

PCN

Europe

processing & control news



Driven by Customer Needs

Page 10



22 ENTERPRISE MOBILITY CONCEPTS:
Process Optimisation in Industry 4.0

14 INDUSTRY SPECIAL PHARMA:
Gentle Packing of Vaccine Dose Syringes

24 DIGITALIZATION:
(Co-)operating Efficiently and Safely from a Distance

www.pcne.eu



24/7 coverage of new
industrial products & technology.

Visit **www.pcne.eu**

Over 6,000 product news & applications for engineers and buyers in the industry!

*Explosion Protection & Safety – Measurement & Instrumentation – Industry 4.0 – Pumps, Valves & Compressors
Processing Machinery – Maintenance – Equipment & Services – Automation & Communication*

www.pcne.eu
marketing@tim-europe.com

PCN Europe
processing & control news

TIM Global Media BV
140 rue de Stalle - 3ème étage, 1180, Uccle
Brussels, Belgium
o.erenberk@tim-europe.com
www.pcne.eu

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

ADVERTISING SALES OFFICES

EUROPE

AUSTRIA, SWITZERLAND

• Monika Ailingner
Tel: +41 41 850 44 24
m.ailingner@marcomedia.ch

BENELUX, NORWAY, SWEDEN

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

FRANCE

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

• M'fumu Tiya Mindombe

Tel: +32 465 443 530
m.mindombe@tim-europe.com

GERMANY

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

ITALY

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

TURKEY

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

UNITED KINGDOM, DENMARK, FINLAND

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

NORTH AMERICA

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

JAPAN

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

OTHER COUNTRIES

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

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



© 2021 TIM Global Media BV
Production by Design3, Milano, Italy
Printing by Logo Srl - Padova, Italy
POSTMASTER: Send address changes to:
Processing & Control News Europe,
Marco Prinari - m.prinari@tim-europe.com



FREE DIGITAL SUBSCRIPTION



Kay Petermann
k.petermann@tim-europe.com

Dear Reader,

The German Bosch Group released some interesting business figures regarding their so called "Industry 4.0" portfolio beginning of April. In the last 10 years, since the creation of the term in 2011, their accumulated sales revenue in this area reached



4 billion euros. In 2020 alone, they generated more than 700 million euros. To support these financial numbers with some additional information from their factories, the count of 120 000 connected machines and 250 000 connected devices, e.g. cameras or robots in Bosch plants all over the world was given. This shows some of the potential and importance the topic has for the industrial communities, even if the full impact it will have, cannot be assessed in detail.

In the focus "Digitalization in Processing Industries" we can show you some of the positive impacts digitalization and Industry 4.0 concepts can have. One of the examples is the reduction of industrial emissions through Continuous Emission Monitoring Systems on page 20. Another one is the article on page 24, showing how remote cooperation is a possibility to deal with the current COVID-19 situation.

The Pharma-Special brings you some interesting solutions, for example how oil free air for the highest production requirements can be provided (page 12) or how flexible automation supports packaging of vaccines and other pharmaceuticals (14, 16).

We hope you will have an interesting read with this issue and as usual: Please contact me with your feedback or if you have an idea for a story you want to share with your co-readers.

Editor of PCN Europe

FREE
Digital
Subscription



Next Issue: September 2021

**Modular and Connected Production
Automation & Process Control
Food & Beverage Industry Special**

5
Industry News

7
New Products

10
Cover Story: Driven by Customer Needs

**SPECIAL PHARMACEUTICAL
INDUSTRY:**

12
Class Zero Air – Achieving Sustainability
Goals While Ensuring Regulation
Compliant Product Quality

14
Gentle Packing of Vaccine Dose Syringes



16
Intelligent Size Changeover for
Pharma 4.0.

18
How Pharma 4.0 Will Benefit from
Open Industrial Ethernet

**DIGITALIZATION IN
PROCESSING INDUSTRIES:**

20
More Solutions, Less Pollution – How gas
analyzers are helping reduce industrial
emissions

22
Enterprise Mobility
Concepts –
Process Optimisation
in Industry 4.0

24
(Co-)operating
Efficiently and Safely
from a Distance



28
New Products

30
Index

EQUIPMENT & MACHINES

26
Transporting and Lifting in Sensitive Areas

27
Continuously Operating Ploughshare Mixer



Trinseo and BASF Announce Business Collaboration on Circular Feedstock

Trinseo and BASF announced end of March the intention to expand their businesses with the production of styrene based on circular feedstock. The enhanced collaboration between Trinseo and BASF aims to increase efforts by both companies in the development and management of styrene featuring an improved environmental profile. Trinseo has recently been procuring first supplies of the synthetical chemical styrene based on circular feedstock from BASF for use in its Solution-Styrene Butadiene Rubber (S-SBR) and polystyrene (PS) products. "By creating synergy across the value chain, the Trinseo-BASF collaboration is an important move towards helping our customers reach their sustainability goals as well as the development of a truly circular economy," said Nicolas Joly, Vice President, Plastics & Feedstocks of Trinseo. "The initiative is also in line with Trinseo's 2030 Sustainability Goals announced earlier this year." There are two types of styrene BASF can produce with a mass balance approach – renewable feedstock based-styrene and styrene based on chemically recycled feedstock. Mass balance is a chain of custody model designed to keep track of the total amount of input (e. g. circular feedstock) throughout the production cycle and ensure an appropriate allocation to the finished goods. The allocation process via the mass balance approach as well as the products are certified by an independent auditor.



The Next Step of ToF (Time-of-Flight) Simulations

tofmotion GmbH participates in the LIGATE project funded by the European research and innovation program HORIZON 2020. The private-public consortium aims to strengthen the use of high-performance computing for the drug development process. In the course of this project tofmotion will, in close cooperation with the University of Innsbruck, raise their ToF 3D camera simulation to the next level. "With this common step, we will be able to virtualize our camera up to its physical characteristics and build up a full digital twin.", explains Mag. (FH) Tia Maria Troch, Head of Strategy and Corporate Development at tofmotion. "As an innovation driver within our branch, we are very pleased to be part of this game-changing project." To better and faster encounter pandemic situations of supranational interest the LIGATE consortium is to research the potential of super computing for life sciences. The consortium consists of eleven institutions and companies in five European countries, including Politecnico di Milano (Department of Electronics, Information and Bioengineering), CINECA Interuniversity Consortium (Supercomputing Innovation and Applications), E4 Computer Engineering, the University of Salerno, University of Basel, KTH Royal Institute of Technology (Department of Applied Physics), das IT4Innovations National Supercomputing Center and Chemnitz Applied Science.



Transforming Biomass Side Streams Into Clean Energy

Bühler Group and Vyncke have announced a strategic partnership to offer integrated solutions to transform biomass side stream products into clean process energy and reduce customers' carbon footprint. The dependency on fossil fuels – and with this, CO₂ emissions – can decrease from 20%-100%, depending on the raw material and side stream products. This means that in some cases, food plants can become fully carbon neutral. The first focus of the partnership is the segments of cocoa, oat, and malt processing. "This partnership is a key element in our strategy to massively reduce CO₂ in the value chains of our customers," says Johannes Wick (r.), CEO of Bühler Grains & Food. "Many industries rely on our solutions to reduce their fossil fuel consumption. With Bühler, we now aim to also become the standard to reduce the CO₂ footprint of the food industry," says Peter Vyncke (l.), owner of Vyncke. "Together, Bühler and Vyncke can now offer integrated and optimized solutions where economic and ecological benefits go hand in hand." One particularly important joint project will be the expansion of a malt production plant for Bühler's long-time business partner, Malteria Oriental S.A. in Montevideo, Uruguay. Malteria Oriental S.A. belongs to the Grupo Petrópolis, one of Brazil's largest beer producers. Both Vyncke and Bühler have set the goal of reducing energy consumption in all new food plants by at least 50% by 2025.



