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Dear Reader,

A herculean task by definition is one that requires superhuman physical strength or mental efforts to solve and is nigh impossible to solve even for a mythical Greek god. If you think of one of the biggest chemical production plants in the world and the task of operating and maintaining about 100.000 electric motors and keeping enough spares in stock 24/7 if a motor needs replacement, you might think that is one of these tasks. The article on page 18 will show you it is not. If you have some clever ideas and a great team, you can do it, even with "mere humans".

In this issue we have also put together a special that describes some intelligent solutions to solve problems in the production process. Be it a vacuum conveyer that helps to avoid a problem of breaking granules in the process line (page 10), sensor solutions that support the filling and packaging of mineral water (page 12) or butterfly valves which have a positive impact on the quality products of a German brewery (page14).



We also bring to you two editorials with focus on the digitalization in the process industries, on page 8 you will find an interesting article about the topic of Ethernet APL and on page 20 you can read about the increased popularity of IO-Link equipment and the positive effects it can have.

As always, we wish you an interesting read. Please note, that due to the delay of some important fairs, as Hannover Messe and of course Achema you will have to wait a bit longer for the next issue of PCN Europe. The new publishing date moves to end of June.

Best regards,

Kay Petermann

Editor of PCN Europe

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Automation & Communication:
The ON Ramp to Digital: Ethernet APL
for Process Plants

Even under normal conditions it is not simple to always have the right motor on hand to address a wide range of applications. It is all that much more difficult in large chemical companies if several thousand drives have to be kept running around the clock in harsh explosive environments.



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EQUIPMENT & SERVICES:
Chemical Company Plays It Safe With
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Industry 4.0:
Acceleration of Process
Plant Digitalization
with IO-Link.



IO-Link is enjoying increasing popularity, with demand for the communications standard growing rapidly, especially in the food & beverage industry. The fieldbus-independent technology for point-to-point communication is easy to use and provides a cost-effective way to digitalize industrial plants.

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Butterfly Valve Meets the Stringent Hygiene Standards
in German Brewery



Atlas Copco to Acquire German Industrial Pump Manufacturer

Atlas Copco has agreed to acquire Pumpenfabrik Wangen GmbH, a German manufacturer of progressive cavity pumps used for transferring fluids mainly in the biogas and wastewater sectors. The company also manufactures twin-screw pumps used in sectors like food and beverage and cosmetics. Pumpenfabrik Wangen is based in Wangen, Germany, and has 265 employees. In 2020 they had revenues of approximately MEUR 46.4 (466 MSEK). The company has manufacturing facilities in Germany, and a global sales and service footprint. "Industrial pumps is a segment that we have identified as a strategic fit for Atlas Copco and Wangen Pumpen has leading differentiated technology with a strong aftermarket business", said Andrew Walker, Business Area President Power TecÚique. "Wangen Pumpen is a strong brand and is known for quality in demanding industrial applications. This acquisition will create a solid foundation for further growth in new industrial pump segments. Industrial pumps play a crucial role in creating sustainable solutions for many industries and contributing to a better tomorrow". The acquisition is expected to be completed during the second quarter 2022 and is subject to regulatory approvals.



Endress+Hauser Consolidates Expertise of Laser-Based Measurement Technology

The subsidiaries SpectraSensors and Kaiser Optical Systems have merged into Endress+Hauser Optical Analysis effective 1 January 2022. Endress+Hauser has placed a strategic focus on process and laboratory analysis for years. The company supports customers from product and process development to production, bringing advanced analysis and quality measurements to process engineering applications. Success in its core markets confirms this approach, with the Group generating nearly one-fourth of its sales through analysis



technology. In order to bundle the Group's expertise in laser-based measurement principles and create a basis for sustainable growth, SpectraSensors and Kaiser Optical Systems merged under

the new name Endress+Hauser Optical Analysis on 1 January 2022. Both companies boast a long history of innovation and offer market-leading product lines for optical analysis. Endress+Hauser Optical Analysis is headquartered in Ann Arbor, Michigan, where Raman spectroscopic instruments are also developed and manufactured. TDLAS (tunable diode laser absorption spectroscopy) instrumentation continues to be produced in Rancho Cucamonga, California. The new company, with around 200 employees, will remain a wholly owned subsidiary of the Endress+Hauser Group.

Fernando Colás Appointed as CEO of OMRON's Industrial Automation Business in Europe

Mr. Colás follows Seigo Kinugawa, who will return to Japan to head the Global Business Process and IT Innovation HQ. His OMRON career began 1985 in sales and marketing, and he quickly established a successful track record in the company. His 37-year career includes more than two decades at senior leadership level, including positions as General Manager Iberia and Division Manager EMEA. Since 2015, Colás has led product and industry marketing and technical support as General Director of Marketing EMEA, in addition to overseeing post-merger integrations. During this time, Colás was instrumental in implementing OMRON's Value Generation 2020 (VG2.0) transformation strategy, helping manufacturers realize flexible, efficient, and sustainable production through the deployment of OMRON's innovative-Automation concept. Colás comments: "I am very excited to take on this new role. My goal is to lead the successful implementation and deliver the first steps of OMRON's long-term 2030 strategic plan in EMEA, as we continue to find new ways to have a positive impact on the lives of people everywhere.



Our core technologies in sensing, control, robotics and artificial intelligence enable manufacturers to adapt their production to meet the challenges they face today and in the future."

Partnership Aimed at Carbon Capture Through Enzymes

Novozymes, a leader in biological solutions, and Saipem, an advanced technological and engineering platform for safe and sustainable complex infrastructure and plants, have signed a collaboration agreement for the development of innovative solutions for enzymatic carbon capture. As part of the agreement, Saipem - which owns an enzyme-based CO₂ capture technology - will be responsible for providing process, mechanical and equipment design, while Novozymes will provide enzymes while further optimizing the process through enzymes innovation. Enzymatic carbon capture is more sustainable in environmental terms and more cost-effective compared to traditional CO₂ capture processes. In fact, it is based on the use of enzymes that require the input of heat at lower temperatures and a significantly moderate use of chemicals, energy and, consequently, cuts down the production of harmful waste. Furthermore, this process is more reliable, as the carbonates and enzymes, being low corrosion materials, minimize the deterioration of equipment.



LOW-MAINTENANCE CONTROL VALVES

Durable valves for switching and controlling



Low-maintenance on/off and control valves are essential in the food and process industry. They control the flow of gases, steam or liquids, for example in auxiliary processes such as CIP (cleaning-in-place), reverse osmosis or temperature control.

Bürkert now offers a wide range of electric motor and pneumatically operated on/off and control valves specially suited for these applications, with extended pressure and temperature ranges. Thanks to special sealing materials, the valves with stainless steel valve bodies work without any problems with media up to 25 bar gauge pressure and temperatures between -40 °C and 230 °C. Sealing materials and lubricants suitable for foodstuffs, drinking water, fuel gases or oxygen allow the valves to be used with other media, for example for cleaning and flushing purposes, for heat carriers or saturated steam at 20 bar and 215 °C. So they can be used to switch and control all common gases and liquids for heating and cooling purposes in the specific process as well as in traditional CIP processes. It is also possible to use them with heat transfer oils e.g. in conjunction with alternative heating concepts. The high-pressure and high-temperature valves are available in different versions with straight-seat on/off and control valves as well as with angle seat on/off and control variants.

▶▶ 61356 at www.pcne.eu

ULTRASONIC CLAMP-ON FLOWMETER

With stainless steel sensor rails for quick and easy setup



The **Krohne OPTISONIC 6300** is now available with new designed stainless-steel sensor rails and enhanced signal converter for quick and easy setup. The ultrasonic clamp-on flowmeter is suitable for temporary or permanent mount installation on virtually any

pipe up to DN4000 with process temperatures up to +200°C. It allows for flow measurement of (non-)conductive liquids in main and utility applications where inline measurement is not possible or desirable. The new stainless steel 316L sensor rails are designed for quick, easy and accurate installations and can be mounted to any pipe within minutes: the same rail type can be used in hazardous areas, in extended temperature applications, in harsh conditions like offshore environments, or as IP68 version in submerged applications. For connection to the signal converter, they feature a fixed signal cable of 6 m or 10 m, optionally up to 30 m. As an alternative to coupling grease and to reduce maintenance to an absolute minimum, solid coupling pads can be chosen as contact material for the ultrasonic transducers, e.g. for high temperature applications. The signal converter has also been improved for quick and easy setup of the measurement point with pre-programmed pipe parameters and an installation wizard.

▶▶ 61536 at www.pcne.eu

INDUSTRIAL WIRELESS ROUTERS

Compact, rugged wireless M2M communication devices



Westermo has launched a new range of industrial cellular wireless products designed to provide resilient data communications for remote sites. The Merlin range of compact, rugged and secure cellular solutions has been specifically developed to support industrial IoT (IIoT) and machine-to-machine (M2M) solutions in demanding utility, infrastructure and transportation applications. The first Merlin products to be released are the 4600 series, which further

strengthen Westermo's existing range of industrial wireless routers. These four compact and feature-rich devices provide high-speed data network connectivity for demanding industrial, smart grid, and rail trackside applications. The routers meet the requirements of IEC 61850-3 Class 1 Medium Voltage substation and railway trackside EN 50121-4 standards. The Merlin range has been designed to be easy to install and maintain. When coupled with Westermo's zero touch deployment software Activator, the Merlin devices provide cost-effective, reliable and consistent onboarding within large-scale projects. To achieve best-in-class cybersecurity, the Merlin 4600 series is equipped with a TPM (trusted platform module) chip that keeps cryptographic keys secure,

▶▶ 61300 at www.pcne.eu

FLOW METERS FOR COOLING SYSTEMS

High Accuracy Water Inline Ultrasonic Flow Meter



AW-Lake introduces a Water Inline (WIN) Ultrasonic Flow Meter for highly accurate and reliable flow measurement of cooling water, condensing water, and water/glycol solutions. Designed for process cooling

applications including industrial cooling circuits, the WIN Ultrasonic Flow Meter has no moving parts for long-term reliability and low maintenance costs. By incorporating two wetted ultrasonic transducers that face each other directly in the flow tube, the ultrasonic flow meter reduces wear associated with moving parts and maximizes signal strength. The WIN Ultrasonic Flow Meter offers very high accuracy (+1.0% of reading over 25:1 turndown, 100:1 total turndown) over a wide flow range with minimal pressure drop. The flow tube design simplifies installation in limited straight runs and ensures no obstruction in the flow path. Holding an IP67 rating, the flow meter operates safely when temporarily submerged in water. An LCD display version comes standard with Modbus RTU communications, providing an output of flow rate, volume total, run hours, alarms, and diagnostics. The display is detachable for remote mount installation up to 5 feet from the sensor. A built-in data logger enables easy data access vis Modbus. Units without a display come standard with analog and pulse outputs, 24V AC/DC power, one pulse and one analog output.

