Subscription



Next Issue: May 2019

Medical - Logistics

Special: Chemical & Pharmaceutical

5
Industry News

6
New Products

Explosion Protection & Safety

8
Tank Storage Monitoring With Intrinsically Safe Camera

10
Communications for a Petrochemical Plant

12
Cover Story: Fit for the Industrial Internet of Things: Mobile Solutions for Hazardous Areas

14
Smart Steam Boiler Technology

17
Measurement:
Pressure
Transmitters
in Space



18
Exclusive Interview: Staying Smart in all Industrial Fields. How HANNOVER MESSE reflects changes in the industry

Industry Special: Food & Beverage

22
Food & Beverage: A Hygienic Doubles Team

30
Index

Control & Software

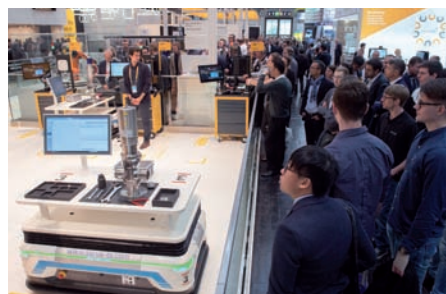
26
Precision Built - Automation and the Business of Manufactured Stone

28
Field Device Integration Opens a new era in Fieldbus Technology



The Road to Digitization

Whether in mechanical and plant engineering, automotive, aviation, construction, metalworking, plastics, process engineering or electrical engineering and electronics – each of these industries must respond adequately to the challenges of digital transformation. Many of them have already embarked on the journey, and others are preparing to follow. “The major challenge here is not to view IT as an isolated solution, but to connect all data and systems together in such a way as to provide the greatest possible benefit for business success,” says Hubertus von Monschaw, Global Director for Digital Factory in the HANNOVER MESSE team. “This year, companies from around the world will be coming to Hannover from April 1 to 5, to demonstrate how artificial intelligence can significantly enhance the capabilities of existing software solutions. HANNOVER MESSE is thus strengthening its profile as the largest B2B platform in the Digital Factory segment,” he concludes.



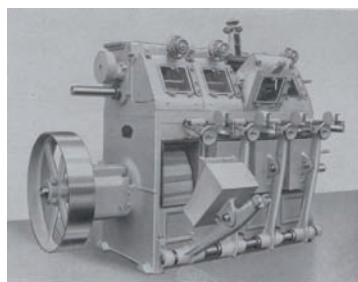
Investment in Industrial Communication



Pepperl+Fuchs acquired the business of US-based pioneer in industrial Ethernet communication Control Corporation, effective February 1st, 2019. Control's technologies will complement Pepperl+Fuchs' portfolio of Sensorik4.0 sensor solutions and interface technologies that includes AS-Interface, IO-Link masters, and industrial connectivity. Expanding its offering of Ethernet communication products and field-interfacing devices ties into Pepperl+Fuchs' Industry 4.0 strategy and will allow the company to provide even more solutions that close the gap between field devices and the control level. “An enhanced Pepperl+Fuchs IO-Link product range will help our customers improve the flow of data from field devices to the control level and the cloud. Customers will be able to turn to a single, trusted partner to help develop their newest digital business processes,” says Reiner Müller, President of the Factory Automation Division at Pepperl+Fuchs.

125 Years in up to Date Bulk Processing

1894 in the heart of Zürich Ing. Walter H. Gericke founded his machine and mill building factory. He attained quickly an excellent reputation as a specialist and as a reliable supplier of modern, partly already automated,



milling plants. At the beginning of the 20th century Gericke constructed its first vertical mixers and celebrated a major success with the patented „Soder-mills“, which resulted a higher yield. Innovation was in the foreground in the 40's with the construction of pneumatic conveying systems and vibrational dosing units. From the 60's on Dr. Hermann and Willi Gericke set significant milestones with the internationalization. New technologies remained in the focus, whereby less common types of machines succeeded into the program through license agreements with US companies. The types of machines included the differential weigh feeder, the sack compactor and the continuous granulators. Today Markus Gericke is leading the company in the 4th generation. Although the engineering and the construction competence has been extended to new locations like Asia, United States of America and South America the reliability and durability of machines and installations stand for Swiss quality. The Gericke Group is employing worldwide over 300 employees in 12 different locations.

Pocket-size Food Scanner Developed by German Researchers

Fraunhofer researchers developed the system, which exists in demonstrator form, together with partners in a project commissioned by the Bavarian Ministry of Food, Agriculture and Forestry. One of the projects concerns a food scanner designed to help reduce waste at the end of the value chain – in stores and in the homes of consumers. In future, the inexpensive pocket-size device will determine the actual freshness of food, whether packaged or unpackaged. Researchers at the Fraunhofer Institute for Optronics, System Technologies and Image Exploitation IOSB, the Fraunhofer Institute for Process Engineering and Packaging IVV, the Deggendorf Institute of Technology and the Weihenstephan-Triesdorf University of Applied Sciences are developing the compact food scanner, which has been built as a demonstrator with data for two foodstuffs and also permits the shelf life of products to be estimated. The core of the mobile scanner is a near-infrared (NIR) sensor that measures the ripeness of the food and identifies the amount and composition of its contents. Once suitably trained, the device could not only determine the usability but also authenticity of a product.



GALVANICALLY ISOLATED HART MODULES

I/O system for use with temperatures up to 70 °C



Turck is presenting HART modules for its excom I/O system with fully galvanically isolated channels. This prevents therefore any potential transfers and the resulting corruption of measured values. The temperature resistant HART modules for inputs and outputs enable excom to be used at all temperatures up to +70 °C. In this way, the

I/O system can be placed even closer to the fieldbus instrumentation even under severe temperature conditions. The new HART modules process the information of multi-variable measuring devices, extended diagnostics or status information faster than previous devices. As the module provides its own communication controller for each channel, this information can be evaluated simultaneously. Another benefit is provided when HART field devices represent their main measured value digitally and not as a 4...20 mA signal: Digital signal transmission is firstly more reliable and secondly more energy efficient. Turck was able to keep the excess reactive power of the devices to a minimum. This improves the power balance of field device and remote periphery. The new modules enable customers to reduce the number of device variants that have to be kept in reserve. Modules with HART communication and galvanic isolation were previously non-standard.

►► 56058 at www.pcne.eu

MODULATING ACTUATORS

For reliable automation of larger linear control valves



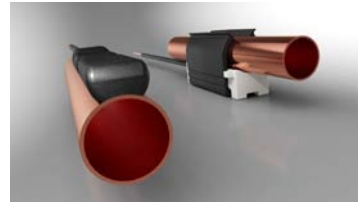
The new **Rotork** actuator is capable of a maximum 4,500 lbf (20 kN) seating thrust. The new sizes increase the CMA range modulating thrust performance to 3,000 lbf (13 kN) with a 114.3 mm (4.5") stroke length for the automation of larger valves with higher pressure ratings. The combined performance of the CMA and the larger CVA

ranges enables Rotork's innovative electrical control valve actuation technologies to be applied to process control applications of virtually any size and description. CMAs are robust enough to handle extreme temperature swings, corrosive environments and are also available for explosionproof areas. The CML-1500 and CML-3000 models, including those with hazardous area approvals, are watertight to IP68 for temporary submersion (7 metres, 72 hours). The optional Reserve Power Pack (RPP) uses supercapacitors to provide the actuator with enough stored energy to perform predetermined action on mains power failure, such as moving to the fully closed position, fully open position or anywhere in between. Manual operation is available as standard. The cost-effective electric solution is suitable for a wide variety of applications found in sectors such as power generation, chemicals, petrochemicals and the majority of other process industries.

►► 56174 at www.pcne.eu

PLASTIC TEMPERATURE PROBE

Contact-optimized and easy to install



JUMO plastoSENS T sensors are coated with plastic in the injection molding process. They offer total design freedom as well as a high level of insulation and vibration resistance. The contact-

optimized probe can measure the temperature by simply being placed against a pipe. To measure the temperature, different platinum thin film sensors can be used in a two-wire circuit, depending on the requirements involved. The maximum measurement temperature is 180°C. A plastoSENS T04 with protection type IP65 is made entirely from thermally conductive plastic. The material not only ensures a fast response time, it also guarantees reproducible measurements. A wide range of variants with different diameters ensure that the probes can be optimally adapted to suit the pipe diameter in question - regardless of whether you are dealing with copper, steel, or plastic pipes. As a further benefit, the device is fastened externally, which means the flow in the pipe remains unchanged. Consequently, the T04 also enables temperature measurements on small tubes as of 8.0 mm or 3/8". The entire temperature probe installation can be given a seal so as to easily identify any tampering. The comprehensive accessories, comprising a shielding shell and fastening clip, ensure that the probe can be mounted easily and quickly without the need for additional tools.

►► 56095 at www.pcne.eu

INDUSTRIAL IOT MACHINE MONITORING KIT

Monitoring up to eight physical factors in applications



Bosch and **HARTING** have pooled their expertise to produce the first Plug&Play IoT kit for industrial applications with IP54 protection, available on the market. It quickly and easily allows digital condition

monitoring for any type of machinery. Digital condition monitoring using physical measurements such as temperature and vibration is an efficient means of permanently monitoring and improving the system availability of machinery and plant. It enables changes in machine behaviour to be identified and the appropriate action taken. However, selecting, installing and integrating suitable components in existing infrastructure can sometimes be very costly, as production plants turn to trained IT specialists for support. The IoT starter kits previously available on the market are suitable for first prototyping but are not designed for long-term use in an industrial environment. The kit comprises a CISS (Connected Industrial Sensor Solution) multi-sensor unit by Bosch and the MICA Edge Computing System by HARTING. The small CISS sensor unit can be attached to any surface (IP54) and detects up to eight physical factors, including temperature, humidity, vibration, change of position, pressure, light, magnetic field and acoustics. The robust MICA mini-computer can also be installed alongside the machine (IP67) without the need for a control cabinet.

►► 56089 at www.pcne.eu



HART TO ETHERNET GATEWAY SYSTEM

Connect HART Devices to the Industrial Internet of Things



Moore Industries announces the release of the all-new HES HART to Ethernet Gateway System that converts signals from up to 64 wired HART devices to Ethernet MODBUS/TCP and HART-IP. The HES allows HART transmitters and smart valves to

interface directly with MODBUS/TCP-based monitoring and control systems over Ethernet, with field device data viewable in any web browser via the HES' built-in web server. The HES communicates with HART field devices in point-to-point and digital multidrop networks and supports both Normal and Burst Mode communications. It is available in a single channel or four channel configuration. Single channel configuration supports up to 16 HART devices in digital multidrop mode, or can support just one device in a standard point-to-point 4-20mA loop configuration. The four channel configuration can support up to 64 total HART devices for high density installations. The HES supports communication with HART 5, 6 and 7 field devices that includes Coriolis, magnetic, vortex, ultrasonic and multivariable mass flowmeters along with pressure, pH, level, temperature transmitters and smart valve positioners. The HES has sufficient memory to handle thousands of process variable and diagnostic data points from connected smart devices.