Siemens Closes Flender Sale Successfully

Siemens has successfully closed the sale of Flender GmbH to The Carlyle Group for €2.025 billion (enterprise value). In October 2020, Siemens announced its plans to sell the specialized supplier of mechanical and electrical drive systems, e.g. for the sectors of Renewable Energy, Oil & Gas, Chemical & Pharma, to Carlyle. Now that the relevant authorities have granted the required approvals, the transaction has closed. As previously announced, the sale of Flender results in a disposal gain of a euro amount in the mid-triple-digit millions for Siemens AG. "The sale of Flender is another step in executing our strategy for enabling Siemens to become a focused technology company," said Ralf P. Thomas, who is Chief Financial Officer at Siemens, where he is also responsible, among other things, for Siemens' Portfolio Companies. "Flender has developed excellently in recent years, and the unit impressively demonstrates that our Portfolio Companies concept has proven effective," added Thomas. Siemens aims to give its individual Portfolio Companies – which tend to have the characteristics of medium-sized enterprises – more independence and autonomy, possibly also in connection with a change in ownership. With some 8,600 employees, Flender generated pro-forma revenue of roughly €2.2 billion in fiscal 2020.



Use of Existing Infrastructure to Transport Green Hydrogen

Efficient and economic separation of hydrogen and natural gas with membrane technology

Researchers at the Fraunhofer-Gesellschaft have developed a technology for the energy-efficient and economic separation of hydrogen from natural gas. This membrane technology makes it possible for the two substances to be routed through the national natural gas grid together and then isolated from one another at their final destination. A major step forward in the transportation and distribution of hydrogen as an energy source. Alongside ceramic-based materials, the Fraunhofer Institute for Ceramic Technologies and Systems IKTS is researching the potential of other materials such as carbon, for example. This material could play a key role in the movement towards hydrogen as an energy source. Hydrogen is seen as a beacon of hope for establishing a CO₂-free energy supply. If hydrogen is collected from renewable sources such as wind and solar power, there are no climate-damaging emissions. But how do we move this “green” hydrogen from the producer to the consumer? Germany still does not have an extensive distribution network for hydrogen. The HYPOS (Hydrogen Power Storage & Solutions East Germany) project initiative is working to solve this dilemma. The aim is to create an intelligent infrastructure of distributor networks and storage stations that will make the clean energy source available to all regions.

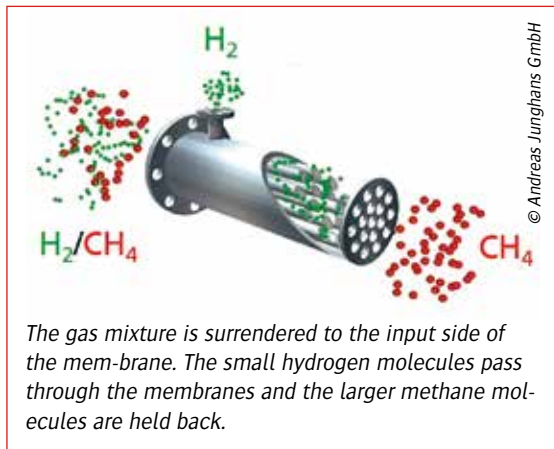


Distribution of hydrogen through the natural gas grid

The HYPOS project partners are pursuing the idea, among other approaches, of transporting the hydrogen (H₂) along with the natural gas (the principal component being methane, CH₄). After all, Germany does have a 511,000 kilometer long gas grid and 33 gas storage locations. “The advantage of this infrastructure is that it allows hydrogen to be fed into the natural gas grid as well. The two substances can be transported together in one line. Once they arrive at the destination, we can separate them from one another again as needed,” explains Dr. Adrian Simon, Group Manager at Fraunhofer IKTS.

This is where carbon comes in. It forms an ultrathin layer on porous, ceramic substrates where it acts as a membrane, separating natural gas and hydrogen from one another. There are various processes involved in membrane production, starting with custom polymer synthesis. Polymers are substances consisting of branched macromolecules. These are then applied to the porous substrate. When the polymer is heated up and starved of oxygen at the same time, it forms a layer of carbon on its surface. The pores in the carbon are less than a nanometer in diameter, and this makes them effective for gas separation.

Physical and chemical processes can be employed to adapt the membrane’s separation behavior even further. Fraunhofer IKTS has been collaborating with Leipzig-based DBI Gas- und Umwelttechnik GmbH to develop tubular carbon membranes. During the separation process, hydrogen and natural gas are pushed through the tubular modules. The smaller hydrogen molecules are forced through the pores in the membrane and reach the outside in the form of gas, the larger methane molecules on the other hand are held back. “This gives us hydrogen with an 80 percent degree of purity. We then filter the residual natural gas in a second separation step. The end result is a purity of over 90 percent,” explains Simon. The researchers at Fraunhofer IKTS are currently working on scaling the technology to an extent that will allow the separation of larger volumes of natural gas and hydrogen. The construction of prototypes is already in the pipeline.



The gas mixture is surrendered to the input side of the mem-brane. The small hydrogen molecules pass through the membranes and the larger methane molecules are held back.

About the HYPOS project:

The “Hydrogen Power Storage & Solutions East Germany” research project has set itself the goal of providing “green” hydrogen, meaning hydrogen produced from renewable energies and without climate-damaging emissions, on a nationwide basis. The idea is to network power and gas grids, storage stations and hydrogen pipelines in an intelligent infrastructure. This will create an energy network that can serve as the basis of an extensive and cost-efficient hydrogen economy.

The plan is to then roll out the model-based structure in East Germany nationwide. The project partners, numbering more than 130, include eight research units or institutes of the Fraunhofer-Gesellschaft, including Fraunhofer IKTS.



ULTRA-COMPACT FLOWMETER

Wide flow range & integrated temperature measurement



KROHNE introduces the AF-E 400 ultra-compact electromagnetic flowmeter. It is specially designed to fit in applications with little installation space available. AF-E 400 matches the requirements of many areas

of industrial automation applications in all process industries. The cost-effective ultra-compact flowmeter is designed to fulfil high demands in terms of temperature range, accuracy, pressure drop and flow range: it features a stainless steel housing and is suitable for continuous use at +90°C/ +194°F liquid temperature, allowing for operation in very demanding cooling and hot water applications. The round bore reduction of the sensor makes the flowmeter more resilient in terms of increased pressure, ensuring high accuracy over a wide range, and a high turndown ratio without risk of cavitation. The integrated temperature measurement eliminates the need for an additional sensor, minimising the intrusion points in the pipe. The meter continuously monitors several critical aspects including low supply voltage, incorrect parametrisation, flow range exceedance, or short circuit on any of its outputs. Warning messages according to NAMUR NE107 alert the user via the rotatable full colour display or the communication outputs. Nominal sensor sizes reach from DN6...25/ ¼...1" for flow rates up to 150 l/min as standard, up to 500 l/min on request.