▶▶ 61483 at www.pcne.eu



MODULAR CONTROLLER WITH PLC FUNCTION

With second control channel for complex applications



The **JUMO meroTRON** controller takes the successful concept of the JUMO dTRON series into the future with a completely new product. The controller has a customizable device menu for user-friendly integration into a wide variety of applications.

Operation, configuration, parameterization, and process information are user-friendly through plain text in 4 languages. Quick startup is possible through PUSH IN terminal technology. Scalable hardware with Plug and Play functionality ensures the greatest possible planning reliability. Users can expand the connection options independently via optional plug-in cards. For example, versions with up to 14 digital inputs, 5 analog inputs, or 10 relay outputs are available. Calibration of the analog inputs according to CQI-9 and AMS2750 is an optional extra. When it comes to communication JUMO meroTRON is optimally prepared for future challenges as it features PROFINET, Ethernet, and RS485 (Modbus master/slave for TCP and RTU) along with Bluetooth as well as USB host and device. It can be used as a two-state controller, three-state controller, modulating controller, position controller, continuous controller, and program controller with real-time clock. An integrated data logger can be used to record 4 analog and 4 digital values. JUMO meroTRON is available in 4 different housing formats.

▶▶ 61325 at www.pcne.eu

ACTUATORS FOR GEOTHERMAL POWER PLANT

Actuation technology is helping to boost green energy



Qingshui power plant is located in northern Taiwan in a geothermally very active area. Water is extracted at a temperature of 180 °C from a depth from 1,200 to 2,100 metres. The new 4.2 MW plant was built in the same place as a former plant from the

1980s that had eventually been abandoned due to technical challenges. The designers of the new plant were therefore careful to choose technical equipment that can cope with the demanding conditions. **AUMA** has supplied 32 SA 07.6 and SA 10.2 multi-turn actuators with AC 01.2 actuator controls and GS gearboxes to the power plant. In addition, eight AUMA SEVEN HiMod actuators are used for high-precision positioning of control valves. As utmost reliability is a must, the plant operator appreciates the robust design and high-quality engineering of the AUMA actuators. All the components of the plant, including the electric actuators, are exposed to high temperatures, high humidity and acid gases, making the geothermal environment extremely corrosive. The TÜV-certified corrosion protection of the actuators pays off in these demanding service conditions. Thanks to an extremely robust two-layer powder coating, AUMA actuators meet the requirements of the high C5-M corrosion category for areas with high salinity and almost constant condensation, in accordance with ISO 12944-6.

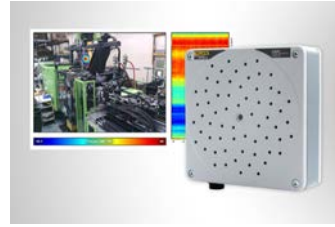
▶▶ 61857 at www.pcne.eu



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FIXED ACOUSTIC IMAGER

Detection and visualization of air and gas leaks



Fluke Process Instruments released its first fixed acoustic imaging solution. The SV600 Fixed Acoustic Imager enables users to detect, locate and visualize air and gas leaks or changes in sound signatures across their process and equip-

ment in real-time before they become costly problems. By using an array of sophisticated sound sensors and powerful SoundMap technology, the SV600 translates the sounds that it hears into a visual representation so users can quickly locate and quantify problem areas. The SV600 easily integrates with factory systems and can serve as an early warning system that can quickly detect changes across compressors, pumps, pipes, conveyors or across product inspection and quality control processes, and much more with user-defined alarms. Remote evaluation options, meanwhile, help to minimize operator intervention, even in parts of the facility that are hard to reach. The SV600 can also be used as a payload for Boston Dynamics' agile mobile robot Spot, which takes inspection to the next level. Designed to go where other robots cannot go and to perform a broad number of tasks, Spot traverses large facilities or unstructured terrain to automate industrial inspections, monitor remote or difficult-to-access environments and provide situational awareness in remote settings.

▶▶ 61837 at www.pcne.eu

STURDY QUARTER TURN ACTUATOR

For different valve types in chemical industry



The DFPD-C quarter turn actuator from **Festo** is well equipped for the harsh conditions in the chemical industry. It is suitable for actuating butterfly valves, globe valves and ball valves in process plants in the chemical and petrochemical industry. The sturdiness and reliability of the

quarter turn actuators DFPD-C and DFPD-C-VDE2 with NAMUR interface to VDI/VDE 3847 are achieved through various features, including a hard anodised end cap to prevent scratches. The blow-out-proof screws for adjusting the end position increase the reliability while the actuator is under pressure. Shaft centring rings ensure the actuator and process valve are perfectly aligned. Captive, non-ferrous spring packages provide additional security against spring fracture. All types of pilot valves with NAMUR interface as well as positioners to VDI/VDE 3847 can be connected to the actuator without additional piping via a manifold block with port pattern to NAMUR mounted on the front of the actuator. The different versions enable the use of a wide range of pilot valves, positioners and proximity switch attachments. Thanks to the optimised spring design, the pressure range can be perfectly set for the task in hand. This allows pressures from 2 to 6 bar to be easily set in increments of 0.5 bar.

▶▶ 61581 at www.pcne.eu

The ON Ramp to Digital

Users in process automation have the most to gain from insight through data from sensors and actuators. This is where the advanced physical layer for Ethernet, short Ethernet-APL comes in, the data highway to the field of process plants. Many questions must be answered when deploying Ethernet-APL for the first time. This article discusses topologies for Ethernet-APL that can be realized with currently available infrastructure components.

Re-use of cable, reachable cable lengths, hazardous area protection with intrinsic safety, tools for easy access and configuration of the instrumentation? This articles provides insights how to bring Ethernet to the field within process plants. Complete details and best practices can be found in the Ethernet-APL Engineering Guideline, written and maintained by a working group of experienced industry professionals. To get the full details now, download the guideline in full from the technology pages at www.pepperl-fuchs.com/apl-tec.

BANDWIDTH, POWER, AND THE CABLE

Bandwidth is the key enabler with 10 Mbit/s: Radar curves can update every 2 seconds providing expedience particularly during time critical phases such as commissioning tank sensor equipment. The asset management benefits form bandwidth, too. It can automatically download, keep and restore exact backups of instrument configurations, which in turn controls risk of human error during instrument exchange.

Power supply is engineered, requiring the planner to match switch output levels to in-

strument input levels. To assist this selection process, Ethernet-APL defines standard power levels for e.g. intrinsically safe instrument connections such as Ex ic IIC for Zone 2/Div. 2 or Ex ia IIC for Zone 0 or 1/Div. 1 respectively. Engineering benefits from simplicity ensuring interoperability between instruments and switches of any vendor.

Selections for cable infrastructure are critical as changes at a later time are typically cost prohibitive. Table 1 is taken from the guideline and shows parameters standardized for Ethernet-APL and compatible with fieldbus communications technologies. Thus planners and operators do good, specifying parameters that meet the needs of their plant. To achieve reliable communication, the standards prescribe two-wire cable type 'A' with shield.

Checking the cable for compatibility with specifications is good business sense. It is highly recommended to do this check when cables are to be re-used for upgrades to an Ethernet network. Standard test equipment provides certainty about conformance and thus eliminates the associated risks. This testing is a skill that is new to installers and that can be learnt from their colleagues in the of-

fice environment. It is much simpler though, as Ethernet-APL runs on two wires – not four or eight.

Because users would very much appreciate the savings of re-using installed two-wire cable, a vendor demonstrated 10 MB communication even over a simple, unshielded twisted-pair cable in a laboratory setting. The experts strongly discourage this as it is bound to cause long-term stability issues, particularly with unshielded cable, where communication is not protected from crosstalk and other EMI. This is one of the lessons learned from fieldbus for which even multi-core cable is permitted. More than 30 years of practical experience have proven that day-to-day operations run with optimum reliability in this highly demanding environment with individually shielded type 'A' cable.

POINT TO POINT TO EVERY INSTRUMENT

Ethernet-APL field switches provide instrument connections according to the spur definition of the standard. This means point-to-point connections to the instrument with cable lengths of up to 200 m and optional intrinsic safety. Requiring auxiliary power, the field switch can be installed near or in the same junction box, that houses remote IO systems and use the same home run cable, which can be standard Ethernet for smaller plants or fiber optics for distances of up to 2000 m between control room and junction box. Switches will support media redundancy concepts applicable to standard Ethernet such as the media redundancy protocol (MRP) that is also adopted for Profinet.

Ethernet-APL rail field switches from Field-Connex can be installed in Zone 2 and come

Parameter	Attribute				Frequency f (MHz)
	I	II	III	IV	
APL Cable Category					
Maximum trunk cable length in m	250	500	750	1000	
Maximum spur cable length in m	50	100	150	200	
Coupling attenuation in dB	≥ 60				0.1 ≤ f ≤ 20
Cable return loss in dB	≥ 15 + 8 × f				0.1 ≤ f ≤ 0.5
	≥ 19				0.5 ≤ f ≤ 20
Trunk cable insertion loss in dB	≤ 10 × (1.23 × √f + 0.01 × f + 0.2/√f)				0.1 ≤ f ≤ 20
Spur cable insertion loss in dB	≤ 2 × (1.23 × √f + 0.01 × f + 0.2/√f)				0.1 ≤ f ≤ 20
Cross talk in dB, (PSANEXT/PSAFEXT wire pair to wire pair) for multi core cables	≥ 60				0.1 ≤ f ≤ 20

Cable specifications for Ethernet-APL – Based on cable type 'A'



with choices of ruggedized enclosures for installation close to the instrument. They require external power and can be placed close to existing Remote IO stations. With point to point connections only, the switch segments power and communication. Such a topology is simple by design and thus easy to operate and maintain. The network infrastructure is very resilient to disturbances even during connect and disconnect operations often required during maintenance work or device exchange.