►► 56017 at www.pcne.eu

AIR HOISTS FOR SAFE AND RELIABLE LIFTING

Robust design for operation in tough environments



Wherever tough or hazardous operating conditions place excessive demands on lifting operations, Profi series air hoists from **J D Neuhaus** rise to the challenge. The JDN Profi range is now deployed in applications that range from chemical (including pharmaceutical, paints and varnish), foundries, and food and

beverage, to list but a few. In such industries, the inherent design attributes of Profi hoists are proven that they can perform safe, high-performance and cost-effective lifting and lowering operations. Profi air hoists are known for their robust design, a characteristic that makes them suitable for tough industrial applications, even in continuous working processes. Safety features, such as 100% duty rating and explosion protection are an important advantage when working in hazardous areas. In line with customer requirements, various control systems are available, including remote controls, while for traversing loads, different trolley designs can be specified. Put simply, Profi hoists excel in places where safety is paramount. After all, unlike electricity, compressed air does not generate sparks, while overload protection is available and is often provided as standard.

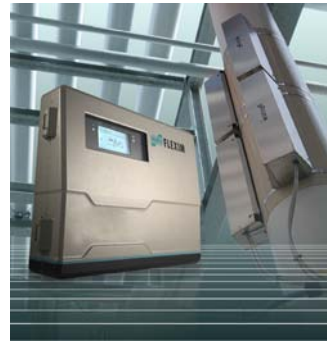
►► 56465 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

NON-INVASIVE GAS FLOW MEASUREMENT

Extension of measuring range up to 200 °C



The clamp-on ultrasonic systems of the FLUXUS G series from **FLEXIM** can now measure the flow of gases at temperatures up to 200 °C. Until now the application range of non-invasive measuring technology has been limited to temperatures up to approx. 100 °C. This progress is made possible by the consistent further develop-

ment of suitable methods of noise suppression and intensive materials research. FLEXIM has pioneered developments in the field of non-invasive gas flow measurement for about 15 years. FLUXUS G series gas flowmeters are currently in use worldwide, from onshore and offshore natural gas production to natural gas treatment and storage in natural gas transport and distribution. FLUXUS G is also used in the chemical industry, especially when the medium itself provides the best reason not to open the pipe, as in the case of corrosive process gases or toxic gases like ammonia. Sophisticated signal processing and effective suppression of noise now make it possible to measure the flow of gases even at low pressures, such as compressed air or nitrogen, which is used as an inert gas in the chemical and pharmaceutical industries. Extension of the temperature range now opens up new fields of application.

►► 56482 at www.pcne.eu

WEIGHING INDICATORS

Variable series for versatile use



Variohm EuroSensor has added a new line of weighing indicators that will fulfil the cost and performance requirements for a wide range of counting, check weighing and platform scale applications across

industries. The new W-series offers four models for DIN-rail and panel mounting with entry level to advanced interfacing and a choice of output, display and interactive functionality. Covering 4 or 8 load cell inputs up to 350 Ω, the range includes an ATEX compatible model and an electronic overload guard for redundant operation. The cost effective WT1 model has DIN-rail mounting and with either RS232C half-duplex or RS485 full duplex serial doors may be loaded with ASCII or Modbus RTU protocols to enable communication with a PC or PLC. The indicator has an internal resolution of 16 x 106 counts and a 5 digit, 7 segment LED display has a resolution of 16,000 counts, with a three-key mechanical keyboard providing easy access for pre-programmed functions. The WT2 weighing indicator builds upon the WT1 with connectivity via PROFIBUS as its default protocol offering the ability for control in more complex systems. The WT2 also features an optional Ethernet connection which comes with a 128-byte in/out buffer for high-speed PC connections.

►► 56525 at www.pcne.eu

Tank Storage Monitoring With Intrinsically Safe Camera

Tank storage companies cannot afford to have leaks as a result of ageing assets or corroding tanks. In order to meet increasing safety and environmental regulations and to avoid huge fines, Belgian tank storage specialist ADPO relies on third party inspection agencies like The Sniffers to monitor its facilities for unwanted fugitive emissions with optical gas inspection cameras

Antwerp Distribution and Products Operations (ADPO) is located on the left bank of the river Scheldt in the Port of Antwerp, Belgium. The site of 32 hectares wide combines all aspects of physical distribution of liquid bulk products and operates 290.000m³ of tank storage capacity. The Sniffers is an independent service provider, which identifies current and future leaks in pipelines and installations in the oil and gas, petrochemical and chemical industries and which provides advice on how to reduce emissions and energy losses, and maintain pipeline network integrity. "ADPO is well aware of its responsibilities and of environmental, safety and health regulations, which is why the organization relies on companies like The Sniffers on a regular basis," says Bart Segers, project leader at The Sniffers. "We have been performing LDAR projects for fugitive emissions around the world for more the 25 years

and optical gas imaging cameras from FLIR are an essential tool for us to get the job done more efficiently and safely."

FAST AND EFFICIENT LEAK DETECTION

When inspectors from The Sniffers are on site at ADPO, optical gas imaging cameras from FLIR are the go-to tool to inspect tank roofs and walls, as well as the storage tank instrumentation (for seals, breather valves, etc.). Bart Segers says an optical gas imaging camera is so much more efficient than traditional sniffer probes (TVAs or Toxic Vapor Analyzers): "With a TVA probe, you have to approach your target really close, which is not always possible or even safe. With an optical gas imaging camera on the other hand, you can monitor large areas, like the chemical liquid tanks here at ADPO, from a safe distance. You can get an overview of the entire target without

having to build scaffolds."

"FLIR optical gas imaging cameras allow you to monitor an area very fast, which is not only a huge time benefit for us, but also for the end customer, who might be able to save thousands of euros in lost gas and lost profits. At a site like this, we typically have to monitor about 500 sources. With a TVA probe, this would take a whole day. With the FLIR camera, I can manage this in one and a half hour."

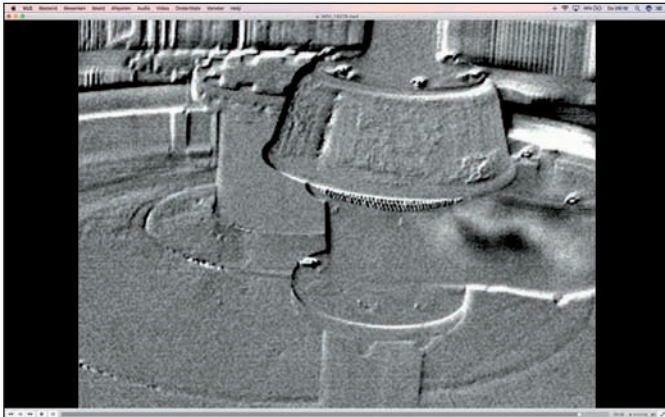
VISUALIZING MORE THAN 400 GASES

The ADPO site in the port of Antwerp has 276 tanks of varying sizes from 150m³ up to 5.000m³ and stores more than 150 different liquids, including oil additives, intermediates, commodities, but also fine chemicals that are stored under a wide operating permit for ADR/IMO classes 3, 4, 5, 6, 8 and 9. With 120.000m³ of stainless steel tank capacity ADPO is the world's biggest single stainless steel storage terminal. When your job is to monitor a tank storage site with such diversity of liquids, you need a detection solution that is capable of handling this. Again, optical gas imaging cameras like the GFx320 enable inspectors to visualize no less than 400 different gases, including methanol, ethanol, benzene, and many other fugitive gases.

SAFETY ZONE COMPLIANT

In hazardous environments like the ADPO plant, there is always a risk of gas collecting and igniting with a stray spark or hot surface. Working in these environments therefore requires dedicated equipment. As the latest addition to FLIR's successful GF-Series of optical imaging cameras, the GFx320 is an intrinsically safe camera that potentially eliminates the





Inspection in High Sensitivity Mode



Visual documentation for customer

need for hot work permits in Zone 2/Class I, Div II areas, depending on company protocols. "With the GFx320, you don't have to go through all the hassle of requesting a hot work permit," says Bart Segers. "This can sometimes be a time-consuming process and in a lot of cases, you can't afford to lose much time. Sometimes, we need to do inspections after a production stop. To be up and running again, customers usually expect us to get started with the inspections as soon as we can. In that case, an intrinsically safe camera like the GFx320 is a huge time saver."

ERGONOMIC VIEWING

"The FLIR GFx320 is easy to carry, much lighter than any optical gas imaging camera

I have worked with," says Bart Segers. "It's also much more comfortable to work with than the usual TVA probe gear that you have to carry around, especially when you're on site for an entire day."

Just like any camera in FLIR's GF-Series, the GFx320 has three imaging modes: IR image, visual image and High Sensitivity Mode (HSM). Bart Segers says that when monitoring for fugitive gas leaks, HSM is his standard mode, because it allows him to detect even smaller leaks very fast.

The High Sensitivity Mode uses proprietary video processing techniques to accentuate plume movement for a fivefold increase in leak detectability. In addition, the GFx320 is capable of measuring temperatures up to

350°C with an accuracy of $\pm 1^\circ\text{C}$. This is critical for assessing thermal contrast between the gas compound and the background scene. "We can also take pictures with the GFx320, which come in handy when you want to report to the customer," says Bart Segers. "The visual aspect of this FLIR detection technology is just an invaluable asset. When you can show your customer an HSM movie of a leak, they are immediately convinced. The optical gas image clearly demonstrates the severity of the leak and allows your customers to assess which actions they need to take to fix the leaks and prevent further economic losses."

►► 56546 at www.pcne.eu

Securing a competitive edge. Shaping the future. Exploring mobility.

New Tablets Tab-Ex 02 for Hazardous Areas up to Zone 1/21 and Div. 1

- Future-proof, Android O8-based technology for more elaborate, IIoT-suitable applications
- More transparency, higher availability and faster processes in commissioning, maintenance and during operation with augmented reality applications
- Worldwide certifications according to ATEX, IECEx and CSA/NEC for global use

www.pepperl-fuchs.com/ecom

ecom
A PEPPERL+FUCHS BRAND



01. - 05.04.19
Hall 9 · D76

Communications for a Petrochemical Plant

Delivering a modern safe and reliable communication solution for a demanding environment

Shell's Pulau Bukom Manufacturing Site is an integrated oil and petrochemicals site with manufacturing facilities for fuels, lubricant based oils and speciality chemicals, located off Singapore. Based on an island 5.5 km southwest of Singapore, it forms part of a group of islands that have been identified by the Singapore government for petrochemical industrial manufacturing. Bukom is Shell's largest wholly-owned refinery globally with a crude distillation capacity of around 500,000 barrels per day; it is Shell's largest petrochemical production and export centre in the Asia Pacific region. Sepura successfully implemented a new TETRA system on the island, with an employee based permanently on the site for maintenance and repairs.

THE CHALLENGE

As an island off the shore of Singapore, Shell wanted to replace their existing analogue network to improve security, coverage and connectivity. The solution had to provide a new network with improved coverage and capacity. One the important requirements was an improved audio quality for the network of up to 2000 devices, that would be in use on the site. Because of the site environment the portables for the workers had to be intrinsically safe and a secure mode of communication for users was needed. To protect the investment maintenance management and service support of the network for 10 years had to be assured.

Being located to the south of Sentosa, the

site required careful planning and regular visits to ensure any challenges were quickly solved. The island covers 243 hectares and as a major oil and petrochemical site the challenges were abundant.

As with any petrochemical site, the island consists of a lot of metal structures, which was one of the key challenges to face the implementation of a new network. Metal is often a barrier to radio communication, frequently blocking or interfering with signals, so this challenge needed careful planning to overcome. The hazardous materials present on site are numerous, namely crude oil/fuel, offering a number of health and safety hazards to overcome during implementation. As an island with such importance to the oil and petrochemical industry, access to the site is heavily restricted; meaning site visits, planning and construction of the new network also needed careful consideration.

THE SOLUTION

Sepura implemented a TETRA based solution for the site, covering the entire island as well as the ferry terminal and remote docking buoy. Sepura's Intrinsically Safe hand portable radios were implemented to ensure worker safety with the chosen model being the reduced keypad STP8X100. Vehicles and offices on site were setup with SRG3900 mobile and desktop radios.