▶▶ 60573 at www.pcne.eu

VERSATILE CHECK VALVES

For media temperatures from -200 to 400 °C



GEMÜ is expanding their product range with the R90 disco check valve and the R91 dual plate check valve. The check valves withstand media temperatures in a range of -200 to 400 °C and are therefore suitable for use in extremely high and extremely low temperatures. Both check valves are designed for use in industrial applications, particularly in chemical engineering, water treatment, mechanical engineering or in energy and environmental technology. They can be used for liquids, gases and vapours. In addition to

the main function of the R90 as a non-return check, the valve can also be used as a gravity circulation check in cooling and heating circuits. For pump systems, it can be used as a short circuit check or to protect containers and piping as a vacuum breaker. Special disc guidance prevents the valve plug from tilting. It is available in the nominal sizes DN 15 to 300 as an intermediate flange solution in accordance with the ANSI, ASME and EN standards. ATEX, FDA or KTW compliant versions are also available. The R91 dual plate check valve comes with two semicircular plates and is distinguished by its low flow resistance. The dual plate check valve can be used as a non-return check in piping systems or also as a short circuit check for pump systems.

▶▶ 59663 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

PRESSURE TRANSMITTER PLATFORM

New modular platform offers high accuracy and stability



With the new MTE EFFICIENCY modular pressure transmitter platform **First Sensor** is offering high measuring accuracy and stability for demanding applications combined with great cost efficiency. The platform comprises the MTE7000,

MTE8000 and MTE9000 transmitter series and offers possibilities for customization together with short lead times. As a trusted partner, First Sensor has been supplying leading companies from the industrial, medical and mobility sectors with high-performance sensor solutions for countless application scenarios for a quarter of a century. With the new platform three new series of pressure transmitters are introduced. The MTE7000 series is based on piezoresistive pressure sensors and is suitable in particular for measuring dry, non-corrosive gases from as little as 10 mbar. MTE8000 series of transmitters is based on piezoresistive ceramic pressure sensor elements and equipped with a stainless steel housing offer high media compatibility for corrosive liquids and gases. MTE9000 series can also boast high media compatibility and is suitable for corrosive liquids and gases. Fully welded stainless steel pressure sensor elements without internal elastomer seals are used in the stainless steel housing. All three series are calibrated, temperature-compensated and offer amplified analog output signals.

▶▶ 60456 at www.pcne.eu

SUCTION LANCE WITH LEVEL MEASUREMENT

Prediction of the range of chemicals avoids downtimes



Chemicals always run out when you least expect it. This is now a thing of the past with the new continuous suction lances from **ProMinent**. Not only does the lance ensure that liquids are reliably withdrawn, it also monitors the current level at

the same time. Connected to diaphragm metering pumps like the GMXa and GXLa, or the peristaltic metering pump DFXa, the level (in containers up to 30 liters) is measured and shown on the pump display; specified in percent or in liters. Due to this, the chemicals can be refilled in time. The full potential can be maximized when the pump and the continuous suction lance are connected to a PLC or even DULCONneX cloud platform. With DULCONneX the consumption is recorded and displayed graphically which enables the user to always have an eye on the containers, and can refill them in time. All conductive liquids with a dielectric constant of over 30 are monitored. These values are recorded by almost all water-based acids or alkalis. The commonly used chemical, sodium hypochlorite, can also be measured without any problems. Based on the measuring distance of 460 mm, the level measurement accuracy is 2.5%. Individually adjustable warning and error levels can be set. It can, for example, be set that a warning is displayed at a level of 20% and an error message at a level of 5%.

▶▶ 60461 at www.pcne.eu

EASY-TO-OPERATE PRESSURE GAUGES

Following the NAMUR roadmap for higher safety levels



Endress+Hauser has launched the new Cerabar and Deltabar pressure gauges. Thanks to their Bluetooth interface, they are easier to operate and more efficient to maintain in safety-critical systems. The high level of safety combined with enhanced productivity follows the smart safety approach to increase

plant availability. Heartbeat Technology allows the devices' functionality to be verified without process interruption. For improved process safety the devices are designed following the Safety by Design guidelines according to IEC 61508. Virtual wizards to guide through the SIL lock and proof test and thus prevent operating errors are included. For speeding up inspection processes a checksum (CRC) to see at a glance if security parameters have been changed. The amount of safety-related equipment has also increased significantly in recent years, for example in the chemical industry, and with it the number of costly proof tests of the safety integrity level (SIL). To meet all these developments handling the new Cerabar and Deltabar pressure measurement line has been simplified. This is reflected in its intuitive operation via the Smart-Blue app, which includes guided operating sequences for commissioning and SIL proof tests. This is made possible by an additional Bluetooth interface, which bridges distances of up to 15 m.

▶▶ 59724 at www.pcne.eu

INTEGRATED SENSOR NETWORK SOLUTION

Bringing data automatically into monitoring dashboards



SignalFire Wireless Telemetry and Machfu announce the integration of SignalFire's wireless sensor network with Machfu's Industrial IoT Gateway. The Machfu IIoT Gateway incorporates edge intelligence, multi-protocol translation capabilities, and multi-dimensional security features, resulting in a versatile and secure sensor-to-cloud solution. Operating the SignalFire Edge Application on Machfu's Edge Gateway,

users can easily and wirelessly bring all sensor measurements from a SignalFire sensor network into their cloud application. With a single click, the IIoT Gateway automatically communicates with the SignalFire Gateway to discover wireless nodes in a network, collect measurements from sensors, and transmit them over cellular, Wifi, or Ethernet connections. Using the Machfu IIoT Gateway, SignalFire customers can bring data from sensors and controllers automatically into their SCADA monitoring software dashboards for anywhere/anytime viewing and analysis, receive alerts about data outages, and remotely diagnose problems in the field. The built-in application uses the MACHREACTOR engine through a simple UI interface to auto-detect nodes in a network, collect and aggregate data from these tags to enable analysis, and enable remote monitoring by SCADA backend systems.

▶▶ 59685 at www.pcne.eu

OPTICAL OFF-GAS MEASUREMENT

Continuous measurement of methane and CO₂



Vaisala introduces a new instrument for off-gas methane and carbon dioxide measurements in the biomethane production process. Robust, reliable, and compact, the CARBOCAP® MGP262 multigas instrument provides continuous measure-

ment data to help optimize and control the biogas upgrading process for greater biomethane yield, process efficiency, and environmental benefits. The novel MGP262 provides a unique and accurate solution. It is the world's first and only in situ instrument that measures off-gases optically with Vaisala's patented technology. The new MGP262 provides high-quality data to determine greenhouse gas composition from the off-gas in the biogas upgrading process. The data can be used to optimize the process more efficiently, resulting in greater profits lower emissions, and less wasted resources. When biogas is upgraded to biomethane, methane is separated from carbon dioxide and other gases that are present in the raw biogas. In the upgrading process, carbon dioxide passes into the off-gas but methane remains in the main gas stream and can be used as a renewable fuel. However, a small amount of methane slips into the off-gas stream. As methane is a harmful greenhouse gas, approximately 20 times worse than carbon dioxide, minimizing this slip needs to be taken seriously.