Consider this scenario: When the installer attaches an instrument to the network, it automatically powers up. Higher level protocols feature automatic device recognition and port identification so that asset management systems can detect the exchange of the device. Thus the system can now indicate this to the maintainer and automatically ask permission to restore the configuration to the replacement instrument.

Point-to-point connections, neighborhood detection and rugged connectors provide a user experience that surpasses even that of two-wire analog systems. This reliability and simplicity that users expect reduces systematic risk.

ACCESS TO ANY INSTRUMENTS VIA PROFILES

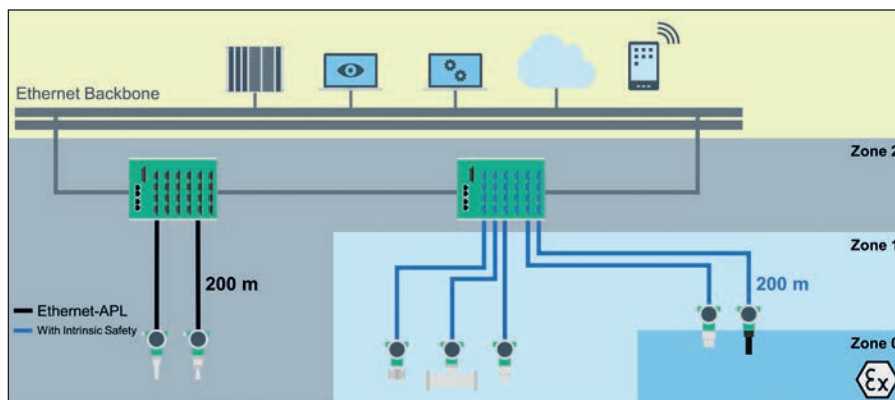
The long service life of process plants demands solutions that enable peaceful co-existence of multiple generations of instrumentation technology on a common network infrastructure. Ethernet provides the basis and protocols enable engineering no matter what the data source is.

Users can choose to mix and match Profibus PA and Profinet technologies for instrument communications and even operate them on the same infrastructure with similar concepts for power, communication, and explosion protection. This reduces risk for first adopters while instrument vendors are just beginning to roll out their product portfolios. Dual-purpose ports can automatically detect what type of instrument is connected.

The instruments and controllers provide a compatibility mode in Profibus and Profinet technologies called PA Profile. This is defined as a single device description or package, which ships with the controller, network component and instruments. Users configure all multiple measurements per instrument in the same way independent of make, model or size of a particular instrument. For example: A pressure transmitter provides pressure and



Rail Field Switch for 16 instrument. Connection to the DCS with redundancy selectable via Ethernet or fiber optics.



Star topology with redundant backbone enabled with the FieldConnex Rail Field Switch

media temperature the same way independent of the vendor. This is highly recommended for the 80 % of standard measurements or controls. The search for device drivers and troubleshooting of compatibility issues is over for good.

Complementing this setup of digital communications are the ruggedized LB/FB Remote IO systems for installation in hazardous areas. The remote IO connects to the same backbone and provides access to modern-day instrumentation with 4-20 mA interface where needed. In addition to the principle measurement value, the remote IO station can translate health and diagnostic data, secondary measurement values or historical data traces from HART to the Ethernet-based protocol of choice. This access is as fast as it can get, as the Remote IO utilizes individual HART masters per instrument and thus eliminates bus cycle times.

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Vacuum Conveyor for Safe Transport of Instant Milk Granules

A Polish producer of various milk-based products faced a problem of breaking granules during the transfer of instant milk within its process. In Piab's piFLOW®p vacuum conveyor they found the solution they were searching for to solve the problem.

Facing continuous quality problems during the transport of granules of instant milk within their process line, Polmlek Raciaz, a member of the Polmlek Group – Poland's largest 100% Polish-owned dairy company, needed to modernize their system. The blower, screw and rotary valve used for this process did not render the expected result and led to regular product damage and waste. "Since we already have two Piab vacuum conveyors in use at other stations and considering our satisfaction with the service experienced so far by Piab's Polish entity, we decided to replace the old system by Piab's premium product, the piFLOW®p vacuum conveyor." Explains Bogdan Graczyk, Technical Manager at Polmlek Raciaz.

REDUCTION OF MACHINE DOWNTIMES AND MAINTENANCE

Tadeusz Fobke, responsible Product Sales Manager at Piab Poland adds "to confirm that the vacuum conveying process would indeed improve the process and avoid damages of the granules, we ran test at our inhouse demo unit and established the necessary parameters to ensure a smooth process at Polmlek." In addition to solving the initial problem with product quality, the deployment of Piab's piFLOWp vacuum conveyor also allowed to reduce the manpower required as the process needed less supervision. Furthermore, due to reduced machine downtimes and maintenance requirements, the production output could also be increased.

ATEX DUST AND GAS CERTIFICATION

Piab's piFLOWp conveyors for powders and bulk solids are perfectly matched to the high standards of operational safety and hygiene in



A piFLOW®p vacuum conveyor helps to assure the product quality and reduce waste.

the food and pharmaceutical industries. They are made of electropolished stainless steel and materials that comply with US FDA and EU 1935/2004 regulations. As a conveying line, a suction hose made of PU is used. An internal steel spiral helps to minimize the electrostatic charge of the product or diverts it to equipotential bonding. The filter in the upper part of the conveyor is cleaned with a filter shock after each conveying cycle. The device control is in a separate control cabinet.

The piFLOWp conveyors are ATEX Dust and Gas certified. Typical applications are powder and granules transfer, form-fill-seal machines, big bag loading and unloading, drum/bag filling and emptying, mill/sieve/mixer/blender filling, tablet/fragile products transfer, applications in explosive atmosphere, hygienic applications or places where space is at a premium.

▶▶ 61393 at www.pcne.eu





ENERGY-EFFICIENT GEAR AND MOTOR UNIT

Integrated IE5+ motor in hygienic wash-down design



The new **Nord DuoDrive** gear unit/motor combination features high system efficiency and a consistent version reduction paired with a smooth, unventilated and compact design. Elimination of various wearing parts results in lower maintenance.

In combination with the simple commissioning of the complete solution via plug-and-play. It is suitable for use in food and pharmaceutical industries as well as in intralogistics. DuoDrive is a integrated gear unit/motor concept in hygienic wash-down design where the IE5+ synchronous motor and the single-stage helical gear unit are installed in one single housing. With up to 92%, DuoDrive currently offers the highest efficiency of a gear unit/motor combination in this power class on the market, and achieves very high systems efficiency in the partial load range. It is thus future-proof and a real cost reducer. The first available DuoDrive size covers gear unit speed ratios of $i = 3.24$ to $i = 16.2$ and is designed for torque ranges of up to 80 Nm and speeds of up to 1,000 rpm. DuoDrive is compatible with the NORD drive electronics and can be equipped with all common hollow shaft dimensions (20 to 40 mm) and flange versions (B5 and B14), or a torque arm. Harting HAN connectors, M12 round plug connectors or direct wiring are provided for the motor connection.

►► 61477 at www.pcne.eu

HYGIENIC ASSEMBLY FOR MV COMPONENTS

Certified modular components for harsh conditions



Launching the Hygienic Building Kit, **autoVimation** presents a mounting system for machine vision applications that is suitable for installing cameras, lighting and lasers in the food and pharmaceutical industries

or in cleanrooms. The new Hygienic Building Kit is based on autoVimation's hygienic, IP69k-protected, AISI 316L stainless-steel enclosure series Dolphin, Shark and Piranha. The camera, lighting and laser enclosures are mounted on rails made of smooth stainless-steel rods. Hygienic T-pieces enable flexible positioning and orientation. Cable routing within the tubes not only ensures optimum protection against mechanical forces, but also eliminates the need for a separate food approval of cable materials. Alternatively, hygienic protective hoses are available for cable routing; these can also be used for additional cable routes to machines etc. All gaskets as well as an acrylic window are approved for direct food contact according to FDA and EU guidelines. The kit can be mounted directly on conveyors, walls, machine covers and ceilings. For application-specific configuration, users can shorten the available shafts to the required length and machine a hole for cable entry at the required location. For users to easily achieve compliance in every application, autoVimation is undergoing EHEDG certification of all components of the modular system.

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A Real Piece of the Ice Age, Bottled

"Untouched since the ice age" is not a marketing slogan, but a fact - a real piece of the ice age that still exists today: When the ice melted, immense amounts of water drained away into the rock of the Swabian Alp mountains. The earth shifting in an unusual way then caused this reservoir to be sealed off approximately 400 meters below the outside world. As a result, EiszeitQuell has an original purity and quality - just like water over 10,000 years ago.

The mineral water contains a balance of minerals and is low in sodium and salt. The deposit was discovered in the 1970s when deep drilling was undertaken near the site of Romina Mineralbrunnen in Reutlingen-Rommelsbach, Southern Germany. "This water has an exceptional quality and is a real gift from nature," says Stefan Lederle, Head of Maintenance at Romina Mineralbrunnen, who knows just how valuable "his" water is: "This unique water quality is what spurs us on and is why we are committed to accepting only the highest standards across the complete filling process." In addition, Romina Mineralbrunnen undergoes regular internal and external quality controls that far exceed what is prescribed by law. This has enabled the company to receive International Featured Standard (IFS) Food certification and pass the test in the highest category, "Higher Level". The criteria for the "Higher Level" category are considered the most stringent standard in the food industry.

MODERNIZATION AND EXPANSION OF THE GLASS AND PALLETIZER SYSTEM

EiszeitQuell is available in the varieties natural, lightly sparkling and sparkling, in large and small bottles made of glass and PET. "For some time now, the glass bottle, which has our icicle relief imprinted all around it, has been experiencing a real return to popularity," explains Lederle. Therefore, Romina Mineralbrunnen invests continuously in the filling of its glass bottles and ensures that its production processes meet the most up-to-date technical and ecological standards. In 2020, Romina started to modernize its glass system. Over several building phases, the company put into operation its transport technology, packing and unpacking machines, crate washers, new-glass depalletizers and a brand-new palletizer system with a double palletizer and depalletizer. Romina Mineralbrunnen chose BEYER Maschinenbau as its partner for this project. The

experienced machine builder from Roßwein in Saxony, eastern Germany, specializes in the planning, development and building of efficient conveyor and packaging systems for the food and beverage industry: Thanks to a high level of vertical integration, this family business, which is now being run by the fourth generation, is able to provide an all-round service. From the individual packaging machines to the complete system with transport technology for containers, unit packs and pallets. These systems are often supplemented by machines for sorting and checking containers and unit packs. "The big challenge was coordinating and implementing all of the modifications with only very short breaks in production and in less than a year," explains Beyer.