To further enhance worker safety, Sepura's STP8X100 gave the addition of a dedicated emergency button for quick responses in an emergency.

To better support the Movement Control Room (MCR) which manage the loading/ unloading of products from ships, the Sepura





radios are integrated to the instrumentation system to provide quick pump trip function so that those on the in control of loading the large ships could trigger a pump trip using their radio in case of emergency.

Since communication is a critical component in Bukom, Sepura have a dedicated team of local engineers to provide 24/7 all year round to support the TETRA radio system. Preventive maintenance is carried out quarterly to ensure that system health is maintained by pre-emptively arresting issues before they happen.

Shell have contracted Sepura to deliver a multi-year managed service to ensure the safety and efficiency of the site and associ-

ated operations.

“The success of this project and long term partnership with Shell proves our ability to provide our customers with the best possible TETRA solution to meet their needs, working closely with them to meet their requirements. We have delivered unrivalled TETRA coverage with the robust, reliable and secure TETRA radios both hand portable and mobile. The new network has delivered safety, efficiency and future capabilities to Shell and we look forward to developing their system further,” says Terence Ledge, Sales and Marketing Director at Sepura.

Peter Tan, Project Manager at Sepura adds, that “Working closely with the Shell stake-

holders and building rapport with user’s focal points was the key success factor to ensure that the delivery could proceed. In the maintenance phase, these relationships help provide a smooth transition process from the old to the new system, helping to ensure that issues and concerns are raised to the maintenance team for remediation as soon as possible.”

The Shell Site in brief contains of 2 base stations, 5 desktop radios, 80 fixed radios, 1,000 hand-portable ATEX certified radios and handles an average number of 7,500 of calls per day.

►► 56540 at www.pcne.eu



Fit for the Industrial Internet of Things: Mobile Solutions for Hazardous Areas

Connecting people, plants, assets and systems is a central key to added value in the process industry. With mobile, explosion-proof solutions from ecom, IIoT-data can be used to manage important assets efficiently, proactively plan maintenance activities and increase plant uptime at minimum cost

Industrial companies can benefit enormously from mobile, digital solutions and IIoT-applications in terms of efficiency and data quality. However, many businesses with extensive factory premises or hazardous areas – due to a lack of economic options, compatibility or certifications – are still not integrated in the modern information and data flow. Intrinsically safe mobile solutions can now provide the technological basis for networked applications to increase productivity, efficiency, flexibility and plant safety – even in hazardous areas. Mobile users can communicate in real-time, anytime, anywhere, as well as collect and retrieve data, parameters and information remotely.

BENEFIT FROM NEW TECHNOLOGIES AND COMPLEX APPLICATIONS

“Translating the technical progress into practice is a challenge”, says Dr. Holger Schlüter, Associate Director IoT/Industry 4.0 at Lufthansa Industry Solutions. “Businesses must design their entire value chain to reduce costs while simultaneously increasing productivity and efficiency. Oliver Wichmann, head of the Mobile Solutions Business Unit at Bilfinger Maintenance GmbH, was also dissatisfied with the status quo in maintenance: “I was simply stunned by the fact that people have to document their maintenance work in writing and then again in the SAP system. With ecom we have found a suitable partner to improve the quality of documentation processes in potentially dangerous work environments, and to make them more efficient while simultaneously saving time and money.”

Managing and maintaining mission-critical assets and plants is very complex and costly. In order to obtain an efficient asset manage-

ment, mobile solutions can help to identify plant components, warehouses and locations, collect data and link them directly to the backend system. The interaction of intrinsically safe mobile devices and the right applications is particularly important. The new ATEX/IECEx Zone 1 / Div. 1 certified industrial tablet Tab-Ex 02 from the Pepperl+Fuchs brand ecom for example is ideally suited for IoT-capable applications. It also simplifies data exchange with SCADA / DCS systems, enterprise resource planning systems (SAP, IBM Maximo, etc.), project management systems and computer-aided system planning. The tablet provides the technological basis for complex applications that connect people, processes and systems through the Industrial Internet of Things and

will be a decisive factor for a company's success in the coming years.

MOBILE SOLUTIONS FOR MAINTENANCE

A mobile solution portfolio based on software and hardware is an important prerequisite for predictive maintenance. Only if the required data can be called up in real time, the information is usable for planning. With the “BM@work” application from Bilfinger Maintenance, all maintenance work can be recorded quickly and seamlessly on an industry tablet or smartphone.

The in-house developed, fully integrated SAP eScheduler, serves to visualize orders and resources, live monitoring, processing and much more. The specific procedures and measures



For efficient asset management mobile solutions help to identify plant components, storage facilities and sites, collect data and link them directly to the backend system.



can be individually assigned to the technicians and mechanics and can be transferred to mobile devices. The maintenance worker sees the order and maintenance logs on his tablet or smartphone and easily records which tasks he has completed and which materials have been used. The mobile device automatically transmits this information to the SAP system in real-time. This not only improves the collaboration with colleagues or experts inside and outside hazardous areas, but also streamlines decision-making processes. Problems and damages can also be resolved quickly and efficiently – without the need for a specialist to visit the plant or offshore platform in person.

NEW TECHNOLOGIES FOR THE PROCESS INDUSTRY

Modern mobile solutions combine high performance with innovative applications such as augmented reality. With its magnetic gyroscope, the Tab-Ex 02, for example, enables users to identify objects of a plant via augmented reality applications. The software delivers all underlying, existing data directly on the mobile device's display in real time, while also making it shareable within a company's network. Whether through construction plans, maintenance information or operating states – the reality is enriched and extended by virtual data already stored in the plant. The mobile use of AR can solve multiple challenges and tasks in the industry – from rapid commissioning of a plant, transparent processes and precise maintenance to efficient asset management. For efficient asset management modern industrial tablets can also be combined with beacon technology. Lufthansa Industry Solutions, for example, re-



lies on ecom's ATEX / IECEx Zone 1 certified Loc-Ex 01 beacons. The Bluetooth Low Energy (BLE) beacons combine digital and physical data in a single, unified business intelligence unit. By attaching small Bluetooth beacons, assets become intelligent, localizable objects, which can provide arbitrary information, such as temperature or fill level, and even respond to events such as key-stroke, brightness, shock or positional change. Apart from the spatial information, additional information about local process parameters is transferred in real time. Neighborhood relations and alarms can also be defined, for example if hazardous

substances collide or are stored next to each other. For example, when a mobile worker approaches an asset, information – tailored to the task, person and access rights – is displayed on the tablet's screen using an individual app, without having to navigate manually to the right content. This immediately initiates the correct workflow and data reception. In addition, BLE beacons provide site-specific insights into operating processes and asset information, such as plant plans, login data, number of deployments and average dwell time – even temperature measurements and other metrics can be implemented.

The key to new and more flexible IIoT-applications lies in the interaction of various technologies and mobile solutions. They enable a high information density along the entire process chain. Whether in manufacturing, ongoing operations, maintenance or the configuration and control of plants, through to the inspection and management of assets, tools and equipment, supply chain management and plant safety controls: By using digital, mobile solutions, maintenance staff, technicians, experts, and project groups can now work together faster, more flexibly and from any location in real-time.

The new Tab-Ex 02 is ideally suited for IIoT-applications and simplifies data exchange with SCADA/DCS systems and enterprise resource planning systems such as SAP, IBM Maximo, etc.

►► 56539 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

N° 3 - MARCH 2019

www.pcne.eu

Smart Steam Boiler Technology

Digitisation and networking in a traditional brewery

Heiko Doppler, a Bosch customer service engineer, and Thomas Steffes, Project Leader at Kramer & Best, have recently handed over a new steam boiler system to André Ködel, master brewer of Park & Bellheimer's brewery in Pirmasens, south-west Germany. Park & Bellheimer expects to save around €80,000 a year in energy costs by installing this upgrade. Furthermore, the brewery in Rhineland-Palatinate is employing an Industry 4.0 solution in the form of MEC Optimize, meaning that in future it will benefit from digitised data collection, intelligent analysis and maximum energy transparency.

SCHEDULING MAINTENANCE AND PRODUCTION

MEC Optimize from Bosch is a digital efficiency assistant that helps boiler attendants

and operators to locate potential energy losses quickly and suggests concrete measures to address them. The efficiency assistant even detects critical situations immediately and analyses the state of components based on the operating mode. The reliable prognoses enable Ködel, who is also Head of Operations at the Pirmasens plant, to schedule maintenance timely according to the brewery's capacity. Leading-edge predictive maintenance is consequently being brought into a traditional brewery while making its workers, machines and processes more efficient.

REMOTE SUPPORT AVAILABLE

The data for MEC Optimize is collected and saved locally by an industrial computer built into the control cabinet. Bosch offers

two different systems for transferring and visualising data, which make use either of standardised interfaces to a process control system or of a PC/tablet via WLAN. At the brewery in Pirmasens, authorised persons can view the statistics and analyses via the central control station, gleaned all the important information about the system's energy consumption, load profile and performance, and digitally entering the results of the boiler tests at the same time. Being networked with the secure Bosch MEC Remote monitoring system enables data to be called up from any location, including outside of the brewery. A further advantage of remote access is that, if requested by the operator, Bosch experts can assist with troubleshooting, parametrisation and programming – cost effectively and without having to travel to the site. "Uninterruptible yet economical process heating is absolutely essential to running our brewery," says Ködel. The networked solutions from Bosch will help to make response times faster and make work more productive overall.

The new Bosch boiler system supplies the brewing house with steam for processes such as mashing and boiling – up to five tonnes of steam per hour are available. Components for heat recovery, a modulating natural gas burner, speed-controlled fans and various items of automation equipment help to provide the steam in a flexible and energy-saving way. The new system was planned and installed by Kramer & Best Anlagenbau GmbH in collaboration with Bosch Industriekessel GmbH.

►► 56016 at www.pcne.eu



WIRELESS TRANSMITTER

For pressure monitoring and control



Honeywell introduced the SmartLine Wireless Pressure Transmitter, which offers a flexible, scalable, secure and cost-effective solution for both pressure monitoring

and control when combined with the company's robust wireless network technology. The enhancement and evolution to the successful XYR 6000 wireless transmitter enables users to choose the wireless protocol best suited to their process automation applications. The multi-protocol-capable OneWireless Network infrastructure supports the two leading industrial wireless protocols - ISA100 Wireless and WirelessHART. The pressure transmitter allows plants to use wireless for control, and seamlessly integrates with Honeywell's Experion control system. The solutions offer significant performance and cost advantages for both current and new users of industrial wireless technology with increased power, faster update rates and reduced infrastructure requirements.

►► 56013 at www.pcne.eu

MULTIPOINT THERMOMETER

For oil & gas and chemical industry



Endress+Hauser presents iTHERM MultiSens, a unique new range of standardized, easily configurable and globally available multipoint temperature instruments for the oil & gas, petrochemical

and chemical industry. The linear and flexible RTD or thermocouple multipoint assemblies can be fully customized to meet the most challenging customer and process requirements while offering simplicity in configuration, ordering, installation, commissioning and maintenance. The innovative safety features and diagnostic capabilities iTHERM are increasing process safety. They produce accurate and reliable temperature profiles, linear or 3D with up to 59 individual sensors. With their mechanical robustness and reliability they can be used in high-pressure, high-temperature, corrosive process environments.