▶▶ 60140 at www.pcne.eu

ISOLATING SWITCH AMPLIFIER

2 channel switch for NAMUR standard proximity sensors



The intrinsically safe isolating switch amplifier is a new addition to the **JUMO** Safety portfolio that enables reliable, galvanic 3-way isolation as well as safe transfer of switching signals - for both normal and Ex applications. It can be used in an extended ambient temperature range of -40 to +60 °C, has ATEX and IECEx approval, and can also be mounted in Ex zone 2. The connected float switch contact or proximity sensor can be operated up to zone 0. In addition, the JUMO Ex-i isolating switch amplifier has

UL as well as DNV GL approval and meets SIL 2 in safety-related applications. A changeover relay with a phase reversal option per channel is available as a switching output. A line failure detection system identifies line breaks or short circuits which ensures a high degree of process reliability. This makes the JUMO Ex-i isolating switch amplifier a reliable partner for a wide range of applications in mechanical and plant engineering, the chemical industry, the food technology sector, and many other areas. By integrating 2 channels in 1 device, the JUMO Ex-i isolating amplifier requires very little space during installation. Its coded screw terminals and simple configuration with DIP switches help to save time during startup. LEDs indicate the respective status directly on the device.

▶▶ 60170 at www.pcne.eu



iR-SyM[®]

The ultimate solution for Temperature and Gas monitoring

Reliable

Optimized for FLIR, the
best hardware for IR and
VOC monitoring



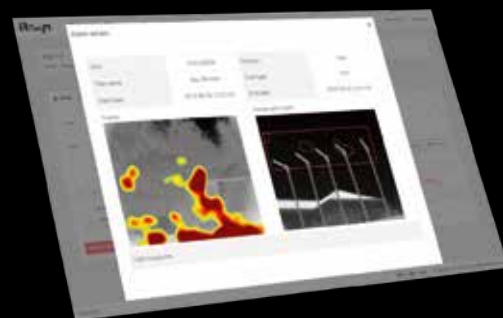
Robust

Optimised to work in
heavy environmental
condition and explosion
proof areas



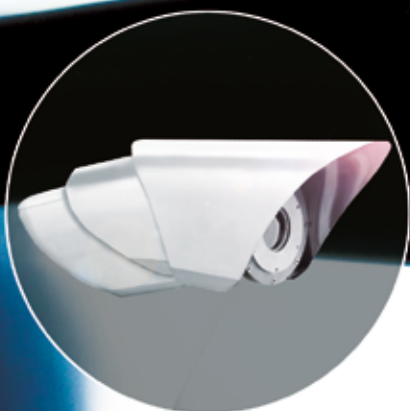
Modular

More IR cameras under
the same system



Best with E100IR-Ex Enclosures

The most advanced Ex-proof cooled enclosures, designed
for FLIR automation A3xx, A4xx, A7xx, FC-R, fixed OGI
and Axx IR cameras



The perfect solution for Oil & Gas,
Chemical and other critical installations.

- Ex II 2G Ex px IIC T6
- Ex II 2D Ex px IIIC T120 °C
- IP66



automation@imcservice.eu

▶ 60132 at www.pcne.eu
www.imcservice.eu

Driven by Customer Needs

30 years of tradition in chemical and pharmaceutical solids handling allow CO.RA. to guarantee its products based on strict norms. Design and development and manufacturing of products are based in Italy and a qualified service team supports customers worldwide, on-site and remotely.

Talking about assistance today more than ever, it has become for CO.RA. the main objective to assist customers.

More and more CO.RA. offers a 360° service guarantee: it is ready to intervene, remotely or on site, with specialist technicians that assist the customer to choose the right solution, with tests in our Technology Center, during installation and start-up through CO.RA. qualified servicemen. Also staff training, performed by CO.RA. servicemen and technical assistance within 48 hours from report of the problem can be offered as part of the portfolio.

If today CO.RA. is a leader in the field of solid handling it is thanks to the multiple customers. Sharing proposals, solutions and technologies with customers to transform proj-

ects into reality: important opportunities for growth.

INTEGRATED SYSTEMS AND TURNKEY PLANTS

Today CO.RA. can boast of a vast experience in the supply of Integrated Systems and Turnkey Plants for pharmaceutical and chemical companies. The staff is able to guarantee all customers 360 ° services, providing established and/or experimental technologies, technical competence, reliability and collaboration: necessary ingredients that go beyond the supply of a simple plant.

Despite the current situation, that is our context, CO.RA., through suitable technological tools, is also present for its customers abroad, through Remote Assistance solutions and remote qualification tests, with SMART solu-

tions within reach of each device.

The attention to detail, which the staff puts in the foreground, has given rise to the creation of a plant which, through 4 coordinated dosing lines, is able to compose a single bulk defining the recipe and monitoring the main operating parameters to be an HMI panel.

The plant was designed, built and qualified in accordance with cGMP (current Good Manufacturing Practice) principles. In particular, the control system was programmed and customized according to the needs of the customer and in consideration of the aspects of data integrity.

The plant consists of 4 stations, each of them complete with STERI LIFT, HR CRUSHER, BAG EMPTYING, DOSING SYSTEM and BIN.

Each station allows the loading and dosing of



Providing support for customers worldwide through suitable technical tools and qualified personnel.



The qualification activities were performed remotely with the help of high-quality equipment and professional and specialized staff.





The MINI DUK is a new lifting device for lifting and handling loads such as drums, pneumatic conveyors, agitators, with a maximum weight of 70 kg.

CO.RA

Technical assistance can be rendered in presence or in SMART mode



an ingredient which, mixed with the others in subsequent processes, will formulate the finished product. The BIN will be automatically moved by the system to receive the quantity of product foreseen in the recipe set by the general control panel. Once the fourth station is reached, the BIN is automatically returned to the starting point, ready to be transported to the next processing step.

The qualification activities were performed remotely with the help of high-quality equipment and professional and specialized staff.

SOME OF THE MAIN ACTIVITIES:

A staff of specialists able to offer complete Services: from choosing the best solution, to installation and after-sales assistance

- Analysis and Verification of User, P&I and

Customer Technical Specifications;

- Meeting and technical inspection to define the project;
- Design and proposal of a Customized Technical Solution;
- Drafting of specifications and documents necessary for the realization of the project;
- Realization of verification and tests at CO.RA. Technology Center with customer products;
- FAT, at CO.RA. or in SMART SERVICE;
- Installation and SAT at the customer site;
- IQ and OQ protocols, use and maintenance manuals complete with certifications;
- TECHNICAL TRAINING for personnel: training in presence or in SMART mode;
- Technical assistance in presence or in SMART mode;

- Scheduled maintenance;
- Spare parts replacement planning;
- Management of complaints and reports of anomalies.

GOOD CONSTRUCTION STANDARDS

All CO.RA. components and systems are completely made of certified stainless steel, designed according to the European referenced standard for lifting loads, according to the lifting regulations and according to the FDA regulations, ideal for use in sterile environments and in compliance with cGMP recommendations. Complete traceability of components thanks to laser engraving directly on the steel

NORMS AND RECORDS AT CUSTOMER DISPOSAL

As per all CO.RA. Products, all components have related certification and documents upon request: Surface roughness certificate, functional specification, operation & maintenance manual, layout, EC certificate of conformity, FAT & SAT records, IQ & OQ records and declaration of suitability for ATEX environments.