NOTHING WORKS WITHOUT A SENSOR SYSTEM

At peak times at Romina Mineralbrunnen, up to 45,000 glass bottles per hour are con-



View of the palletizer technology in the new glass system.



Reliable sensors are very important for ensuring the efficiency of system technology.





veyed through the system, depalletized, unpacked, cleaned, filled, repackaged and finally loaded onto a new pallet, secured in place and transported into storage. A high level of system availability is absolutely essential. Otherwise this level of peak operation simply could not be achieved. "Nowadays, conveyor and packaging systems just don't work without reliable sensor systems," says Beyer. Therefore, for many years now he has relied on optical sensor systems and a particular, experienced partner: Sensor expert Leuze from Owen/Teck, Southern Germany - just a few kilometers away from Romina Mineralbrunnen. The sensor expert has a precise solution on hand for almost all applications in the beverage industry: For example, for transporting pallets, unit packs and containers. Leuze also always has the appropriate sensors for applications in individual machines.

RELIABLE TRANSPORTATION OF UNIT PACKS AND CONTAINERS

One example of a Leuze sensor that is particularly suitable for use in the beverage industry is the PRK retro-reflective photoelectric sensor. This is an optically switching sensor that uses the reflection principle. "Even transparent or highly reflective materials such as glass bottles or plastic crates with glossy, multicolored decoration, like Romina's EiszeitQuell crates, can be accurately and reliably detected by these sensors," says Andreas Eberle, Local Industry Manager Packaging at Leuze. Retro-reflective photoelectric sensors are available in various series, sizes and performance classes. The sensor principle offers a range of functionalities: When transporting unit packs, it detects the individual crates. For example, identifying whether they are being transported correctly or becoming backed up somewhere along the conveyor line. Alternatively, it detects protrusions if crates are too long or too tall. If the PRK is used in the machines themselves,

MLC 530 SPG safety light curtains from Leuze ensure the safety of people and machines in the area where pallets are loaded and unloaded.

the sensor is mostly used for product detection. On the set-down table, it monitors free spaces and prevents collisions when pallets are being unstacked.

SAFE MATERIAL FLOW WITH ACCESS GUARDING

Retro-reflective photoelectric sensors monitor the beginning and end of a pallet. Both when the empties are set down on the conveyor line and when the Euro pallets are finally loaded with newly filled crates. Provided that the euro pallets were detected as flawless by an optical and mechanical checking device during transportation. The sensors also monitor the pallets to check that they stop in a particular position, and that they were actually transported at all. In this area, safety sensors are also required to ensure the safety of people and machines. For example, when loading and unloading pallets. Multiple light beam safety devices in the device column with integrated muting function are often used for this application. However, safety light curtains with the Smart Process Gating (SPG) technology patented by Leuze are also suitable. Using the version of safety light curtain that features SPG means that additional signal-emitting muting sensors are not required. This saves a lot of space and is a significant advantage when setting up in confined areas.

FULLY AUTOMATED MATERIAL FLOW: RELIABLE AND SAFE

End customer Romina Mineralbrunnen, machine builder BEYER Maschinenbau and sensor expert Leuze look back on their joint project with satisfaction. And they are all in agreement: Reliable systems and fast cus-



tomers service are essential in meeting the demand for mineral water, which is particularly high in the summer months. Even greater efficiency and a glass bottle throughput of up to 45,000 bottles per hour is achieved thanks to the modern transport technology and the brand-new glass system from BEYER Maschinenbau. And the sensor systems from Leuze, just up the road in Owen/Teck. Because a fully automated material flow is only possible with reliable sensor systems. And these must be precise, but also safe.

►► 61996 at www.pcne.eu



Butterfly Valve Meets the Stringent Hygiene Standards in German Brewery

A chemically resistant valve for the requirements of applications with heightened hygiene standards

Around three years ago, EBRO ARMATUREN worked closely with its customers to develop a butterfly valve adapted specifically to the requirements of the chemicals industry. A prototype has already been deployed in the food and beverage sector, including at Schneider Weisse. Besides the FDA compliance required with regard to food and pharmaceutical technology, resistance to chemically aggressive media (such as detergents) has also been extremely important to the company during this process. The H0 butterfly valve has been continuously refined and optimised over its three years of use in ongoing operations at the “Weisses Brauhaus”, part of the Schneider Weisse brewery in Kelheim. On the back of extremely positive feedback received during this time from Schneider Weisse and other customers who have also been trialling the H0 butterfly valve, it is now entering series production.

TRADITIONAL BREWING METHOD CALLS FOR IMPECCABLE HYGIENE

The Schneider Weisse brewery is now in the hands of the sixth generation of the owner family and has been brewing its wheat beer for over 140 years using a technique that has hardly changed at all over this time. As well as using a strain of yeast that has been cultivated ever since the company was founded, this also includes in particular the traditional method of fermenting the wort in open containers rather than in sealed tanks. Schneider Weisse also shuns any filtration and heat treatment. All the components involved in the brewing process have to be as clean as possible to give the beer a twelve-month shelf life despite its traditional origins. To solve this conundrum, Schneider Weisse relies on cutting-edge, ultra-innovative technology, while preserving its traditional methods.

VALVES ARE KEY COMPONENTS IN THE HYGIENE MASTER PLAN

It became clear that microbial contamination from the brewhouse can be transported during the production process into the areas behind it, where cooling takes place, as deposits break off and come away. This means that micro-organisms can get into processes that take place a long way behind the brewhouse. In order to prevent this and guarantee lasting production reliability, identified weaknesses in the process are directly avoided and potential risks excluded as far as possible. Anton Ladenburger, Senior Sales Support at GEA, comments: “The H0 valve that EBRO developed has now been part of the hygiene master plan for three years and handles everything thrown at it with aplomb.”

To achieve the maximum possible degree of safety and quality, Schneider Weisse drew



EBRO supplies a pneumatic actuator that has been designed specifically for this application and that boasts a particularly hygienic and space-saving geometry





up its hygiene master plan as far back as 15 years ago and works continuously on improving it. This plan, which was developed in partnership with GEA and which, according to Master Brewer and Managing Director Hans-Peter Drexler, has valves as a key component, enabled the number of infected batches and thus the reject rate to be reduced to 0. The brewery has also enjoyed a hygiene status of 0 germs.

DEVELOPED TO HANDLE THE TWIN REQUIREMENTS OF THE CHEMICALS AND FOOD INDUSTRIES

The new H0 butterfly valve was developed on the basis of the T 200 valve, which had proved its worth over decades. It is a PTFE-clad butterfly valve that is used in extremely demanding processes in the chemicals industry. The butterfly valve was fitted with flange connections used in the food and beverage industry in order to meet customer requirements. The benefit of these connections is that they centre the valve inside the pipe system and are accurate to the nearest tenth of a millimetre. Because the inside diameters of the valve and the pipe are identical, overhangs and recesses are avoided, allowing a fluid medium to flow out and the pipe system and valve to be cleaned, in each case without leaving any residue.

MODULAR CONSTRUCTION

The H0 valve has a modular design. At the centre is the body, which is made from corrosion-resistant stainless steel (1.4408). The outer edges are designed so as to ensure gap-free sealing, ensuring that the valve can be cleaned easily and thoroughly from outside. The disc and shaft are cast from a single piece of duplex stainless steel (1.4469). This one-piece process enables a gap-free join between the disc and shaft and thus avoids any dead space, therefore reducing the risk of contamination even further. In addition, the high-gloss-polished duplex disc offers very good resistance to corrosion and has a non-adhesive, hygienic surface that is easy to clean. The valve liner is made from PTFE, which is FDA- and EG1935-approved and can thus be used safely in the food and pharmaceutical sectors. The material is also resistant



Left to right: Werner Volkmann (Schneider Weisse), Thorsten Hardt (EBRO ARMATUREN), Hans-Peter Drexler (Schneider Weisse), Michael Dahm (EBRO ARMATUREN), Michael Beck (GEA), Anton Ladenburger (GEA)

to almost all chemical media and does not absorb any odorants, flavourings or colourings. The materials employed allow a wide range of cleaning agents to be applied, as is the case with CIP, for example. Steam up to 150°C can also be used without any problems. The shaft sealing system comprises a spring assembly with a downstream pressure ring, which applies reliable, constant pressure to the liner. Unlike with a conventional disc sealing system, this guarantees particularly reliable and long-lasting sealing for the shaft feedthrough.

FREE CHOICE OF CONNECTORS

The flange at the top of the valve is designed in accordance with DIN EN ISO 5211 and can thus be attached directly to all standard types of actuator. Especially for areas of facilities with stringent hygiene requirements, such as food applications, EBRO supplies a pneumatic actuator that has been designed specifically for this application and that boasts a particularly hygienic and space-saving geometry. This means that customers can get their hands on a compact, automated end-to-end solution for these facility areas too. The unit comprising the valve and connect-

ing flanges is a modular assembly, enabling, for instance, the transition from a welded pipe system to one with tri-clamp connections. Customers can choose from connectors in accordance with DIN 11853-2, DIN 32676 and DIN 11850/11866. The connecting flanges are likewise made of high-grade 1.4408.

POSITIVE CONCLUSION

Over the three years in which they have been trialled at Schneider Weisse, the H0 butterfly valves have undergone regular checks, including via endoscopy. The last of these checks revealed that the valves were still virtually as good as new. "Whereas the butterfly valves that were used previously had a service life of at most three years before they had to be replaced, due to the oils from the hops and abrasion from the husks, we expect our H0 butterfly valves to last at least six years," explains Thorsten Hardt, the EBRO product manager in charge. As well as increasing availability on the brewing line, it also means lower maintenance costs. This has prompted Schneider Weisse to convert its entire brewery to EBRO's H0 butterfly valves.