►► 56173 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

MAGNETIC FLOW METERS

Reliable measurement + diagnostics



Emerson's Rosemount 8700 Series of Magnetic Flow Meters has been certified to comply with NAMUR (Normen-

arbeitsgemeinschaft für Mess- und Regeltechnik in der Chemischen Industrie) recommendations, expanding the automation supplier's portfolio of advanced process measurement solutions approved for use in the European chemical market. NAMUR, the international association and standards body for automation technology users in the process industry, establishes recommendations for equipment deployed in the European chemical market based on operating norms and user requirements. Emerson's certification is the culmination of rigorous testing by an accredited third party, which allow the Rosemount 8700 Magnetic Flow Meters to be deployed in chemical industry applications.

►► 56097 at www.pcne.eu

EX MULTIGAS PROBE

For 3-in-1 gas measurement



The **Vaisala** MGP261 multigas measurement instrument gives continuous readings of methane, carbon dioxide, and water vapor directly in the biogas process pipeline. It is optimized for biogas production processes, such as anaerobic

digestion of waste from agriculture, industries and municipalities, and the utilization of landfill gas. The newly launched MGP261 is based on Vaisala's patented CARBOCAP technology. The Vaisala biogas measurement instrument, MGP261, offers real-time gas composition without sample extraction or treatment. Thanks to its accurate and stable methane measurement, this compact and reliable instrument helps biogas plant operators gain comprehensive control over their process and optimize their combined heat and power (CHP) engine performance.

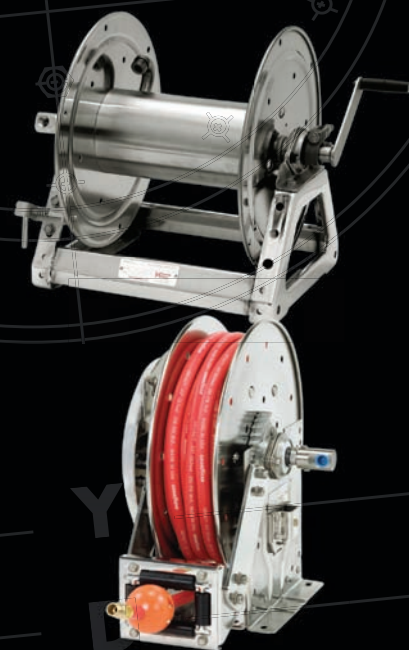
►► 56516 at www.pcne.eu



HANNAY WORKS HERE

When it comes to food processing, you need reliable equipment that won't quit.

Hannay Reels delivers every time.



**Hannay[®]
Reels**
The reel leader.

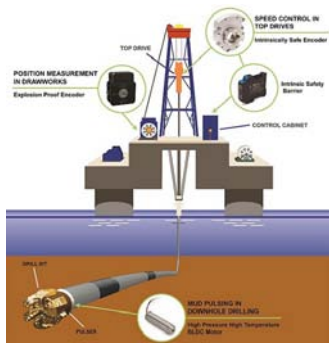
hannay.com | +1-518-797-3791

►► 56553 at www.pcne.eu

www.pcne.eu

ENCODERS AND MOTORS CAN HELP SAFETY

What engineers for Oil & Gas need to know



The constant fluctuations in supply and demand in the oil and gas industry drastically effect the worldwide demand for drilling operations, making the need to design more efficient control systems greater than ever. Position sensors and motors are crucial components in oil and gas equipment and must reliably

operate day in and day. High temperature and pressure, potentially explosive environments, extreme vibration, shock, dirt and moisture are all part of the daily operating environment in drilling applications. The rules and standards that impact the development of drilling equipment and systems are also constantly evolving. Engineers designing components for the oil and gas industry need to stay up-to-date with these changes, which are often complicated by location and governments. Depending on the application, products often will need to be certified for hazardous area use, or, in situations where explosion is not a risk, specified and tested to operate in the given environment. The **Sensata** White Paper gives an introduction about the different specifications to be considered. You can find the download on our webpage by entering the 5 digit code below.

▶▶ 56514 at www.pcne.eu

MACHINE MONITORING PLATFORM

Manufacturer independent machine data collection



e-nizing, a newly founded subsidiary of Schenck Process, has launched e-nizing.io, a platform to visualize the status of all machines, no matter if it is Schenck Process- or any other equipment. In today's faster, digital, connected and complex world, the platform provides easy integration. No matter which IoT

solution a customer has in place, e-nizing brings it all together in one app: simple, safe, generic and fast. The software offers the freedom to integrate all IoT solutions. No data silos anymore as data can be collected from any machine (also non-IoT machines can be retrofitted), analytics or sensors. It is an open system, highly scalable and offers everything in one place, independently of its vendors. It visualizes the status of the machine in a structured and clear way and analyses through a variety of Add-Ons. Limits for every data point can be defined and thereby, any event can trigger a phone call, email or API call. This can be used for example to be notified if there is a problem in the plant or to order spare parts or maintenance automatically. The system is run with end-to-end payload encryption, every device has a unique ID and unique encryption key, 2-factor authentication and certified data security.

▶▶ 56520 at www.pcne.eu

BELT ALIGNMENT SWITCH

Long lifetime in extreme conditions



The **steute** business unit Extreme presents its new ZS 92 SR belt alignment switch, created on the basis of its ZS 92 S emergency pull wire switch series, which is also new. This robust switching device monitors the alignment of conveyor belts. A large stainless steel roller lever registers when the belt is not running centrally, for

example because it is unevenly loaded, and then - depending on its communication with the control unit - either corrects the alignment or stops the conveyor system. An new feature of the variant with staggered contacts is individually adjustable switching points. The switching points for advance warning and for switching off can both be individually set within a range of 5°-35°. This is made possible through a simple unlocking, shifting and latching of the switching inserts. The ZS 92 SR is especially designed with this fact in mind. Its aluminium die-cast housing is very robust and has multiple outer layers (passivation, base coat, powder coating). The normal position of the roller lever can be freely adjusted and thus adapted to suit the individual application. Optional extras for the steute ZS 92 SR include an LED indicator light. The ZS 92 SR can be used in temperatures from -40 to +85 °C.

▶▶ 56500 at www.pcne.eu

SENSORS FOR SMALL-SCALE PROCESSES

Rugged device for temperature measurement



Balluff is expanding their range of sensors for media-contacting temperature detection, in hydraulic power units for example. New are a temperature sensor with display, a temperature transmitter as well as a PT1000 sensor. The version without display is especially compact and vibration-resistant, whereas

the versions with the turnable and highly readable display offers high operating convenience and flexible installation. Depending on the version, the BFT sensors provide PNP switching outputs, analog signals 0...10V / 4...20mA or work as a PT1000 sensor. They are simple to install by threading into the process using a standard process connection with G- and NPT threads. Integrating them requires just a 4-pin M12 plug on the sensor. Continuous monitoring of process media on machines and equipment contributes greatly to process security. Values that need to be maintained are pressure, level and temperature. When for example in a hydraulic system you need to monitor the temperature of the hydraulic fluid, you can do this reliably using our BFT media-contacting temperature sensors. Critical process conditions such as a temperature limit can be controlled directly via the switching output.

▶▶ 56186 at www.pcne.eu



Pressure Transmitters in Space

On 22 September 2018, a Japanese H-IIB rocket launched the HTV supply vessel containing the ACLS (Advanced Closed Loop System) module destined for the International Space Station (ISS). The ACLS is tasked with "recycling" CO₂ from the air in the spacecraft and generating fresh oxygen for the crew by means of electrolysis. KELLER has developed and manufactured highly reliable absolute and differential pressure transmitters to regulate these processes

The International Space Station moves around the Earth at some 400 km above its surface. As barely any oxygen is present at this altitude, it must either be supplied from the ground or generated on board the ISS. Bringing oxygen to outer space is expensive, with transportation costs for 1 kg of payload coming in at around EUR 33,000. It is therefore a good idea to try to process the air exhaled by the astronauts in order to generate oxygen that can be inhaled again.

This is the purpose of the ACLS, which was transported to the American Destiny module (US laboratory) on 22 September 2018. Airbus developed the ACLS on behalf of the European Space Agency ESA. In the ACLS cycle, oxygen is generated by the carbon dioxide from the

cabin air being turned into methane and water using hydrogen obtained from splitting water molecules and adding energy. The electrolysis process extracts breathable oxygen from the water. According to Airbus, the system is designed for a crew of three astronauts and saves 450 kg of additional water load per year. At full performance, the ACLS extracts 3 kg of CO₂, supplies 2.5 kg of oxygen and produces 1.2 kg of water each day. The ACLS requires extremely reliable components to ensure that these processes run safely. Swiss pressure measurement technology manufacturer KELLER AG from Winterthur won the contract to develop the pressure measurement technology. The project posed some extreme challenges, as, at 400 km above the Earth's surface, components cannot

be replaced within a reasonable period of time if they fail. KELLER's contribution to this mission comes in the format of absolute and differential pressure transmitters that work in the range of 50 mbar...20 bar at 0...110 °C.

"With its pressure transmitters that can undertake the most varied tasks in numerous types of aircraft and contribute to the security of all manner of systems thanks to their reliability, KELLER has proved that the demands imposed on sensor lifetimes (MTBF) in actual operations are many times greater than they need to be", says a delighted Jürg Dobler, Managing Director of KELLER Gesellschaft für Druckmesstechnik mbH.

►► 56537 at www.pcne.eu



International Space Station with pressure measurement technology for applications under extreme conditions, KELLER AG



Rocket H-IIB before launch at Tanegashima Space Center, JAXA Japan Aerospace Exploration Agency



Staying Smart in all Industrial Fields

How HANNOVER MESSE reflects changes in the industry, an interview with Arno Reich, Senior Vice President of HANNOVER MESSE, Deutsche Messe AG

PCN Europe: The imperative of climate protection calls for a complete energy system transformation flexible, digitally integrated energy systems. How does Hannover Messe plan to face this delicate challenge?

Reich: HANNOVER MESSE focuses on the key topics that link energy and industry: power generation, energy management and mobility solutions. Thanks to its size, diversity and internationality, HANNOVER MESSE's energy sector brings together not only providers and users of energy products, solutions and services, but also key decision-makers from government and business. Special displays and forums about such topics as integrated energy, decentralized energy supply and hydrogen and fuel cells round out the program.

PCN Europe: The use of smart technologies like artificial intelligence, machine learning and virtual and augmented reality is already reality in many fields. Now it's industry's turn to get smart. If you had the "Smartometer" what would be the smart rate of the industry today and how could it be increased more?

Reich: For the past several years, HANNOVER MESSE has been tracking the development of smart industry with its lead theme "Integrated Industry". In fact, the term Industrie 4.0 was coined at HANNOVER MESSE 2011; back then, it was a concept for the digitalization of manufacturing. Today it is reality, with more and more companies embracing digitalization to improve efficiency and maintain competitiveness. The focus today is on areas such as machine learning, augmented and virtual reality, cobots, and platform econo-

mies. These technologies are driving the current stage of industrial transformation.

PCN Europe: Why is Smart Integration so important nowadays? How can it yield major benefits to industrial companies?

Reich: Integration is important because it connects all parties along the value chain, from manufacturers and suppliers to customers and logistics partners. Integration enables real-time access to information, improves efficiency, reduces costs and promotes the development of new business models.

PCN Europe: In these years of deep geopolitical changes and social instability all over the world, and also in Europe, why do you think that it's still important for a company to invest in a trade show such as Hannover Messe? What is the main return of investment that the exhibition can offer?