►► 60364 at www.pcne.eu

COMPANY PROFILE

CO.RA. was founded in 1989 in Altopascio, a Town near Lucca ITALY, we are born as a supplier of components to connect machine "A" to machine "B" in the pharmaceutical and chemical process and during the 30 years of activity we have specialized our know-how in order to offer our customers complete Service in the solids handling process.

The staff is composed of a team of researchers, production designers, engineers and customer service.

The 30 years of tradition in chemical and pharmaceutical solids handling allow CO.RA. to guarantee its products based on strict norms (FDA, ATEX), design and development are completely made and manufactured in Altopascio. CO.RA. has left a trail of success that customers follow with trust - many of which we have been serving for more than 20 years. Visit www.coraitaly.net to learn more about company, products and services.



FREE DIGITAL SUBSCRIPTION

N° 5 - MAY 2021

www.pcne.eu

Class Zero Air – Achieving Sustainability Goals While Ensuring Regulation Compliant Product Quality

Addressing the demand for industry-standard compressed air in pharmaceutical manufacturing while delivering improvements in energy efficiency, sustainability and margin growth

Traditionally, compressed air has had several shortcomings, impacting drug manufacturing and handling, such as high maintenance cost, high risk of contamination and the presence of moisture. Compressed air quality in a pharmaceutical manufacturing process has a direct relation to the end-product quality. The luxury afforded previously by pharmaceutical companies was that this quality was worth paying the additional price. Nowadays, pharmaceutical companies need to balance the rising costs and energy emissions of the plant while at the same time maintaining product quality and process efficiency. This means that they start to challenge the existing norms and look for innovative solutions to their quality compressed air needs.

In addition, reducing emissions and energy use of operations is also under the increased attention of policymakers. In Europe, energy

efficiency and the broader goal of reduction in carbon emissions add to the pressures of the manufacturing industries. Regardless of the current pandemic and anticipated global slowdown, the European Commission’s flagship initiative (the European Green Deal), remains a key priority, which aims to “transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy”. Successful and economically sustainable businesses know that they need to make the investment decisions now to protect their viability in the medium-term. Responsibility lies with industry to play its part in making the EU carbon neutral by 2050, which includes meeting the interim target of a 55% reduction in CO₂ emissions by 2030.

AIR PURITY

For a pharmaceutical manufacturing plant,

compressed air is one of the utilities of absolute priority. The absence of compressed air will bring a plant to a standstill, much like the lack of power. However, the lack of quality air, which does not meet the global compliance requirements of ISO 8573, 1:2010 and ISO 8573-7, can cause a high risk of contamination and moisture. This could result in drug recalls and export bans, thereby damaging the reputation of the company in question.

Across these processes, plants must maintain zero tolerance for impurities.

Oil free screw compressors are the preferred choice as they compress the air inside an oil free compression chamber, which is well sealed to avoid lubrication oil contaminating the compressed air.

Until a few years ago, companies used oil injected compressors with filtration arriving to ‘Class 1’ oil quality standards, which means the air must have no more than 0.01 mg/m³ of oil residue. To ensure no residual oil, airborne particulates or vapour could enter the system, they used downstream air dryers and double line filters to further purify the air.

Today, quality sensitive industries such as drug manufacturing use oil free air compressors that deliver ISO:8573 (P-2):2007 ‘Class 0’ oil free air to ensure 100% contaminant-free air is produced for various applications in their manufacturing and packaging processes. However, until recently, these compressors were expensive and were used primarily by large companies and those that exported drugs to markets with stringent standards (ex., the US Food and Drug Administration). With the advanced oil free technology in ‘Class 0’ certified compressors, every pharmaceutical manufacturing company is assured of



How the different components in the compressed air system assure Class 0 oil free air



not only oil free air that meets the most stringent standards, but also much higher energy savings and uptime.

NO OIL. WATER.

Compliance and quality norms clearly define the pharma industry thereby pushing compressor manufacturers to evolve and demonstrate their commitment to compressed air purity of the highest standards. Very often the pursuit for purity of compressed air brings pharma manufacturers to extremes. For example, installing multiple filters instead of one, which increases energy use and drives complexity resulting in increased maintenance and costs.

For several years, the pharmaceutical industry has seen water injected oil free compressors as a highly efficient alternative to traditional oil-free, dry screw two-stage compressors. It delivers the same 'Class 0' compressed air in a much simpler, one stage design whereby water is injected into the air-end as opposed to oil thereby cooling it down and sealing the system. Consequently, the compressor and air-end are running at a much lower speed than a dry screw compressor, which translates



in increased reliability, lower parts wear, less maintenance and better energy efficiency. There is just one "but". Most of the water injected oil-free compressors come with additions like sensitive reverse osmosis (RO) purifiers in the water inlet line, special rotor materials and complex bearing systems. These systems have proven to be cost intensive and prone to failure.

OIL FREE AND WATER INJECTED. DISRUPTED

Today, there is an answer to these issues:

- a closed loop water circuit design with less complexity
- no special bearings or exotic materials
- no need for sensitive RO purifying systems

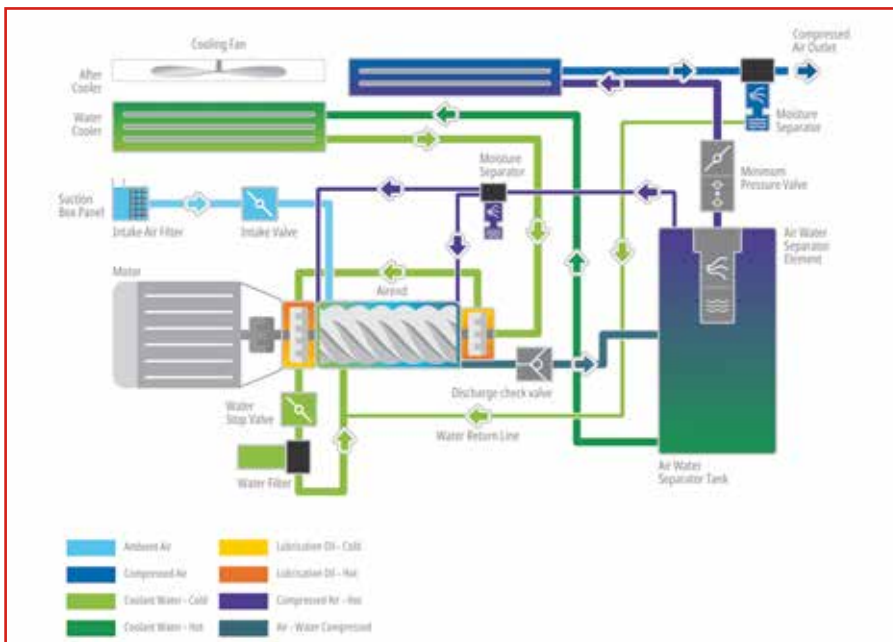
In short, an innovative and much more reliable design. For pharmaceutical manufacturing where failures equal significant losses,

and where reduced power and maintenance costs are critical, the advantages are clear. In this closed-circuit system, the risk of contamination is lowered even further. The water is topping up; rinsing and cleaning the insides of the compressor. Furthermore, the compressor drains the condensate wastewater which doesn't require any additional treatment (as it's of drinking water quality).