►► 61583 at www.pcne.eu



CLEANING NOZZLE FOR 100% TANK COVERAGE

High potential of savings in water and cleaning media



The new **Alfa Laval PlusClean®** cleaning nozzle combines 100% tank cleaning coverage, up to 80% savings in water and cleaning media costs, and no product contamination. Paired with a top-mounted tank cleaning device and installed flush with the tank wall or bottom, the PlusClean

raises productivity and lowers total cost of ownership. With its optimized, high-impact spray pattern, the PlusClean delivers 100% cleaning coverage in shadow areas that other tank cleaning spray nozzles miss. Installed flush with the tank wall or bottom, the nozzle has a built-in adjustment function that makes installation easy and operation effective. Perfect for the pharmaceutical, dairy, food, beverage, and home-personal care industries, the innovative cleaning nozzle provides even more efficient cleaning and improves process efficiency and safety as well as product quality. The cleaning nozzle delivers significant water and cleaning media cost savings, minimizing the impact on the environment. The standard PlusClean is supplied as a media spring-activated cleaning nozzle for hygienic process tank cleaning. A special pneumatic-driven version is also available. For sterile and aseptic process tank cleaning, there's the Alfa Laval PlusClean UltraPure, which is backed by Alfa Laval Q-doc documentation package to ensure full traceability across the entire supply chain.

▶▶ 61452 at www.pcne.eu

UV SYSTEM FOR DRINKING WATER TREATMENT

Certified in line with the new testing standards



The DIN:19294 2020-08 & OE-NORM:M5873-2020-01 test standards for UV systems have recently been revised and harmonised. Certificates for systems tested in line with DVGW

worksheet W 294-1 from 2006 may no longer be extended. The UV system Dulcodes LP from **ProMinent** is the first and currently the only system to be certified in line with the new test standards. The design test for the new standard is considerably more comprehensive: in addition to testing effective disinfection, as undertaken in the past, the lamps are also subject to close scrutiny. Output control of the lamps is particularly important here as the disinfection of drinking water should use as little energy as possible. Tests therefore include the control characteristic of the lamps with regard to speed and precision. ProMinent's UV system satisfies the new test standard and represents pioneering drinking water treatment: the dynamic lamp heating adjusts the lamp output in a matter of seconds and provides for optimum disinfection even with varying flows and water temperatures. Seasonal fluctuations in water temperature are no longer an issue and are simply compensated for. As well as disinfecting drinking water, the UV system is also used to treat industrial water and is suitable for a flow of up to 406 m³/h.

▶▶ 61580 at www.pcne.eu

HYGIENIC PUSH-BUTTON ENCLOSURES

Range of housings withstand high pressure wash-downs



Powell Electronics now has the new HYPB range of IP69/IP69K stainless steel push-button enclosures for hygienic applications from Hammond Manufacturing in stock. Ideal for applications where maintaining hygiene standards and avoiding contamination are of high importance, e.g. in food processing and pharmaceutical manufac-

turing, HYPB range enclosures have been designed for use with hygienic push-buttons and withstand regular high temperatures as well as regular high pressure wash-downs. They also have no areas - like slotted screw heads, quarter turn latches or welded mounting brackets - where contaminants can gather and all sides slope to ensure any water quickly drains off. Available with 22.5mm and 30.5mm holes with either a single row of one, two, three or four mounting holes, two rows with four holes arranged in two rows of two or two rows with six holes arranged in two rows of three, HYPB series push-button enclosures benefit from a rectangular design enabling the units to be surface mounted either vertically or horizontally to suit most applications. The cover is secured to the body with crevice-free hex head bolts fitted with a silicone washer to eliminate potential dirt traps.

▶▶ 61543 at www.pcne.eu

IO-LINK RADAR SENSOR

Level measurement in hygienic applications



Whether beer, orange juice or soya sauce - a large number of products or intermediates in the food industry are stored in tanks. To control the process in the best possible way, continuous level measurement is usually required. With the new **ifm LW2720** radar sensor, this measurement can be carried out reliably and precisely without

the sensor having to come into contact with the medium. The sensor is installed on the top of the tank and measures the distance to the medium surface via the reflected signal. The volume of the tank content can then be calculated very easily based on the level. Due to the radar sensor operating with a measuring frequency of 80 Ghz, the antenna is relatively small. The measuring range is 10 meters, with an accuracy of ± 2 mm. The new radar sensor has been developed by ifm especially for hygienic environments. Featuring a stainless-steel housing, food grade antenna and seals, the sensor complies with the strict hygiene requirements according to 3-A and EHEDG. The new sensor is also suitable for the CIP and SIP processes which are frequently used in the food industry. The measured value can be transferred by the LW2720 either via a conventional 4...20 mA interface or via IO-Link.

▶▶ 61664 at www.pcne.eu





WIRELESS SYSTEMS FOR IOT CONNECTIVITY

Asset monitoring for increased effectivity of equipment



Sensata announced the availability of its new Industrial Wireless Systems that allow implementation of scalable, cost-effective connectivity to industrial equipment. Wireless networks eliminate the instal-

lation and maintenance costs associated with wired systems for continuous asset monitoring. The breadth and configurability of system devices, which include wireless pressure and temperature sensors, gateways, receivers and transmitters, gives it scalability and adaptability to work in a range of industrial applications. To simplify setup, Sensata's wireless systems feature out-of-the-box configurations while still allowing for the flexibility to program to specific requirements.

▶▶ 61307 at www.pcne.eu

DIFFERENTIAL PRESSURE TRANSMITTER

Highly accurate device with SIL 2 certification



The new model DPT-20 differential pressure transmitter from **WIKA** is suitable for many industrial processes. As a SIL-2 certified instrument, it meets the highest safety requirements. The transmitter, with its compact design, operates with an accuracy of $< \pm 0.065\%$ of span. Due to a

three-dimensional temperature compensation on adjustment, it provides a reliable measuring result, even under unfavourable ambient conditions. The DPT-20 is available with measuring ranges between $-10 \dots +10$ mbar and $-16 \dots +16$ bar and is designed for a static pressure of up to 400 bar. Its turndown function enables very flexible use and thus economical stock-holding.

▶▶ 61551 at www.pcne.eu

ETHERNET SWITCHES WITH METAL HOUSINGS

For a variety of markets, available with SFP port options



The **Phoenix Contact** FL Switch 1000NT series is further expanded to introduce wide temperature models with advanced approvals for process and maritime markets. These switches offer a robust, metal

housing, with great port density, and a best-in-class automation protocol traffic prioritization. The seven models allow for applications in a variety of industries such as oil and gas and ship-building. Select models also feature SFP ports, providing greater flexibility for customers dependent upon their application connection and distance requirements. Thanks to the robust housing, the FL Switch 1000NT series has high immunity to noise, enabling it for use in the most critical of applications.

▶▶ 61508 at www.pcne.eu

PERISTALTIC PUMPS FOR DIFFICULT MEDIA

For large flow rates at a wide range of pressures



The new PERIPRO™ pump expands the **NETZSCH** pump portfolio with its characteristics as particularly robust and powerful pump that can easily handle viscous and abrasive media even at high pressures. These pumps have a long operating life, are easy to use, and enable 30% energy savings as compared to other hose pumps due to their inventive design.

These peristaltic pumps have very few wear parts. There are no valves or mechanical seals; the only wear part is the hose, characterized by remarkable durability. In addition, the pumps are insensitive to dry running, require 90% less lubricant than other peristaltic pumps and enable an extremely high metering accuracy.

▶▶ 61945 at www.pcne.eu

Shaping the Future of Process Industries

Ethernet-APL



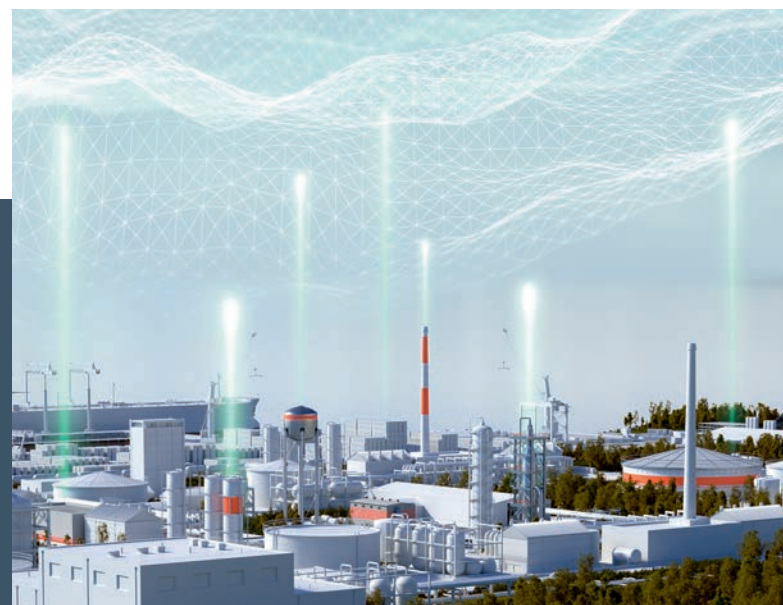
From hazardous areas to the cloud: with ranges of up to 1,000 meters and transmission speeds of 10 Mbit/s, Ethernet-APL is paving the way for the Internet of Things in process automation. Existing installations can be used and existing plants can be modernized at low cost. Decades of experience make us a competent partner as you prepare for Industry 4.0.



For more information, visit pepperl-fuchs.com/apl

▶▶ 62066 at www.pcne.eu

Your automation, our passion.



Chemical Company Plays It Safe With Explosion-Protected Motors

Even under normal conditions it is not simple to always have the right motor on hand to address a wide range of applications. It is all that much more difficult in large chemical companies if several thousand drives have to be kept running around the clock in harsh explosive environments. In the future, one of the largest chemical companies in the world will be depending on a team of external specialists and the comprehensive range of Simotics XP explosion-protected motors from Siemens.

Motors represent the driving force in all industrial processes. Without them, pumps, agitators, compressors, fans and many other pieces of equipment would grind to a standstill – and in turn, the production process itself. The chemical industry also requires especially rugged and explosion-protected designs. The greater the number and diversity of explosion-protected motors deployed, the more complex the challenge of always having precisely the right motor on hand at the right location. For BASF SE in Ludwigshafen, this has always been part of their day-to-day business.

To ensure that processes are safely and reliably kept up and running, the right explosion-protected motor must be on site in the shortest time to address regular service and maintenance work, process modifications, upgrades and especially in the case of sudden unexpected failures. "It is not unusual that up to 150

motors are called up every month – every day company operations require between three and five and sometimes even up to ten motors, predominantly for work that has been scheduled", explained Bernd Korbach. He shares responsibility in BASF SE for technical drive systems and the procurement in the Technical Expertise, Global Engineering Services area.