Reich: When someone is making large capital investments, they want to see the product and meet the sales representative in person. Companies exhibit at HANNOVER MESSE because it is where they meet qualified potential customers from all over the world. Companies present their complete product portfolio at HANNOVER MESSE, including numerous world premieres, so for visitors it is a one-stop shop for the latest technologies and solutions. During the course of the show, exhibitors demonstrate more than 500 functional examples of Industrie 4.0 and generate roughly 6.5 million business leads.

PCN Europe: Imagine to be an important decision maker of a small/medium-sized

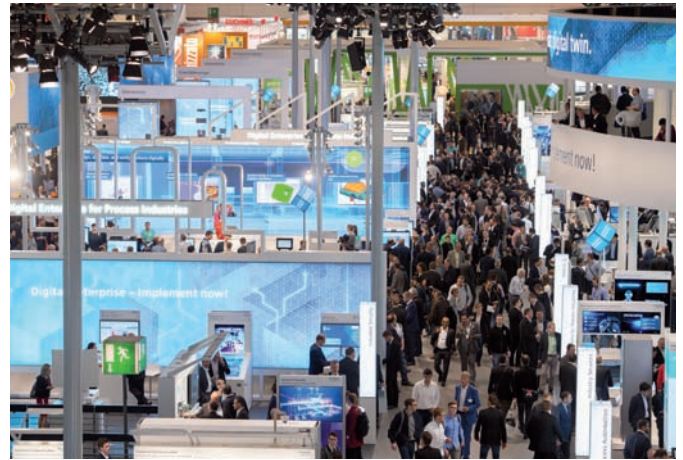


Arno Reich, Senior Vice President of HANNOVER MESSE

enterprise: Which moves are essential to enter the Digital Transformation and where is it possible to find the right support?

Reich: For companies that want to begin their own digital transformation, HANNOVER MESSE is the perfect place to explore the possibilities. Over five days, the show presents all key topics of industry – from Industrie 4.0, automation and robots to engineering, energy systems and single components – at one place and one time. We expect 6,500 exhibiting companies from 75 countries in 2019. No other event provides access to so many products, solutions and services.





PCN Europe: ComVac, the leading international tradeshow for compressed air and vacuum technology that runs with Hannover Messe, is almost completely booked out. Can you explain the reasons of this success? Are there any countries particularly involved in this growth?

Reich: We expect ComVac to grow 15 percent compared to 2017. Why? Because

compressed air and vacuum technology are essential to industry: if they stop working, production stops - just like with a power outage or IT disruption. Furthermore, compressed air and vacuum technology significantly improve energy efficiency. Manufacturers from the sector are also very innovative when it comes to new business models. For example, companies can lease compressors and pay

per unit used. Particularly companies from China, Germany and Turkey have contributed to the strong growth of ComVac.

PCN Europe: Thank you for this interview!

Sara Ibrahim

▶▶ 56536 at www.pcne.eu

Intelligently combined

www.bosch-industrial.com

Three good reasons for combined energy systems from Bosch:

- ▶ Reduced energy costs for higher competitiveness
- ▶ Cost-saving own power generation and maximum waste heat recovery
- ▶ Eligible energy management (EN 50001)



BOSCH
Invented for life

Visit us!

ISH

Frankfurt/Main, Germany
11 - 15 March 2019
Hall 12, Booth C40

▶▶ 56515 at www.pcne.eu

HUMIDITY TRANSMITTERS

Stainless steel housing for duct and wall mount



The high-end EE310 industrial transmitters from **E+E Elektronik** are now available with stainless steel or polycarbonate enclosure. The EE310 is dedicated to demanding industrial processes control. Both devices feature an optional

3.5" TFT color display, which offers an optimal view of the measured values and facilitates the commissioning and configuration. The built-in data logger can save 20,000 values per measurand. The measured data is available on two analogue outputs and on the optional digital interface (RS485 with Modbus RTU or Ethernet with Modbus TCP). The EE310 measures relative humidity and temperature in the range -40 °C...180 °C (and calculates further physical quantities such as dew point temperature or absolute humidity.

▶▶ 56199 at www.pcne.eu

ATEX CLOGGING INDICATORS

Certification allows use for broad range of applications



MP Filtri has launched its new DEH series of ATEX clogging indicators. Designed to thrive in hazardous work environments, the indicators provide critical early warnings for operators, alerting them that filter elements need to be cleaned or changed. Suitable for a wide variety of applications from oil, sea and gas to industrial production plants, the indicators have been designed to prevent machinery failures, reduce unplanned downtime, and improve safety. The new DEH series features three different

models each with a distinct connection type. They are made from AISI 316 Stainless steel and can operate with a maximum working pressure of 420 Bar (6,091 PSI) and fully tested to one million cycles. The series is approved for use in hazardous environments with ATEX, IECEx, UL, CSA, and TRCU EAC certification.

▶▶ 56184 at www.pcne.eu

STAINLESS STEEL ROTARY LOBE PUMP

For use in corrosive environments



At an amine recycling plant, a **Börger** rotary lobe pump has been introduced to add sulphuric acid to an important neutralising process. The pump has replaced a screw pump that had reoccurring problems with its sealing system. A sodium sulphate solution (created

by the reaction between caustic soda and the sulphuric acid contained in the amine sulphate) is pumped to one of two storage tanks - with sulphuric acid mixed in on the suction side until the solution reaches a pH value of 7. The unit in use is a Mobile PL200 Protect Pump in stainless steel with MIP [Maintenance In Place] and stainless steel casing liners and thermosyphon system. It is powered by a 5.5kw drive and works with 470-720rpm.

▶▶ 56380 at www.pcne.eu

DIGITAL FLOAT SWITCH WITH PNP/NPN SIGNAL

Highly accurate level detection for liquids



The digitised float measuring principle of the new **WIKa** level switch is implemented using semiconductor sensors. These enable an unlimited number of switching cycles. Users can define up to four switch points with a minimum distance of only 2.5 mm. Thus the instrument reacts to even the smallest

changes in level and is able to detect changes of $\leq 1\text{mm}$. At the same time, the GLS-1000 can monitor the temperature of the medium via a temperature output with a Pt100/Pt1000 resistance. Even with the electronic circuitry, the digital float switch is also an economical measurement solution due to its similarity in design to its conventional counterpart. With the GLS-1000, traditional PNP/NPN limit switches can be replaced by a float switch.

▶▶ 56181 at www.pcne.eu

CYLINDRICAL OPTICAL SENSOR

A compact and space-saving solution



With the 412B series in metal housing, **Leuze** presents a slim, cylindrical M12 sensor design that is especially well suited for use in tight installation spaces, as occur in, e.g., material handling or packaging machines. Compared to the previous series, the new series of switching optical sensors for object detection has an even more compact design and is available with various functionality: as throughbeam photoelectric sensor, energetic diffuse reflection sensor and as retro-reflective photoelectric sensor. In addition to

improved performance such as operating range, response time and glass optics, laser variants as well as models with NPN switching outputs are available for the throughbeam photoelectric sensors. Focus of the new development was primarily on the simple and intuitive set up use by means of 270° potentiometer.

▶▶ 55932 at www.pcne.eu

ROBUST MASS FLOW METERS FOR GASES

Flexible interface for different Bus-protocols



The **Bronkhorst** MASS-STREAM instruments operate on the basis of direct through-flow measurement in accordance with the constant temperature anemometer principle. They contain no moving parts and the measured gases pass the two stainless steel sensor probes

directly, without bypass, making the series particularly suitable for applications with low pressure loss as well as less sensitive to moisture and contamination. On the new D-6390 model, the maximum measuring range has been expanded to 10,000 l/min air equivalent. Analogue I/O signals as well as an RS232 interface are provided by default. In addition, an interface with DeviceNet, PROFIBUS DP, Modbus or FLOW-BUS protocols can be integrated.

▶▶ 56206 at www.pcne.eu



PROPORTIONAL VALVES WITH IO-LINK

Digital communication for increased reliability



Emerson today introduced its ASCO Numatics Sentronic Plus (Series 614) and Sentronic LP (Series 617) proportional pressure control valves with the integration of IO-Link communications to provide cost-effective and reliable control and diagnostics in support of predictive maintenance practices.

Using IO-Link communications to gain insight into these devices on the factory floor supports future implementation of Industry 4.0 and Industrial Internet of Things (IIoT) applications that will contribute toward greater plant reliability, availability and profitability. The versatile valves enable process optimisation, regardless of application requirements. Sentronic Plus digitally operated pressure regulator valves accurately adjust pressure, flow, force, speed and linear or angular positions. They regulate pressure up to 12 bar and are electromagnetic-compatible according to Electromagnetic Compatibility Directive 2014/30/EU. Sentronic Low Power (LP) valves are a highly efficient option for pressure regulation requirements, offering a small footprint, an easy-to-use and modular design, and advanced software capabilities. Their low-power consumption of less than four watts supports applications where power is limited.

►► 56065 at www.pcne.eu

IR ENDOSCOPE IMPROVES PROCESS SAFETY

Safe monitoring of glass vitrification process



Resolve Optics has developed and supplied an Infrared (IR) endoscope to enable safe monitoring of the glass vitrification process within a radioactive waste processing plant using a thermal camera.

The processing plant required a

method of monitoring the temperature of their waste material to ensure that there was not an excessive build up of heat that could lead to fire. With the level of radiation around the vitrification process unsafe for operators and also likely to rapidly destroy the thermal camera a remote measurement solution was sought. Operating at 7-14 microns, the prime function of the IR endoscope was to provide the desired field of view to monitor the vitrification cell and to transfer the image to the bolometer based thermal camera. For added safety the thermal camera was mounted after a 90° fold to ensure it was not in the shine path of the radiation. Due to the large aperture and sensitivity of the bolometer-based camera the endoscope required carefully positioned baffles to ensure there were no stray light reflection that could degrade the performance of the camera leading to imprecise monitoring of the vitrification process. The IR endoscope system designed and developed by Resolve Optics is capable of helping thermal cameras safely monitor glass vitrification radioactive reprocessing.

►► 56527 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

THREE PHASE ENCAPSULATED TRANSFORMER

For use in industrial and harsh environments



Hammond Power Solutions, manufacturer of dry-type transformers and magnetics, has announced the availability of an improved line of three phase encapsulated transformers for industrial and harsh environments - HPS Titan N. It offers an innovative design with

technological improvements. The transformer is completely encapsulated in epoxy and silica, providing excellent protection from airborne contaminants and prevents the ingress of moisture. Enhanced electrical performance such as 10kV BIL, lower inrush current, and higher impedance, improve safety and minimize equipment damage. Improved thermal performance and a broad range of temperature classes makes this transformer adaptable for a variety of applications. The new enclosure design offers enhancements such as front entry, removable hinged door, textured powder coating, as well as both wall and floor mount on select kVA's. HPS Titan N's improved electrical and thermal design also results in a more efficient product. Although not mandated by DOE 2016 or NRCan 2019, HPS Titan N meets or exceeds the current minimum efficiency level for ventilated transformers. It is also seismically qualified and O.S.H.P.D certified.

►► 56421 at www.pcne.eu

FLEXIBLE FLOWMETER/DISPLAY UNIT

Different flow ranges from 0.05 to 15 l/min



Titan Enterprises have introduced a combination package of 800 series turbine flowmeter and Pulsite Solo display unit as a replacement for their 800 Series Displaying Turbine Flowmeter. This new

combination provides users with more versatility, more information and the possibility of remote display reading when your flowmeter is situated in an inaccessible or environmentally unfriendly location. Designed for ease of use, programming on the Pulsite Solo is simple using the 2 front panel keys and following the prompts on the LCD display. when used with the battery-power 800 series flowmeter the replaceable battery life is estimated to be well in excess of 5 years when the Pulsite Solo is used as a flow totaliser. With rate readings, the life of the display will depend on the duty cycle but is still several years. The unit can also be externally dc powered if required for example when used with an electronic sensor such as a standard Hall effect device. This versatile flow indicator will take frequencies from dc through to 2 KHz and scale them to display rate or total. The series is designed with 6 flow ranges from 0.05 to 15 L/min. Using totally non-metallic wetted components make the 800 Series the ideal choice for the metering of aggressive chemicals.