Finally, in addition to cleaner water, and the slower running of the compressor, the closed-loop system can rely on standard, more cost-efficient bearings as used in traditional oil lubricated compressors, reducing complexity and costs further.

The total cost of ownership of this water-injected compressor is considerably lower (8% or more) versus traditional two stage oil free screw compressors thanks to the reduced power consumption and the simplicity of the design as well as maintenance ease. Compared with oil injected solutions, these systems are even more interesting since the downstream filtration is less stressed.

Simplicity, efficiency, and having lower maintenance requirements, the advanced design language of these latest closed loop water-injected oil-free compressors can help companies unlock new avenues of quality in their compressed air needs while also improving equipment peak uptime. All this translates into the energy consumption and reliability costs of a single stage oil lubricated compressor, while providing an oil free solution. This in turn protects the pharmaceutical manufacturing processes against more stringent energy efficiency regulations while meeting Class 0 air quality standards - all for a lower total lifecycle cost



Example of a closed loop water circuit design with low complexity

►► 60596 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

N° 5 - MAY 2021

www.pcne.eu

Gentle Packing of Vaccine Dose Syringes

Autumn is the right time for the annual flu vaccination – at least in the northern hemisphere. South of the Equator, populations are vaccinated in the spring. Twice a year, pharmaceutical manufacturers need to produce millions of vaccine doses in a short time to meet demand for the protective drugs. An internationally active supplier relies on Schubert-Pharma to package its syringes containing the vaccine.

The importance of vaccine availability is clearly illustrated by the corona crisis: When there is no vaccination protection against communicable diseases, human lives are put at risk. In the current situation, however, it is not only research that has to achieve the impossible and develop a vaccine within the shortest possible time. The production of millions of vaccine doses is also a challenge – but one that the pharmaceutical industry has had to overcome again and again. Every year, as the flu season approaches, a new vaccine is produced that immunises people against current mutations of the influenza virus. Since the flu season occurs at different times of the year in the northern and southern hemispheres, this production process is required twice a year. Speed is of the essence in production: Due to the lead time required to adapt the

vaccine to new strains of pathogens, there is not much time between the development of the appropriate drug and the emergence of the flu epidemic. To ensure that the flu vaccines can be produced quickly, safely and reliably, a global pharmaceutical group with over 70,000 employees decided to collaborate with Schubert-Pharma in March 2018.

GENTLE HANDLING OF 400 SYRINGES PER MINUTE

One of the most important requirements for the new packaging machine was a gentle packaging process for the fragile glass syringes containing the valuable vaccine doses. The various syringe types consist of 1-millilitre-long syringes with a 16-millimetre cannula and a soft cap, tip cap or hard cap, as well as 1-millilitre

standard syringes with a soft or hard cap. In order to package the drugs securely, the syringes already filled with the vaccine are placed into trays when they are fed. The loading sequence requires every second syringe to be rotated by 180 degrees so that the syringes are always in opposing directions. This saves space and therefore packaging material. Before this can take place, however, they must be pre-grouped from a hanging, loose feeder into a lying position with defined distances between each individual product.

This task was previously performed by pick & place robots at the international pharmaceutical manufacturer's production facility. To keep up with the seasonally very high demand, the pharmaceutical manufacturer wanted to significantly increase output: "The entire process should be able to handle 400 syringes per minute," says Karin Kleinbach, Sales Account Manager at Schubert-Pharma, describing the requirements. The other components of the packaging line have been meeting this requirement for some time now – including several machines from Schubert-Pharma, part of Schubert Packaging Systems, a subsidiary of Gerhard Schubert GmbH. "Since we already operate several Schubert packaging machines, we know and value the company as a reliable partner," says the pharmaceutical manufacturer's responsible project manager, who also praises the excellent collaboration they experienced during the design of the feeding line.

STAR WHEELS REPLACE PICK & PLACE ROBOTS

The new robot-supported infeed system from Schubert-Pharma now ensures a gentle packag-



Two interlocking star wheels ensure the exact feeding of the syringes.





The products are placed into the transfer chain flights at defined intervals by means of the star wheels.



One robot places 20 syringes at a time onto the grouping table.

ing process for the vaccine doses at the large pharmaceutical company while still maintaining high output. In order to bring the syringes coming from the upstream assembly and labelling line into a lying position with defined distances for packaging, they are separated by two star wheels, which convey the products horizontally into a transfer chain. The first, horizontally positioned star wheel takes the accumulated glass syringes from the feeder. It then transfers the products at defined intervals to the second, inclined star wheel, which transports them further. This way, the syringes are transferred directly and without

time-consuming intermediate steps to the designated transfer chain flights. A robot always takes 20 syringes from the chain and places them onto a grouping table with four rotating cassettes. Five syringes are grouped together, then the cassettes are turned through 90 degrees so that they can be placed into the trays provided by a second robot. In the next step, five syringes are again placed on the grouping table; this time the cassettes are turned in the opposite direction. This enables the second robot to place the syringes into the tray 180 degrees opposed to the position of the previously placed syringes, without having

to perform a time-delayed rotary motion itself.

OPTICAL CONTROL ENSURES QUALITY

A group of four trays each with a total of 40 correctly aligned syringes is then fed by a conveyor belt to a Schubert camera system, which finally checks the correct length, filling and alignment of the syringes, and also ensures that the plunger rod, label and protective cap are present. Trays with faulty syringes are automatically sorted out. Only intact syringes in correctly filled trays are then packed by a cartoner. The empty trays, coming from the cartoner, are transported back to the filling station via another conveyor belt.

In addition to the high processing speed, the pharmaceutical manufacturer was especially interested in gentle product handling and the prevention of glass breakage – after all, the increased output could simply not result in a higher reject rate. “Feeding with star wheels is ideal to meet this requirement, as it is very gentle on the product and precisely matched to the high demands of pharmaceutical production,” explains Karin Kleinbach. The star wheels also ensure flexibility: As exchangeable format parts, they can be adapted to any syringe format. This allows the pharmaceutical company to react flexibly to future market requirements – ideally preparing it for the next wave of flu.

IN THE SERVICE OF HEALTH

For more than a hundred years, this internationally active manufacturer has been producing pharmaceuticals. Today, the main business of the group, with its more than 70,000 employees, includes research, development and production of pharmaceuticals in the fields of human and veterinary medicine, as well as laboratory diagnostics and clinical nutrition. With the influenza vaccine, the pharmaceutical company offers a flu vaccine that can also be used in children from the age of three upwards.

►► 60597 at www.pcne.eu



Intelligent Size Changeover for Pharma 4.0

“Size changeover” is not necessarily a term that immediately makes people stop and pay attention in the pharmaceutical industry. However, considering the challenges in pharmaceutical manufacturing, which are characterized by cost and competitive pressure as well as strict regulations, intelligent size changeover means competitive advantages in terms of efficiency, product quality and process reliability.