MOTOR LOGISTICS REORGANIZED

BASF SE has reorganized its motor logistics so that the supply chain is even more efficient, which means faster, more reliable and cost efficient. BASF has brought two competent partners on board – Siemens AG and ASF Südwest GmbH, located nearby in Mörsstadt. In close collaboration, they drew up a new logistics strategy. Simotics XP explosion-protected motors from Siemens represent the basis for the majority of the applications. Over time, these

motors will replace motors from other manufacturers. Employees belonging to the Technical Expertise department in BASF SE have defined a standardized inventory with minimum unit quantities that address the demand of the complete complex under normal conditions.

In a concerted action involving several departments of Siemens and the user, a central warehouse that stocks approximately 2100 explosion-protected motors was established at ASF Südwest in a very short time. Some of these motors are presently still from BASF's own inventory, which are now being delivered with priority, and gradually being replaced by the corresponding Simotics XP variants. Motors that have taken from the plant and overhauled are also in circulation.

All motors in the new warehouse comply as a minimum with the requirements for use in hazardous area, Zone 2. Versions are also immediately available to address even more demanding requirements, for example designs with flameproof enclosure. Currently, the warehouse has explosion-protected motors with power ratings extending from 0.18 up to 250 kW, in shaft heights 71 to 315 and types of protection Ex ec and Ex eb (increased safety, for Zone 2 respectively Zone 1) as well as Ex db (flameproof enclosure for Zone 1).

READY TO DELIVER AROUND THE CLOCK

Service provider ASF Südwest works around the clock 365 days a year and transports motors to precisely where they are required. "Generally, we deliver the next work day – but in an emergency, the right motor is in the plant within three hours. If required, we modify this according to user specifications, for instance by installing special flange rings or fan cov-



In the future, BASF SE will be predominantly using explosion-protected Simotics XP motors from Siemens at its Ludwigshafen complex. It is estimated that this complex has up to 100,000 motors. © BASF SE



ers with protective canopy – we also re-equip reinforced bearings” explained Bernd Wolf, CEO of ASF Südwest GmbH. IT structures have been appropriately adapted to ensure smooth workflows. At defined intervals, the warehouse team checks whether new requirements apply and prepare motors according to user specifications. Generally, motors are delivered once daily but also more frequently depending on the actual requirement. Unlike a transport company, these drive specialists can provide in-depth technical support to the user and recommend suitable, approved alternatives if a motor doesn't precisely correspond to the specifications. The warehouse operates with fixed SAP storage locations so that ASF and BASF always know which motor is located in which warehouse rack.

Triggered by ASF Südwest, Siemens regularly stocks up the inventory through established replenishment routes as quickly as possible to ensure maximum delivery capability. The procurement process is significantly simplified by having just one supplier.

For BASF SE, all of this means professional support, the shortest response times and in turn maximum plant availability and process reliability without tying up their own capital in electric motors.

DOCUMENTED PROFESSIONAL COMPETENCE

Since 2014, ASF Südwest has been active in the area of automation, electrical installation and drive technology for companies in the region and currently has a 30-strong team. The motor competence is also the result of a sig-



Supported by Siemens, ASF Südwest GmbH in Mörstadt set up a new warehouse for about 2100 motors. © Siemens

nificant maintenance/repair and revision work performed for various chemical companies as well as in the municipal sector. They built-up their specific expertise on explosion-protected motors from Siemens through the Siemens Modification and Logistics Program (Simolog). As a consequence, these specialists are qualified and authorized to modify both standard as well as explosion-protected motors from Siemens and to market these independently.

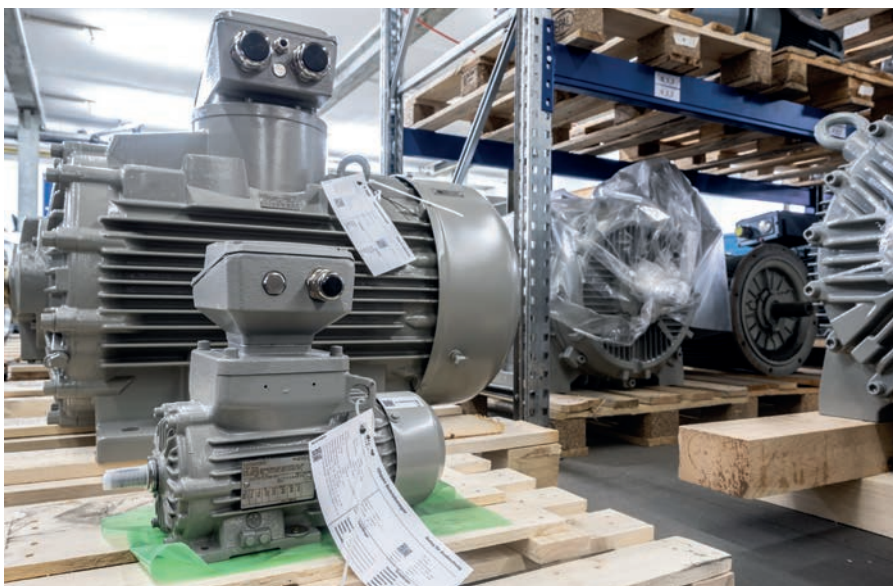
EXPLOSION-PROTECTED MOTORS FOR ALL REQUIREMENTS

BASF SE selected Siemens as preferred sup-

plier as their portfolio, quality and availability to deliver are precisely what they were looking for. “We reliably get all of the explosion-protected motors required from a single source”, explained Bernd Korbach. The Simotics XP program encompasses explosion-protected motors with types of protection Ex ec, Ex eb and Ex db to address applications in Zones 1 and 2 in the factory. The motors correspond to the usually applicable directives such as ATEX and VIK. Standard versions with aluminum and cast iron enclosure are always available for delivery. Further, variants with reduced inrush currents, special cable glands or for converter operation up to 690 V can be quickly provided. This means that the optimum motor is always available for all requirements and eventualities. And to top it off, they have a low energy consumption: In the Ex eb version, Simotics XP motors today already surpass future energy efficiency specifications laid down in the IE3 standard. On the path to achieving CO₂ neutrality by 2050, energy efficiency is also very high on the agenda for BASF SE.

EFFICIENT FROM THE VERY START

Since the operation kicked off back in March 2021, motor logistics from the new warehouse with new partners have been running smoothly without any bottlenecks. News about this outstanding performance spread like wildfire in the region and brought other interested parties into the program.



Simotics XP in detail © Siemens

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FREE DIGITAL SUBSCRIPTION

N° 3 - MARCH 2022

www.pcne.eu

Acceleration of Process Plant Digitalization with IO-Link

IO-Link is enjoying increasing popularity, with demand for the communications standard growing rapidly, especially in the food & beverage industry. The fieldbus-independent technology for point-to-point communication is easy to use and provides a cost-effective way to digitalize industrial plants.

IO-Link is regarded as an established standard for measurement devices with basic functionality, offering advantages such as data transparency and additional control through digital technology. Integrating IO-Link-capable sensors and actuators is especially popular with suppliers of machines or skids for the food & beverage industry. Particularly for utilities, devices with basic functionality are well suited; instruments with a rich set of different functionalities would unnecessarily increase complexity and costs.

BROAD OFFERING FOR THE FOOD & BEVERAGE INDUSTRY

Endress+Hauser is a leading global supplier of process instrumentation for the food & beverage industry. "No other manufacturer offers such a broad and deep range of products and services. Our comprehensive IO-Link portfolio clearly illustrates this position. As a strong partner for process automation, we support our customers with IO-Link sensors in numerous fields of application," says Rob Sips, Strategic Account Manager for the Group's international business.

ANALOG SIGNALS AND DIGITAL COMMUNICATION

The majority of the IO-Link sensors can be optionally operated in analog mode (4–20mA) with simple configuration changes to the instrument, thus allowing production workflows to remain in place. If extra information such as diagnostic and service data is required, in addition to the actual process parameters, an installed IO-Link-capable instrument can be simply switched to a digital signal.





interfaces support the acyclic transmission of helpful metadata to ensure stable and efficient production. Furthermore, the smart sensor profile is designed for simple engineering, which reduces the effort required by plant operators to integrate sensors into their systems.

ADDITIONS TO THE IO-LINK PORTFOLIO

Endress+Hauser offers a comprehensive product portfolio of IO-Link-capable instruments for all relevant process parameters. The company recently introduced the Smartec CLD18 compact conductivity sensor, IO-Link versions of the PMP51, PMP55 and PMC51 pressure transmitters, and the Deltapilot FMB50 level transmitter. With these new additions to the IO-Link portfolio, customers can exploit the benefits of digitalization in a cost-efficient manner.

▶▶ 61582 at www.pcne.eu

A SIMPLE AVENUE TOWARDS INDUSTRY 4.0

“Although IO-Link is not the most powerful communications standard for process engineering, the technology is cost-effective and

harbors tremendous potential for the digitalization of process plants,” says Oliver Hansert from Endress+Hauser Digital Solutions. Endress+Hauser instruments with IO-Link



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SIL 4 Modular Interlocking Manifold for HIPPS System

Versions: 1oo1, 2oo3 and other... with optional Enclosure IP66 in SS 316 or GRP

SIL 4 - IEC 61508



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4000 sqm
of which 3000 sqm
of production area

Application



Standard and special materials

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- SuperDuplex F53/F55
- A105
- LF2
- Monel
- Alloy 625/825
- Hastelloy C276
- Titanium
- 6MO
- Others on demand

Engineering

Manufacturing

3D Checking

NDT Testing

Bunker " High Pressure Test"

100% Pressure Testing



VERSATILE, HIGH-PRECISION DATA LOGGERS

Safe and secure temperature data management



The new **T&D** Thermo Recorder TR7A series is ideal for temperature and humidity monitoring, having been designed for a broad range of measurement tasks. They offer multiple types of communication interface. Depending on the particular device, temperatures

from $-199\text{ }^{\circ}\text{C}$ up to $1760\text{ }^{\circ}\text{C}$ can be measured and monitored, as can humidity from 0 to 99% RH. Measurement ranges depend on the sensor type, with additional optional sensors available. In addition to the measurements of two channels, models in the TR7A series can display maximum and minimum values, as well as warning notifications thanks to upper and lower limit alarms. Large storage capacity allows for 30,000 readings per channel, with 15 different recording intervals available, ranging from 1 second up to 60 minutes. The TR75A of the series is a temperature logger with 2ch thermocouple (K, J, T, E, S, R) connections. It is capable of measuring temperatures ranging from -199 to $1760\text{ }^{\circ}\text{C}$ and can be used in deep-freezes where temperatures reach ultra-low levels, or in very high temperature environments such as plant furnaces. All TR7A Series units use a wireless LAN access point to automatically upload recorded data and alerts to the free cloud-based "T&D WebStorage Service" or a PC running "T&D Data Server" software.