►► 56543 at www.pcne.eu

A Hygienic Doubles Team

Hygienic design is becoming ever more established in the food and beverage industry. A good example of this trend is the new pms ultrasonic sensor from microsonic. To guarantee hygienically sound installation of this new ultrasonic sensor, microsonic puts its trust in the SKINTOP HYGIENIC from LAPP

In the food and beverage industry, containers or receptacles need to be counted and positioned, the flow rate on conveyor belts needs to be monitored, and food that has been packaged needs to be checked for the correct fill level, or that the filled product is complete. Ultrasonic sensors are ideally suited to these many processes as they are able to detect objects irrespective of their colour and transparency. The sensors work in the same way as bats' sonar: the sensors cyclically emit a short sound impulse and measure the time it takes for an echo signal to be received. Because the speed of sound in air is known, the sensors can use the time measured between the emission of the

sound impulse and the reception of the echo signal to calculate the distance from the object, or even the fill level. Sound impulses above 20 kHz are referred to as ultrasound, which is inaudible for us humans.

ROBUST AND VERSATILE

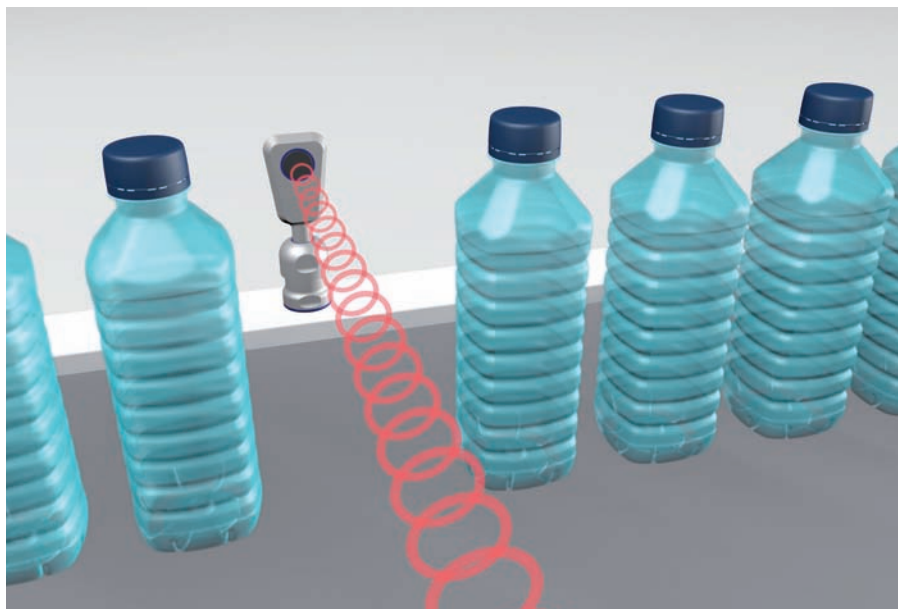
One leading provider of ultrasonic sensors for distance measurement is microsonic. The sensors from Dortmund are used in a wide range of industrial sectors. One example of these is the printing industry, where sensors are used to measure the fill level for paints and coatings, or to detect the diameter of rolls of paper. Due to the fact that the hygiene requirements with regard to

the machinery and technical components used in the food and beverage industry are constantly increasing, the commonly used standard sensors are no longer fully fit for use in areas that come into contact with the respective product. This gap in the market is now filled by the new pms ultrasonic sensors from microsonic, designed in compliance with EHEDG guidelines and constructed from FDA-tested materials.

SOPHISTICATED SENSOR DESIGN

The unusual shape of the stainless-steel housing, made from material grade 1.4404, is particularly striking. The engineers at microsonic selected a geometry with which none of the surfaces of the pms would be horizontally aligned in any conceivable installation position. Doing so ensures that cleaning and disinfection fluids can always run off. Even in situations where the fill level in a container is measured, for which the sensor measures vertically downwards, the rear side of the housing features an incline of $\geq 3^\circ$ to ensure that any cleaning fluids are certain to run off in this installation position as well.

The smooth sensor housing does not have any gaps or edges for food residue or bacteria to accumulate in; the stainless steel has a roughness depth of $R_a < 0.8 \mu\text{m}$. Alongside the sensor design, selecting the right material is crucial. The ultrasonic transducer itself is protected by a PTFE film and therefore repels chemically aggressive cleaning and disinfection agents. The pms is highly durable and ECOLAB-certified. With four different scanning ranges, the new pms ultrasonic sensors cover a wide measuring range from



The pms ultrasonic sensor detects glass and PET bottles in scanning mode and stands up to the cleaning intervals of a bottle-filling system with the SKINTOP® HYGIENIC cable gland.





Stainless-steel pms sensor with SKINTOP® HYGIENIC cable gland.

20 mm to 1.3 m. They are available with a push-pull switch output and IO-Link in version 1.1, or with an analogue output of 0-10 V or 4-20 mA.

CABLE GLAND ENSURES A SECURE FIT

Unlike standard sensors, the installation of hygienically sound sensors on packaging or processing machinery also forms a fundamental component of guidelines published by the European Hygienic Engineering and Design Group (EHEDG). When hunting for hygienically sound and simple sensor installation, the company found what they needed to mount the sensor in a safe way at LAPP. The secret of the SKINTOP® cable gland's ability to prevent twisting effectively is in its special construction, the geometry of the individual parts and the selection of materials for the latter. Although conventional cable glands also contain an elastomer seal, attention is already paid during the development phase at LAPP to fix and seal all materials installed for cables, conduits and pipes as effectively as possible.

INGENIOUS PROTECTION AGAINST TWISTING

The elastomer seal for the cable on the SKINTOP® HYGIENIC is longer: when the nut is tightened, a certain volume is additionally displaced along the inside of the domed cap

nut. This results in a higher retention force, prevents twisting and reliably fills potential dead spaces between the elastomer sealing ring and stainless-steel tube or cable. LAPP's engineers came up with an ingenious design to ensure that this worked. The SKINTOP® typically conceals a plastic basket with flexible ribs beneath the domed cap nut. Internally, the domed cap nut is tapered to the optimum degree of efficiency and presses these ribs downwards and inwards when screwed down, where they press against the sealing ring. Doing so guarantees controlled material displacement, high retention forces, and prevents the cable and/or sensor from being pulled out. The stainless-steel base features small indentations, into which the corresponding pins of the ribbed basket engage to ensure that the smooth plastic of the basket doesn't become twisted in the stainless-steel housing. As a result, neither the basket nor the cable or sensor twist: they all remain stable.

WATER-TIGHT TO 100 METRES

The cable gland's seals are not only intended to prevent twisting, but also to protect and guide the electrical connection cable out of the equipment and prevent liquids from entering. SKINTOP® HYGIENIC cannot be infiltrated by water and particles, in compliance

with IP69. This is tested in the LAPP Group's laboratory by spraying the products at high pressure. SKINTOP® HYGIENIC also passes IP68, the criteria of which require the cable and gland to be immersed in water and subjected to a pressure of 10 bar, which corresponds to a depth of 100 metres. Alongside the internal seal, the SKINTOP® HYGIENIC features two additional seals for this requirement: one where the cable gland meets the housing and another underneath the domed cap nut. The seal which is in contact with the housing takes the form of a flat seal in accordance with hygienic design principles, and not that of an O-ring, which would usually be fitted on or in one section of the housing. After all, food residue could accumulate in this indentation that might not even be removed when using a pressure washer.

The cable gland doesn't leave itself vulnerable to bombardment by dirt and germs anywhere else either. The sliding seal beneath the domed cap nut reliably seals potential dead spaces. Instead of a hexagonal shape, the design only features two flattened sides for a wrench to engage with on the neck and domed cap nut respectively. This allows the sensor to be fixed in place with great ease. Development is still ongoing. LAPP presented as well an EMC variant: the SKINTOP® HYGIENIC SC. This model contains a spring made of beryllium copper which acts as a barrier against electromagnetic fields. It is the first electromagnetically compatible cable gland manufactured in compliance with hygienic design specifications.

►► 56538 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

N° 3 - MARCH 2019

www.pcne.eu

HYGIENIC HOUSING ASEPTIC FILTRATION

For use in pharmaceutical and healthcare applications



The 76B Series single cartridge housing from **Amazon Filters** is a high-quality product specifically designed for aseptic liquid pharmaceutical and healthcare filtration applications. The vent and drain connections can be customised from a wide range of options to provide an optimised filter housing for your application.

The housing is designed and manufactured to provide crevice free sanitary finish with all internal surfaces having a 0.4µm RA value making it an ideal choice for critical liquid pharmaceutical or healthcare applications, where a standard finish is simply not good enough. The hygienic design is easy to clean after use ensuring quick turnaround between processing of batches. Designed to be easily sanitised or steam sterilised prior to use - the housing ensures that the sterility of your process is maintained. Suitable for operating at temperatures from -10°C up to 150°C, and rated up to 10 bar and full vacuum, the PED and ATEX compliant housing can be used for the filtration of both liquids and Group 1 gases. Designed to deliver minimal pressure drop even in high flow applications - the housings will accept the full range of industry standard code 7 (226) style single open-ended filter cartridges with nominal lengths of 10-, 20- and 30-inches.

▶▶ 56015 at www.pcne.eu

SMOOTH BODY MOTORS

For applications with high hygiene standards



The new size 71 smooth body motors are available in three power classes: 0.12 kW, 0.18 kW and 0.25 kW. IE3 efficiency level guarantees resource-saving operation. Thanks to their aluminium housing (protection class IP66), the

motors are protected against corrosion. Additional protection is provided by the optionally available, innovative nsd tuPH surface treatment. **NORD** smooth body motors are fanless and therefore contribute to the non-proliferation of germs during production. The modular design provides wide application flexibility due to numerous equipment options. Variants with condensation outlets (sealed), encapsulated terminal box, standstill heating, temperature sensor, temperature monitor and/or protection class IP69K expand, among other things, the possible uses. The motors are available in various versions. This way they are suitable for the entire NORD range, preferably for use with aluminium smooth surface drives, either helical, bevel or worm gear units. The smooth surface motors are specifically designed for easy cleaning and have even and regular surface transitions wherever possible. Thus, cleaning liquids and foam can wash off easily. Due to their washdown design, they are especially suitable for the application in the food and beverage industry.

▶▶ 56201 at www.pcne.eu

SAFETY LIGHT CURTAIN

Stainless steel housing for use in aseptic environments



The **SICK TWINOX4** safety light curtain was specially developed to protect aseptic filling and sealing machines used in the pharmaceutical and cosmetic industries. Its housing design enables it to be integrated seamlessly into machines or systems. The safety light curtain also boasts a full high-resolution

protective field, ensuring maximum safety and high availability of the machine or system. The housing of the safety light curtain, along with all brackets and end caps, is manufactured in stainless steel 1.4404/316L. Thanks to its easy-to-clean housing, all residue can be removed from the light curtain quickly and efficiently. With rounded edges and no indentations, the design is ideal for use in areas with stringent hygiene requirements. Multi-colored LEDs indicate the operational readiness and status of the TWINOX4 safety light curtain across the entire protective field height. The status lights illuminate in green when the protective field is intact, indicating to the operator that the protective function is active before he reaches into the hazardous area. Thanks to the LED status indicators, fast on-site diagnostics can be performed on the electro-sensitive protective device at any time.