In the pharmaceutical industry, the concept of centerlining is relevant, which means that the optimum machine settings must always be selected in order to prevent unnecessary deviations in the process and thus a reduction in product quality. The aim is to network manufacturing, technology, maintenance and electronic data acquisition in the best possible way in order to make optimum use of plant efficiency. In addition, the growing variety of products and ever smaller batch sizes in pharmaceutical manufacturing demand a high degree of flexibility from the systems. This is where size changeover comes into play, which can be a decisive factor when it

comes to system availability. With optimized size changeover, reconfiguration times for product changes can be significantly reduced and process reliability increased. SIKO GmbH, manufacturer of sensors and positioning systems, has introduced various options for size changeover, from purely mechanical position indicators to fully automated positioning drives.

BENEFITS OF OPTIMIZED SIZE CHANGEOVER

In pharmaceutical manufacturing, size changeover takes place everywhere, especially in packaging processes, labeling and product inspections. Whenever the dimen-

sions on the machine have to be changed for a new product, this involves size changeovers – whether manually via a crank or automatically via an actuator.

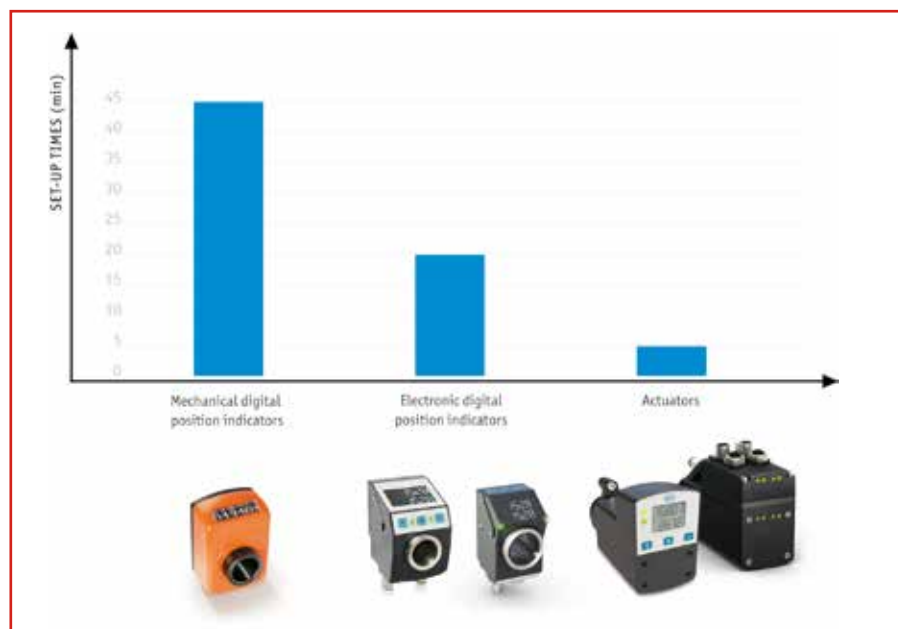
Always exercise caution when changing the machine settings, as errors can creep in and have a negative effect on the product result. Monitored or even automated size changeover minimizes the risk of incorrect settings and can make processes more flexible. The advantages of optimized size changeover are as follows:

- high repeatability, meaning that drugs are always manufactured using the same form and quality
- faster reconfiguration times and thus an increase in process speed
- an increase in efficiency and a reduction in costs
- an increase in process reliability, which is a decisive criterion in pharmaceutical manufacturing

A distinction is made between manual, monitored and automated size changeovers. Which type of format change is most suitable depends on the requirements: the more sizes need to be changed over and the more demanding manufacturing is from a quality perspective – which is usually the case in the pharmaceutical sector – the more sensible it is to use monitored or automated positioning systems.

MANUAL SIZE CHANGEOVER

For manual size changeover, both mechanical and electronic position indicators are used, which indicate the actual value of the current



Comparison of optimization potential through intelligent positioning solutions





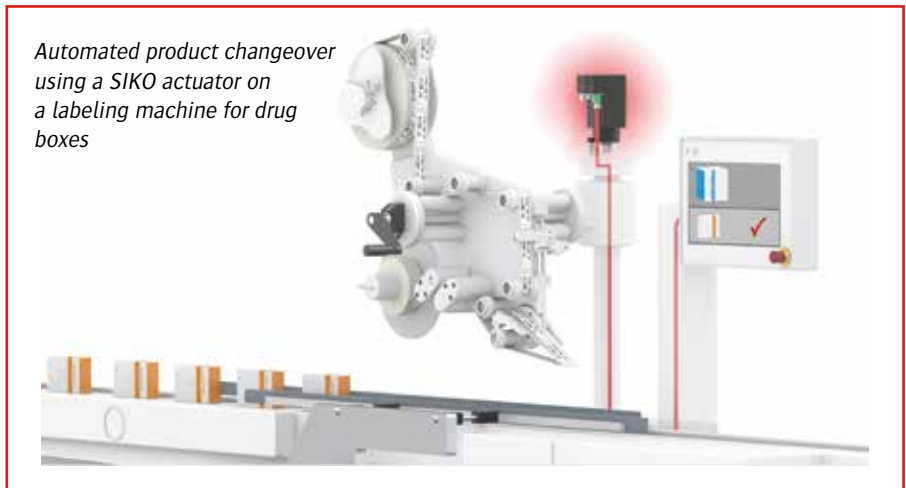
Size changeover using SIKO position indicators on a Track & Trace system in pharmaceutical manufacturing

position. They are suitable for basic machines with rather infrequent adjustments. The common mechanical-digital SIKO position indicators are very precise, easy to read and are configured specifically for each application. Electronic position indicators have an advantage over mechanical ones in that they are freely programmable and can therefore be used with greater flexibility. Parameters such as spindle pitch, decimal places, direction of rotation, mounting position or use in angle mode can be conveniently configured. Practical: Mechanical and electronic variants are compatible for installation, so that reconfiguration or expansion is not problematic.

MONITORED SIZE CHANGEOVER

Monitored size changeover is made possible by bus-compatible electronic position indicators with setpoint value specifications, which are integrated into the machine control system. Actual and target values are exchanged and compared between the individual position indicators and the higher-level control unit with the aid of a formula management system in which all product variants are stored with their setpoint values as formulas. This enables increased process reliability, as the system is only restarted when all setpoint and actual values on the indicators match. Rejects or damage to system parts are thus avoided. The changeover of the axes is still carried out manually with this variant, whereas the monitoring of the correct settings is carried out electronically. The special feature of the electronic position indicators are the LED lights which clearly display the position status to the operator:

Automated product changeover using a SIKO actuator on a labeling machine for drug boxes



Green lights for "position correct", red lights signal "position not correct". In addition, the display includes an integrated arrow direction indicator, which indicates in which direction the changeover has to be made.

APPLICATIONS FOR MONITORED SIZE CHANGEOVER

Monitored size changeover can be helpful in pharmaceutical manufacturing, for example, in the case of systems for cartoning machines requiring frequent adjustment or in the case of product labeling. A relatively new development is "Track & Trace" systems, which requires prescription drugs to be provided with a clear, traceable label. This involves a wide variety of processes such as printing, reading, labeling and weighing, and thus numerous adjustments. The process reliability of these systems is significantly increased with monitored size changeover.