▶▶ 62046 at www.pcne.eu

HIGH-PERFORMANCE CONTROL

With displays that are easy to read in all environments



Whether in the water/waste-water or building materials industry, processes can be particularly well monitored and represented with large displays and traffic light warning systems. These help operating staff to quickly grasp even complex processes and maintain an overview. A new generation of controllers from

VEGA makes level and pressure measurement and control easier and more efficient. The VEGAMET series are designed to be highly visible and ready to use out of the box. Controllers are available to be fitted in switching cabinets, as front panel or stand-alone versions in the field. The high-contrast display offers options for a clear, well-arranged visualisation of measurement data. The display is particularly large in relation to the small size of the controller itself, which provides an overview that is easy to take in - even from a distance and in broad daylight. Via a smartphone or tablet with Bluetooth, users can still access the controller from even further away. In this way, they can parameterise the device remotely and monitor measured values away from hazardous zones. In recent years, the tasks controllers have to perform has grown considerably. To meet this challenge, many powerful functions have been packed into the three different housing versions.

▶▶ 60777 at www.pcne.eu

RELIABLE MEASUREMENT OF METHANE

Dependable thermal mass flow gas measurement



The ST80 Series Thermal Mass Flow Meter from **Fluid Components International** is a solution to measuring methane and providing data to meet emerging government environmental regulations and reporting requirements. CH₄ is over 20 times more effective in trapping heat in the atmosphere than

CO₂ over a 100-year period and is emitted from a variety of natural and human-influenced sources. Thermal mass flow meters using Adaptive Sensor Technology™ such as the ST80 Series, with their robust, open and cleanable, no-moving parts sensor design provide an ideal methane gas application solution in demanding industrial processes. Furthermore, their international approvals for Div.1/Zone 1 ensure safe installation in hazardous gas processing areas. The measuring technique combines, for the first time, both of the industry's highly proven constant power (CP) and constant temperature (CT) thermal dispersion sensing technologies in the same instrument. The ST80 Series transmitter enclosure is NEMA 4X/IP67 rated, selectable for NPT or metric conduit port threading and is available in both aluminum and stainless steel and may be remotely located up to 300 m from the flow element. The ST80 Series Flow Meters are suitable for pipe diameters from 25 to 2500 mm and air/gas temperatures up to $450\text{ }^{\circ}\text{C}$.

▶▶ 61454 at www.pcne.eu

LIQUID CHROMATOGRAPHY FLOWMETER

High-precision measurement of lc flow rates



Flow rate is one of the most important parameters in any liquid chromatography system, it determines retention time or volume and therefore has a major influence on reproducibility. The **TESTA Analytical** liquid chromatography flowmeter has set a new standard for non-invasive measurement of flow rate in HPLC and GPC/SEC systems. Compact in size, and conveniently powered via a USB connection, the TESTA Analytical liquid chromatography flowmeter uses a thermal flow sensor that is not only extremely accurate, sensitive and high-resolution - but it also offers the advantage of being non-invasive. As the sensor does not interfere with the measurement it can operate over a wide dynamic range, and has been demonstrated to be the perfect real-time flow monitoring tool for liquid chromatography applications including calibrating the flow rate of HPLC pumps, troubleshooting defective systems, and continuously validation for regulated products. Version 1.2 of the liquid chromatography flowmeter allows users to now set the optimal integration time to suit different applications. For example - sampling data every 0.1 seconds is optimal for real-time monitoring of HPLC pump performance whereas sampling data every 10 seconds is best for absolute flow rate calibration.

▶▶ 61839 at www.pcne.eu



STAINLESS-STEEL INDUCTIVE SENSORS

In compact housings with a large switching distance



The inductive sensor with increased switching distances from **wenglor** features enhanced performance in miniature design: A total of eight new sensors from the I03 and I04 series in the compact D3 and M4 housing are available for

detecting metallic objects in confined systems. The robust sensors in V2A stainless steel housing demonstrate their strengths exactly where space is most limited. The I03 series sensors have a diameter of just three millimeters (D3) and a smooth housing, while the I04 series has an external thread with a total diameter of four millimeters (M4). With both series, the housing is just 22 millimeters long. The almost invisible miniature sensors detect precise switching signals in places where virtually no installation space is available. Increased switching distances of up to 1 mm, a robust PUR cable connection (two meters), a high IP67 degree of protection and a broad temperature range between -25 and +70 °C ensure high performance and long service life. Thanks to flush mounting, the sensors can be integrated mechanically protected in systems. The optional PNP/NPN and NO/NC variants also enable convenient handling with existing systems. With the LED adjustment aid, the sensors can also be easily installed. The bright LED shows the status clearly, even over long distances.

▶▶ 61327 at www.pcne.eu

COMPACT CAPACITIVE IO-LINK SENSORS

M8/M12 sensors with flush & non-flush metal housing



Turck is presenting new capacitive sensors in the M8 and M12 metal housing for flush or non-flush mounting. The robust IO-Link devices with protection to IP67 are compact and offer versatile use, particularly for detecting objects in production, logistics or pharmaceutical applications. Their dynamic teach function simplifies setup

during the ongoing process. The sensors can thus detect the extreme values of passing objects on conveyor lines and independently determine the ideal switch point. An integrated counter function enables the implementation of autonomous counting applications without the need for a PLC. The sensors provide a large amount of additional information for condition monitoring systems for the monitoring of machine states: process values, operating hours, actual internal or maximum temperature, number of switching operations or the actual device status can be called up directly via the interface. The IO-Link sensors are commissioned by the usual IO-Link process. The easiest way to do this is with Turck's IO-Link masters, which enable direct access to all parameters via their web server. Users therefore neither have to download an IODD nor an IODD interpreter such as Pactware.

▶▶ 61446 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

EX-CERTIFIED PROCESS GC ANALYZER

For continuous and autonomous mixture monitoring



The DynamiQ-X, the micro gas chromatograph analyzer from Qmicro by **Sensirion**, is designed for continuous gas mixture monitoring in industrial process and factory automation applications. The analyzer offers the ability to measure a wide range of gases at an ultra-fast

measurement time, long-term autonomy thanks to their low carrier gas consumption and automated re-calibration. It is accurate and has a low power consumption. The ultra-compact form and explosion-proof housing means they can be installed at virtually any location. In addition, the innovative cartridge system ensures that the replacement of consumables is fast and easy. All of these aspects make Qmicro's product an ideal solution for applications where natural gas properties need to be analyzed, such as custody transfer, bio-methane injection or hydrogen blend stations. Qmicro's DynamiQ micro-GC gas analyzer product line are supplied in application-specific configurations to selected customers, typically system integrators, OEMs and expert distributors. The instruments are configured for one specific application and are therefore sold as analyzers for this single application. Qmicro has been part of Sensirion since 2021.

▶▶ 61631 at www.pcne.eu

ACOUSTIC IMAGING CAMERAS

Focusing on air leaks and partial discharge detection



Teledyne Flir has expanded its acoustic imaging category with two additional models of the FLIR Si124 Industrial Acoustic Imaging Camera. This expansion provides additional, tailored solutions for different end-users needs, from utility infrastructure to plant environments. The FLIR Si124-PD and Si124-LD devices also

include easy-to-use onboard analytics with access to an online portal through the FLIR Acoustic Camera Viewer cloud service. The new Si124-PD features automatic electrical fault classification for partial discharge issues, including surface, discharge, floating discharge, and discharge into air. With the PD Severity Assessment software feature, users can also input the kind of component, the equipment voltage, and the distance from the component to get a severity assessment specific to those parameters. This feature is included within the FLIR Acoustic Camera Viewer cloud software. The Si124-LD features real-time, on-device leak sizing and cost analytics, allowing users to instantly view the leak rate onscreen as it occurs, either in liters per minute (l/min) or cubic feet per minute (CFM), and to quantify leak size. This feature provides a quick assessment of how much air is being lost and estimated cost savings from fixing the issue. As part of a maintenance program the Si124-LD can extend life and efficiency of existing compressors.

▶▶ 61384 at www.pcne.eu

SENSOR FOR END POSITION DETECTION

Contactless and wear-free retrofitting for valves



For many applications, it is essential that the user is certain whether the valve has switched or not. Such end-position queries are usually solved with reed-contact switches. This means that retrofitting valves that have already been delivered is only possible with considerable effort. The **GSR** end position sensor, on the other hand, can be easily

retrofitted to existing valves. It is currently available for the GSR DC solenoid systems .032 and .012. Other solenoid systems are in preparation, as e. g. explosion protection. In complete assembly with valve, the sensor is also available as option 6H. The mode of operation is as follows: The sensor detects the magnetic field. When the armature moves, the magnetic field changes and the sensor detects when the valve has switched. The LED display integrated in the plug signals successful switching. In this way, the user can be sure that the valve is functioning reliably. The GSR end-position sensor scores points not only for its simple installation but also for its compact and robust design. The high-quality stainless-steel housing enables a long service life, withstands drops and can even be used under water. The sensor on its own is suitable for high ambient temperatures up to 160 °C and requires only a low current consumption.

►► 61510 at www.pcne.eu

PROCESS PUMPS WITH IEC MOTORS

Available with heating jacket for smooth operation



A few years ago, **Sulzer** launched the energy-efficient CPE ANSI (American National Standards Institute) centrifugal pump range. Now, responding to market demand, Sulzer provides an IEC (International Electrotechnical Commission)

motor compatible pump range. The CPE process pump is designed for a variety of industrial applications, such as clean or slightly contaminated liquids, viscous liquids, and fibrous slurries. It meets the requirements of ASME B73.1 (American Society of Mechanical Engineers) applied to chemical processes. A heating jacket option is available for applications that require a specific temperature to enable smooth pumping operation. Today, there is a global demand for CPE pumps. Therefore, Sulzer extended the pump range with IEC compatibility that features IEC motors, base plates, and couplings. The CPE pumps are manufactured in the US, Finland, and China for best global availability. The CPE pump with an IEC motor is a strong alternative if there is a need for a process pump with higher pressure or temperature than an ISO5199 pump can reach. It offers the highest efficiency in the ANSI pump market. For customers, this means substantial savings in the total cost of ownership (TCO) and a reduced environmental footprint. The pump is a fit for a wide range of industrial applications.