▶▶ 56187 at www.pcne.eu

SCREWS AND NUTS IN HYGIENIC DESIGN

In Stainless Steel with FDA-compliant elastomer sealing



Hygienic cleanliness is not only an essential prerequisite in the food and pharmaceutical industries. Other areas of industry, such as the manufacturing of dispersion paint for use in construction, also profit from high hygiene standards. This often makes it possible to do without preservatives without

compromising on the product lifespan. When using typical components, cleaning means time-consuming and costly disassembly, long machine downtimes and massive consumption of water, cleaning agents and energy. Not so when using components of hygienic design: These are made of high-quality materials with particularly smooth surfaces, making them significantly easier to clean, especially while still installed. To continue this approach, **Ganter** is now expanding its hygienic design product family with nuts and screws of Stainless Steel under the designation GN 1580 that optimally satisfy the high requirements of EHEDG. They are designed with special geometry and a surface roughness of < 0.8 µm, which causes liquids to quickly bead up and accelerates the drying process after cleaning. The standard design incorporates FDA-compliant elastomer sealing rings on the contact surface that are practically impossible to lose.

▶▶ 56499 at www.pcne.eu





2-WIRE COMPACT TRANSMITTER

Automatic sensor recognition and configuration storage



Knick has expanded its range of compact transmitters for the Memosens standard by adding MemoTrans, an extremely lean 2-wire multiparameter solution that supports 4 - 20 mA and HART communication. The combination of transmitter and sensor interface in a single space-saving unit enables a direct, loop-powered connection of the measuring point to the process control system. Thereby, Memosens technology can now also be employed in applications where

conventional 2-wire transmitters do not require displays or control units on location, or where there is not enough space for a conventional transmitter. MemoTrans is a multiparameter transmitter. It can be used with all Memosens sensors for measuring pH/ORP, oxygen (amperometric measurement), or conductivity. A red or green LED on the housing indicates whether it is connected to the sensor. Once successfully connected, the sensor can be automatically identified by its sensor ID. Featuring an integrated Bluetooth interface, MemoTrans provides technical personnel with flexible and convenient direct access to the measuring point without necessarily requiring a display unit. All MemoTrans devices are visualized in the MemoTrans app for iOS and Android.

►► 56490 at www.pcne.eu

COMPACT LEVEL TRANSMITTER

Intelligent processing for improved accuracy



Siemens presents Sitrans Probe LU240, its newest ultrasonic level measurement Hart transmitter, a hardworking and rugged device that provides reliable level, volume, and

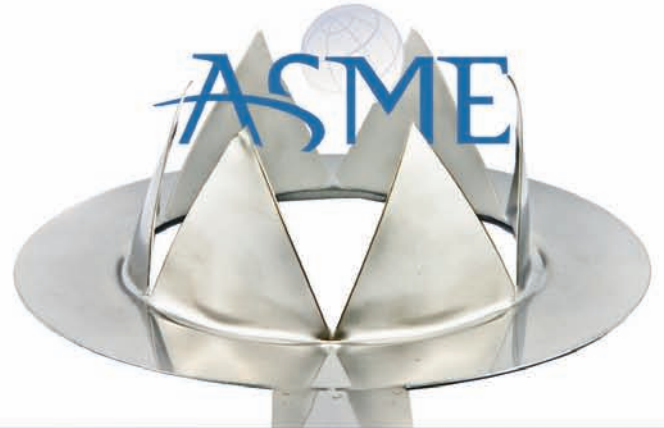
flow measurements. Engineered for the challenges of the environmental industry, this transmitter is also suited for the chemical and food and beverage applications. Field-proven Process Intelligence echo processing separates true material level echoes from false, providing reliable readings while still allowing rapid response to actual changes in the material level. The device's reduced blanking distance decreases waste in applications while boosting asset utilization by providing continuously accurate readings even with high levels of material. Sitrans Probe LU240's four-button user interface or remote configuration with Simatic PDM ensures fast and easy setup. Operators will save time and maintenance costs with Sitrans Probe LU240's transparent lid: in manual observations, users can observe values directly instead of by removing the device's lid. For those applications requiring process temperature data, Sitrans Probe LU240 now gives users both level and temperature readings. The device is also battery and solar-power friendly due to a low start-up current of 3.55 mA and minimum 10.5-volt operation.

►► 56172 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

THE ITALIAN MANUFACTURER OF RUPTURE DISCS



- ☀ ASME VIII Approved
- ☀ US Patent Technology
- ☀ 100% Italian Design



ENSURES THE MAXIMUM PROTECTION AGAINST OVERPRESSURES

☀
WWW.DONADONSDD.COM

►► 56006 at www.pcne.eu

Precision Built - Automation and the Business of Manufactured Stone

Siemens soft- and hardware helps optimizing processes and saving resources

You have just purchased a new house. After choosing the building lot, the house model, and interior layout, it's now time to decide on the exterior appearance. Do you go with natural stone—river rock, perhaps, or granite? Or how about something different—something less expensive, easier to work with, all while giving the same look as natural stone? An Ohio-based company designs and manufactures a wide range of products for the building industry—including artfully crafted, long-lasting manufactured stone. Their operations are centered on values of sustainability and continuous improvement, both of which are supported by Siemens automation and process instrumentation.

MAKING LIGHT WORK OF HOME CONSTRUCTION

To clad an average three-bedroom house in natural river rock, you're looking at somewhere around 56 tons of rock. Fifty-six tons that need to be extracted from their natural environment, transported to your new house, and supported with an assortment of reinforcing techniques. Can you hear the

costs piling up alongside those rocks? Manufactured stone, on the other hand, is a concrete product that's expertly dyed and then molded. It's also only a few inches thick—yet looks just like a variety of natural stones, from river rock to limestone to fieldstone. And the cost savings? Generally speaking, installed manufactured stone cladding on a house can cost approximately one third to half the cost of natural.

IF THE ROMANS COULD SEE US NOW!

Concrete is certainly not a new product—the Romans built their empire using ash from Mount Vesuvius for cement—but the technology is constantly evolving. There are always new processes, new chemistries, and fresh ideas in instrumentation and control that pave the way for new concrete products and processes.

Some of the basics are still the backbone of concrete production. Mix cement, coarse and fine aggregates, and water, and you will get concrete—but without the tight controls, new chemistries, and improved mixing and handling methods, the high-performance

materials of today would not be possible. These new concretes are providing opportunities for products and processes that were unfathomable just a few years ago.

HIGH TECH IN AMISH COUNTRY

Located in the heart of the country's largest Amish population, this company's old-world craftsmanship is remarkably high tech. Take the company's water usage. Because of its rural location, it can only draw so much water from its wells—so engineers designed a water system that stores and integrates rainwater collected from across the company's building.

Water is the catalyst that makes concrete work. The concrete manufacturing process itself uses water, and quite a bit of water is also used to clean the equipment. After cleaning, instrumentation and mechanical equipment separate solids from the water for reuse and also purify and adjust the water's PH using CO₂. This allows the water to be completely reused without any being discharged back into the environment.

PIONEERS IN HIGH-SPEED PRODUCTION

And then there's the manufactured stone process itself, which showcases modern technology from across the globe. For the plant design, complete integration, material management and storage equipment, production equipment, and a totally integrated control package, the company looked to Canada's J. McCoy Equipment, a firm that over the past three decades has specialized in customized plant and machinery construction for the concrete industry. McCoy Equipment engineered an integrated



Siemens automation and instrumentation work together to make manufactured stone





Using the Siemens Totally Automated Integration (TIA) Portal, the designers assembled all of the required components along with SIMATIC S7-1500 control system. Minimizing wires and maximizing mobile requirements, all instruments are connected with Profinet communications protocol

incorrect production.

Says John McCoy, "Working with Siemens has allowed us to move forward with new ideas more rapidly due to the straightforward integration of the various components and instruments". Not only does this automation solution reduce waste in the operation, but it is also extremely user friendly. The company's technicians have a flexible system that allows them to see into each stage of manufacturing—with the Siemens instruments acting as the eyes and ears of the plant.

system that manages ingredient mixing and batching. From incorporating cements, sand, lightweight aggregates, and various polymers and admixtures to adding the various shades of pigments, the equipment needs to be precise.

Through hard wired and wireless Profinet communications, the production lines call for their particular batch recipe and flying bucket systems deliver to the various production lines. McCoy Equipment are pioneers in the creation of high-speed production processes for concrete products with textures and colors only rivalled by Mother Nature. "With the use of these high-performance concretes, the strength and durability can be better than the original rocks we simulate," says John McCoy, Owner of McCoy Equipment.

ADDING IN AUTOMATION

Based on years of successful projects, McCoy Equipment chose Siemens automation and instrumentation for this task. Using the Siemens Totally Integration Automated (TIA) Portal, the designers assembled all of the required components along with SIMATIC S7-

1500 control system. Minimizing wires and maximizing mobile requirements, all instruments are connected with Profinet communications protocol.

Using RFID technology, the system knows the precise amounts of ingredients in each varied product batch. The batches use molds to create their specialized recipe. Each mold has an RFID tag which identifies that particular mold. And, each RFID tag contains essential information about when the mold was created, who made it, how often it has been used and other critical information. This information is fed to a centralized location for a complete overview of the process. This information is used to correctly create recipes in the right locations. With the company's more than 100 varieties of stone, the automation system needs accurate instruments that all work seamlessly. From level instrumentation on hoppers to weighing electronics and load cells on the scale systems, Siemens is there at each step of the process.

The result? A manufacturing process that takes the guesswork out of measurements—one that produces the same high-quality stone every time, reducing scrap caused by

A ROCK SOLID SOLUTION

With more than 1.21 million new home builds across the U.S. in the last year alone, it simply isn't realistic that everyone who wants the look of natural stone can outfit their house with river rock or granite. It is realistic, however, that a flexible, precision-built automation system has given this stone manufacturer considerable benefits across their manufacturing operations, including:

- Seamless integration of all Siemens instruments—with each other and with devices from other vendors
- Simplified reporting on process efficiencies and key performance indicators (KPIs)
- An easy learning curve for operators working in different areas of the plant.

And homeowners gain the high-end look that they want without the removal of pristine natural stone from the environment. The only decision left is which stone to choose for your new house... now this might take a while.

►► 56541 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

N° 3 - MARCH 2019

www.pcne.eu

Field Device Integration Opens a new era in Fieldbus Technology

ABB's Neil Shah discusses key issues faced by users of device management tools and how Field Device Integration helps address them

The release of the Field Device Integration (FDI) specification means that instrument and automation manufacturers now have a solution for integrating field devices with the multitude of networks, operating systems and control systems used in the process industries. Furthermore, FDI introduces compatible products and host systems for managing field devices.

Today's field devices look increasingly like embedded computers: intelligent, micro-processor-based devices deployed across a wide choice of networks offering a broad range of data that has never been available before. Increased data creates an information management dilemma. How do you take the storm of data created by intelligent field devices and turn it into actionable information?

The first step is to simplify the procedures needed to access field device information by higher-level control or host systems. These

procedures, known as integration, must be completed to assure proper field device management by the host including device configuration, replacement, maintenance and diagnostics. They must be standardized, usable across all systems, independent of device suppliers, system suppliers or vendor specific tools.