►► 61579 at www.pcne.eu

OPEN PATH GAS DETECTORS

Detector for toxic/ combustible gases across wide areas



Emerson introduces two new open path gas detectors to increase safety and reduce downtime by offering performance reliability over wide areas in extreme environments and an easier, faster installation and commissioning process.

Extreme environments include both heavy vibration conditions and operating temperatures ranging from -55°C up to 65°C commonly found in the oil and gas, refining, chemical, mining and large-scale refrigeration system operations. The Rosemount™ 935 Open Path Combustible Gas Detector uses infrared technology to detect a wide range of highly combustible hydrocarbon gases, including methane, propane and ethylene. The Rosemount 936 Open Path Toxic Gas Detector uses ultraviolet technology to detect hydrogen sulphide and ammonia, two of the most common toxic gases in industrial facilities. Leveraging xenon flash technology, the Rosemount 936 enables greater installation flexibility versus the tunable diode laser (TDL) technology which needs perfect alignment between beam and receiver for high reliability. With nearly twice the tolerance for misalignment than TDL, users can save up to 30% of installation time and streamline project schedules. Both detectors can be used in combination with Emerson's full portfolio of flame and gas detection products.

►► 61517 at www.pcne.eu

ACTUAL-POSITION FEEDBACK UNIT

Easy installation for use with pneumatic linear valves



When developing its new intelligent actual-position feedback unit of the type SK-i LED, the **KSB Group** company SISTO Armaturen S.A. attached particular importance to meeting the special requirements of biotechnology, fine chemicals and

the pharmaceutical industry. The unit continuously measures the valve travel. The limit positions of the valve are saved in the micro-controller, doing away with the need for time-consuming manual settings. Initialisation can be carried out automatically on site based on an integrated magnetic sensor or remotely from a control station using a process control system. SISTO-SK-i LED is connected via an M12 connector (24 V). It is ready for operation as soon as initialisation is complete. Key information such as valve position, readiness for operation and any faults are indicated by colour-coded high-visibility LEDs. In this way the valve's status can reliably be recognised, regardless of its installation position. Optionally, SISTO-SK-i LED is available with an AS interface. The user can also add a 3/2-way solenoid valve for single-acting pneumatic actuators in the plastic or stainless steel IP65-compliant housing. With its smooth surface the unit is easy and efficient to clean. For special requirements a stainless steel variant (1.4404) is available.

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SEALS WITH NEW FKM COMPOUND

New precision seal material for long-term use up to 250°C



C. Otto Gehrckens presents a high-performance material with outstanding temperature resistance qualities. The new high-performance FKM compound Vi 250 is completely air-tight at temperatures of up to +250 °C, even over the long term. With this innovative product, the COG experts have enriched the FKM portfolio

with the addition of a high-performance special material which will also withstand permanently high temperatures in industrial environments. A further impressive feature of Vi 250 is its excellent media resistance, and it is also resistant to chemicals, including all types of hydrocarbons. The material's profile is rounded off to perfection by its low gas permeability. What's more, at -25 °C, Vi 250 also boasts a remarkably low minimum temperature threshold for a high-temperature FKM. This compound is thus highly recommended as a flexible all-rounder for a huge range of applications across the entire spectrum of industrial sectors. In compressor and compressor technology in particular but also mechanical and plant engineering in general, Vi 250's strengths make it ideal for use as a versatile specialist for hot environments. Depending on the chemical harshness of the environment, this newcomer can often be used as a lalternative to the more expensive FFKM materials.

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PRESSURE-COMPENSATING RUPTURE DISC

Air-permeable for pressure compensation and relief



Bormann & Neupert by BS&B has developed a new pressure-relieving rupture disc that is also permeable to air and therefore enables pressure compensation as well. This dual-purpose function is ideal for low-pressure fluid containers with a design pressure below that specified by PED and ASME. The new eVent is breathable, allowing air to flow and thus compensating several millibars of positive or negative

pressure without bursting. Just like conventional rupture discs, it remains free of leaks and requires no maintenance under normal operating conditions. The eVent activates with high precision only upon reaching the predefined activation pressure, opening up to enable full flow. This protects pressure-sensitive plant components against both damages caused by temperature-related pressure fluctuations and real critical pressures. This dual function is all thanks to a film made from sintered polytetrafluorethylene (PTFE). This material allows air to flow through at low pressure differences of several millibars, while reliably withholding fluids. The developers had to overcome the challenge of ensuring reliable activation at low rupture pressures of around 0.5 bar. The eVent breathable rupture disc are delivered as a light, integrated assembly ready for installation in the nominal diameters DN25 and DN150.

▶▶ 61642 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

SAFETY VALVES FOR H2 ELECTROLYSERS

For the safe production of hydrogen by electrolysis



Safety valves from **WITT** provide the required precision and flow capacity for electrolyzers. Historically and currently, enormous amounts of hydrogen are needed for key industrial processes. The WITT safety valves AV 619 and AV 919 perfectly match the target pressure and temperature ranges of PEM and Solid Oxide electrolyzers. The opening pressure can be set accurately anywhere in range 5 to 500 mbar. The operating temperature can be anywhere up to 250°C. For Alkaline electrolyzers, the SV 805 model is ideal, with an opening pressure settable anywhere in the range 0.5 to 45 bar, with operating temperatures up to 150°C. Highly precise and reliable, the valves open when the set pressure is reached and safely protect workers and sensitive equipment from overpressure. Despite their small size, the valves allow high flow rates, making them also suitable for large installations. The valves are available with the elastomers required for hydrogen, including EPDM or FFKM (also known as FFKM). WITT safety relief valves are oil and grease-free, can be installed in any position, and are available with various inlet and outlet connections and in different materials, including stainless steel or aluminium (AV 919).

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▶▶ 61947 at www.pcne.eu

CLOUD-BASED ASSET MANAGEMENT

Advanced Analytics for intelligent flow control assets



Rotork's Intelligent Asset Management is a cloud-based system for intelligent actuators and the flow control equipment they operate. The system of advanced analytics improves reliability and availability of key assets (such as valves) across all industries that use flow control processes. Failure of key equipment on any site or plant can result in unplanned downtime, poor performance and output yields or reputational damage. By collecting data and monitoring asset status, Intelligent Asset Management can lead to long-term operational stability. The system uses the information downloaded from the data logs recorded within intelligent actuators. It is a robust, safe and secure online platform with a simple to use intuitive interface that can run on all operating systems. Summary views and colour coded maps simplify complex analytics into easy to understand visuals. Early detection of issues will allow resolution before costly failure, aiding Rotork's customers in saving money and reducing downtime. Intelligent Asset Management is available both as a standalone offering and as part of a combined solution to meet individual customer needs. It is suitable for use with all intelligent actuators across multiple applications, including oil and gas, chemical, process and industrial markets.

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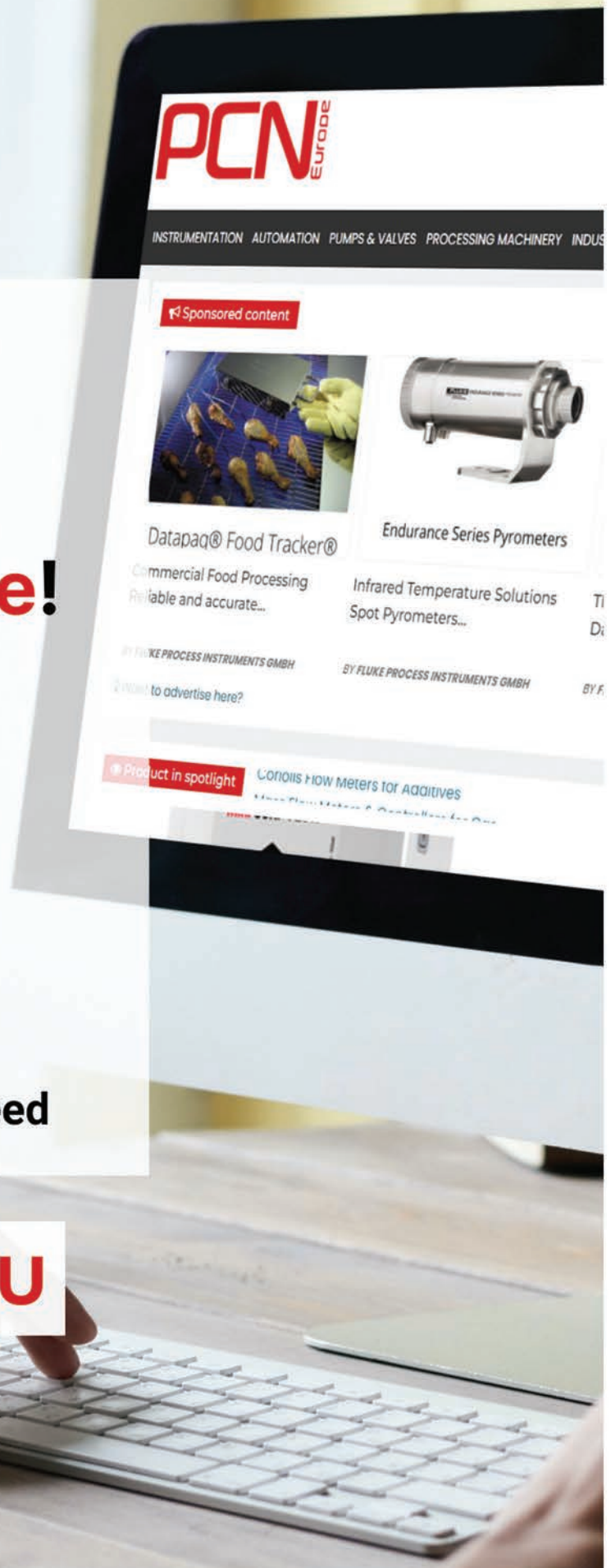
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