For ABB, FDI is the key technology to overcome the ever-repeating efforts for integrating field devices into control systems and asset optimization tools. It helps end users to take advantage of devices' functionality more effectively and efficiently than ever before.

For the user, the specification combines the attributes of competing device integration technologies: EDDL and FDT/DTM. A key objective of the specification is to combine the simplicity of the text-based DD technology with the flexibility of specialized Windows-based FDT features and complex graphical representation.

FIELDBUS DEVICE MANAGEMENT TOOLS

Today, more than 30 open and proprietary communication protocols serve industrial/process automation, with 90 percent using just three - HART, PROFIBUS and FOUNDATION Fieldbus. It is these three protocols which offer the most benefits for improving and optimizing plant operations and enterprise asset management. With their potential to improve processes, these protocols play a key role in maintenance and upkeep of field instruments. The tools for commissioning, calibrating, diagnosing, and maintaining these instruments must be capable of taking full advantage of the fieldbus communication protocols.

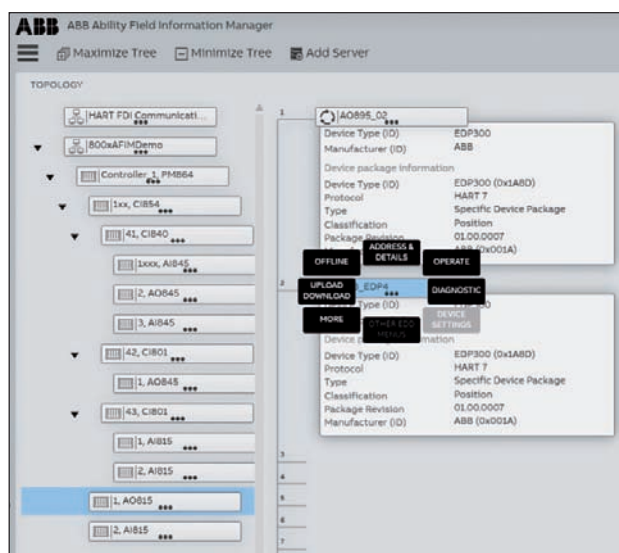
Furthermore, the tools must use these advantages in the simplest possible way, keeping the end user in mind.

Usually, there is more than one user type operating these tools at a single plant location. For instance, an instrument service technician diagnosing a device needs online communication with that device. A commissioning engineer may want to first configure the device offline and then download the data to the device. Instrument and maintenance engineers need to access an overview of the device's health. The management tool for the field device, therefore, needs to simultaneously and simply serve all these users.

KEY END-USER ISSUES

Most process automation manufacturers have their own tools for managing field devices. The same device may have different device drivers for different tools. Yet, despite standardization the device drivers supplied for one system often do not function, look





Structure of the Field Information Manager software

and feel the same way in other systems. This means that the user needs to maintain different drivers for the various tools for the same underlying device. This is also a problem for instrumentation manufacturers as they must execute tests of their device drivers with multiple device management tools. The reasons for this are that each host fits a device description into its own user interface architecture. Also, each device manufacturer has its own understanding about what tool parameters are important for a user. FDI has undertaken activities that, to a large extent, minimize these inconsistencies.

FDI PACKAGE

The FDI package serves all devices and tools. Each device comes with an FDI package used by all the tools or systems, including standalone PCs, field instruments, and process control and automation systems. The FDI device package makes sure all device management tools function with devices without any issues, regardless of the manufacturer. Each host interprets a device driver slightly differently to fit into the layout of its user interface (UI) layout.

COMMON HOST COMPONENTS

Device vendors typically design their driver for one preferred tool. Although the driver may adapt to the other tools, most often it does so imperfectly. Specifications and recommendations from the manufacturer don't solve these issues, leading to the FDI's biggest strength: Common Host Components. The Common Host Components consist of the EDD Engine and the UI Engine. All FDI device packages are tested and approved

with reference to the FDI reference host containing the Common Host Components. These components will be available for implementation to host system manufacturers for their tools.

The use of Common Host Components ensures that the representation of the FDI package is similar in various tools. Importantly, since the device package developers will use the FDI reference host during product development, the representation of graphs, images, text, etc. in the device package will be highly optimized as desired by the instrument vendor. Instrument and host system manufacturers will not need to test their device drivers in various tools.

USER INTERFACE DESIGN

A usability style guide documents several aspects of user interface design. The guide provides examples of source code or sketches of the graphical representation of controls or frames. It also standardizes labels. For example, entry level menus like Device Settings, Diagnostics, Operate and Action become labels like "Apply", "Cancel", "Next", etc.

The guide documents translations in key languages (German, French, Spanish, Italian, Chinese, Portuguese, Japanese and Russian). In addition, the FDI packages will be based on the harmonized EDDL applicable for all the three major protocols: HART, PROFIBUS and FOUNDATION Fieldbus. All new EDDs must use the updated and optimized IEC 61804-3 standard. The "User Views" concept and harmonization of EDDL have been key requirements from the User Association of Automation Technology in Process Industries (NAMUR).

LOCKED VALUABLE DEVICE INFORMATION

In the initial life cycle of a plant, most users are content with employing the device information within the tool. Sooner or later, however, they get into situations where the valuable information from the device needs to be made available to external tools or systems. They may need to analyze the field device conditions, failures, and calibration data or they just think that another specialized tool would benefit from access to a device.

Most device management tools do not allow transparent and easy access to this valuable information. Even if the tool does allow access, a complex series of steps or additional hardware/software may be required.

Technologies like OPC-Unified Architecture (UA) play an effective role in easily opening this information to third party tools.

The use of the standard interface OPC-UA in FDI hosts allows easy access from other applications.

- Applications can be designed and developed without any support of the supplier of the FDI host
- OPC-UA services supported by the FDI server allow safe and secure access to the device or to stored offline data
- Generic OPC-UA clients can be maintenance tools or Manufacturing Execution Systems (MES) or Enterprise Resource Planning (ERP) systems. Not all existing devices will have FDI packages immediately. It will take some time before a sizeable number of FDI device packages are available in the market. But users need not worry since FDI will support existing device drivers.

►► 56601 at www.pcne.eu



A	ABB Automation	28
	Amazon Filters	24
B	Balluff	16
	Bosch Industriekessel	14, 19
	Bronkhorst High-Tech	20
	Börger	20
D	Deutsche Messe	1, 2, 18
	DonadonSDD	25
E	E+E Elektronik	20
	e-nizing	16
	Emerson Process Management	15, 21
	Endress + Hauser Instruments	15
F	FLEXIM	7
	FLIR Systems Trading	8
G	Getriebebau NORD	24
H	HAMMOND POWER SOLUTIONS	21
	Hannay Reels	15
	Hans Turck	6
	HARTING	6
	Honeywell Process Solutions	15
J	J.D. Neuhaus	7
	JUMO	6
K	Keller	17, 32
	Knick Elektronische Messgeräte	25
L	Lapp Kabel	22
	LEUZE electronic	20
M	Moore Industries	7
	MP FILTRI	20
O	Otto Ganter	24
	Pepperl + Fuchs	9, 12
P	Resolve Optics	21
	Rotork	6
S	Sensata Technologies	16
	Sepura	10
	SICK	24
	Siemens	25, 26
	steute Technologies	16
T	Titan Enterprises	21
V	Vaisala	15
	Variohm EuroSensor	7
W	WIKA	20

MARCH

StocExpo Europe

26-28
Rotterdam
www.easyfairs.com/stocexpo-europe-2019

Automaticon

26-29
Warsaw
www.automaticon.pl

APRIL

Hannover Messe

1-5
Hannover
www.hannovermesse.de

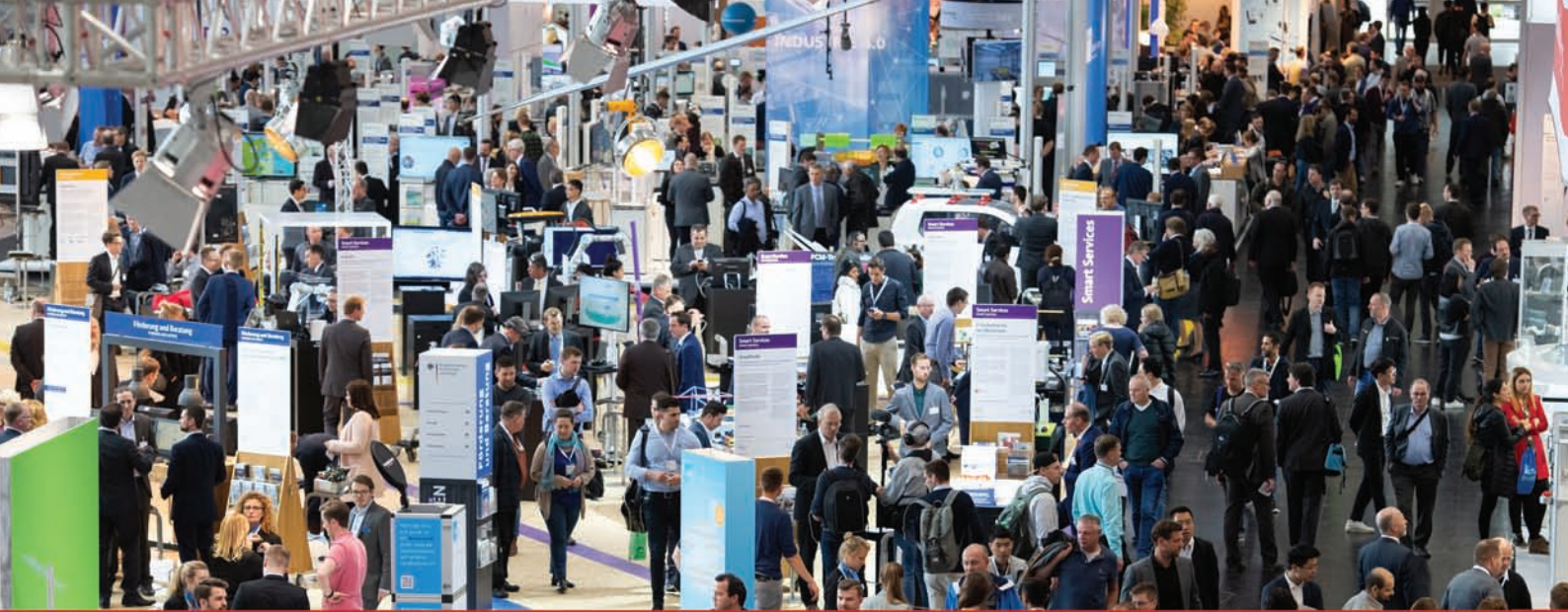
Powtech

9-11
Nuremberg
www.powtech.de

Neftegaz

15-18
Moscow
www.neftegaz-expo.ru





PCN Europe will exhibit at Hannover Messe 2019



1-5 April



Hall 9 Stand H81

Come, meet us and take part in our contest!

Don't miss the chance to win one of the available awards!



1st Prize - Huawei P20 Lite Smartphone



2nd Prize - Amazon Kindle E-Reader



3rd, 4th and 5th Prizes - Sony Bluetooth Headphones



KELLER in Space

International Space Station (ISS)
welcomes Swiss pressure measurement technology

**Absolute and differential pressure transmitters
regulate regenerative processes
in the ISS oxygen supply**

Including in the following ranges:

- 50 mbar...20 bar
- 0...110 °C
- 1...9 VDC and RS485

**Pressure measurement technology
for applications under extreme conditions**

- Joint development with the customer
- Stringent stability and reliability requirements
- End-to-end quality assurance from sales and development to specialised production areas