AUTOMATIC SIZE CHANGEOVER

If axes are changed over without any manual intervention, this is referred to as automatic size changeover via compact positioning drives. The actuator, which is networked with the machine control system, moves directly to the required position. With automation, a further significant reduction in reconfiguration times is achieved. In addition, automation is worthwhile if system parts that are difficult to access have to be adjusted frequently. An actuator is characterized by its highly integrated design, which combines all components in one device: the brushless DC motor (which is wear-free), a low-backlash and powerful gearbox as well as position encoder and power and control electronics. The integration of the actuator into the machine controls as well as the communication with the controls is easily achievable, not least thanks to a large number of common standard interfaces.

These include Siemens-compliant Profibus or Profinet interfaces, cost-effective serial interfaces such as RS485 and CAN, IO-Link and modern Industrial Ethernet interfaces.

Depending on the requirements of the application, different power classes of actuators are required: from small actuators with low power requirements for fine adjustment in a folding box magazine to feeding systems for large cardboard boxes where entire machine aggregates have to be moved with actuators with relatively high torques.

With this variant of size changeover, too, the controls only initiate a system restart when the process data exchange between the drive and the control has resulted in a match between the actual and setpoint values.

To continue reading please visit:
<http://www.pcne.eu/bingo/60600>

►► 60600 at www.pcne.eu



How Pharma 4.0 Will Benefit from Open Industrial Ethernet

Confirming the safety, efficacy and quality of medications is paramount in the pharmaceutical sector, which requires robust data governance strategies. In the world of Pharma 4.0, these need to accommodate an ever-increasing volume of data. Technologies that incorporate gigabit Ethernet and Time-Sensitive Networking (TSN) are exactly what is needed.

Author: John Browett, General Manager at CLPA Europe

By creating smart and responsive facilities, pharmaceutical manufacturers can optimise yield of regulatory compliant, high-quality medications. The latest advances in sensor technology can offer ever greater process transparency on the factory floor via the data produced. This can provide clear benefits that increase process and quality control/assurance as well as regulatory compliance.

While generating data is the first step in creating greater process transparency, it is crucial to gather these pieces of information in order to analyse them and turn them into process knowledge. This, in turn, can offer actionable insight to improve production processes as well as provide the foundation of quality audits and reports.

LOOK AT THE BANDWIDTH

To unlock these opportunities a network technology that can handle the constantly growing flow of data from sensors and analytical equipment needs to be implemented. In practice, this means offering sufficient bandwidth to transfer as many data packets as possible within a given timeframe without any packet loss or network congestion.

Although many existing Ethernet systems offer a maximum bandwidth of 100 Mbit/s, pharmaceutical manufacturers that aim to build truly smart, connected factories should leverage more advanced solutions. The highest bandwidth currently available for industrial Ethernet networks is in the gigabit range. By adopting a technology with this capacity,



Pharmaceutical manufacturers wanting to benefit from smart, connected plants and enterprises can implement them today

companies can futureproof their industrial communications and lay the foundations for next-level data traffic.

DETERMINISM AND CONVERGENCE

In addition to offering sufficient bandwidth, the ideal network should also be able to provide a deterministic method of data transmission, to assure predictable information flows. The latest Ethernet technology, Time-Sensitive Networking (TSN), brings this capability to the table, thanks to its defining IEEE 802.1

standards that assure tight synchronisation across the network along with providing methods to ensure predictable transmission of all data types. As a result, time-critical data from drives and controllers on the factory floor, e.g. from tableting lines, can be transmitted on the same network used for other Ethernet devices with less time critical requirements, such as vision systems or bar code readers.

The end result is converged networks, where it is possible to merge operational technology



(OT) and information technology (IT) systems for truly responsive, smart data-driven manufacturing. More precisely, TSN's determinism ensures the predictable delivery of all process data flows that OT requires while offering a framework to support IT functions for higher-level enterprise systems. As a result, companies can benefit from real-time decision-making opportunities, accurate operational control as well as unmatched databases for quality compliance reporting. Furthermore, convergence can reduce the number of industrial networks required while supporting the creation of simpler architectures, as different types of traffic can be transferred on the same system.

THE RIGHT SOLUTION IS RIGHT HERE

Pharmaceutical manufacturers wanting to benefit from smart, connected plants and

ABOUT THE CC-LINK PARTNER ASSOCIATION (CLPA)

The CLPA is an international organisation founded in 2000, now celebrating its 20th Anniversary. Over the last 20 years, the CLPA has been dedicated to the technical development and promotion of the CC-Link family of open automation networks. The CLPA's key technology is CC-Link IE TSN, the world's first open industrial Ethernet to combine gigabit bandwidth with Time Sensitive Networking (TSN), making it the leading solution for Industry 4.0 applications. Currently the CLPA has almost 3,800 member companies worldwide, and more than 2,000 compatible products available from over 340 manufacturers. Around 30 million devices using CLPA technology are in use worldwide.

enterprises can implement them today. CC-Link IE TSN, the first open Gigabit Ethernet with TSN capabilities satisfies both the need for high bandwidth and convergence. By implementing CC-Link IE TSN, pharmaceutical producers can achieve a number of key business benefits. In particular, simpler

network architectures and machine designs, greater process transparency and better management, as well as optimised productivity and better integration of OT and IT systems.

►► 60602 at www.pcne.eu

ENERGY-SAVING SCROLL VACUUM PUMP

Oil-free pump for food & pharmaceutical applications



With the new oil-free DSS scroll vacuum pump, **Atlas Copco** is expanding its range of dry industrial pumps. The robust, low-wear pump is particularly suitable for vacuum generation in the rough vacuum range. A key feature of the innovation is its simple and effective operating principle for gas handling. Inside the pump there are two intermeshing, spiral-shaped screws made of aluminium. One spiral screw is fixed, while the second one rotates to compress the gas inclusions. The ergonomic vacuum pump is also characterized by low energy consumption, lower life cycle costs and user-friendly operation. Due to the dry running of the pump, no oil changes are necessary; there is also no need to replace the exhaust filters. The reduced service and maintenance costs can also be attributed to the fact that the removable front cover simplifies access to the pump interior of the DSS scroll vacuum pump. Equipped with these properties and high-quality materials, the new development is particularly suitable for applications in the pharmaceutical industry as well as in food packaging and processing. In these and other industries, the pump will provide a stable vacuum at an atmospheric pressure of up to 1 mbar and maximum productivity at low to medium flow rates.

ing principle for gas handling. Inside the pump there are two intermeshing, spiral-shaped screws made of aluminium. One spiral screw is fixed, while the second one rotates to compress the gas inclusions. The ergonomic vacuum pump is also characterized by low energy consumption, lower life cycle costs and user-friendly operation. Due to the dry running of the pump, no oil changes are necessary; there is also no need to replace the exhaust filters. The reduced service and maintenance costs can also be attributed to the fact that the removable front cover simplifies access to the pump interior of the DSS scroll vacuum pump. Equipped with these properties and high-quality materials, the new development is particularly suitable for applications in the pharmaceutical industry as well as in food packaging and processing. In these and other industries, the pump will provide a stable vacuum at an atmospheric pressure of up to 1 mbar and maximum productivity at low to medium flow rates.

►► 59738 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

ATEX-APPROVED SAW FLOWMETER

Hygienic measurement without media contacting sensor



Bürkert offers its FLOWave flowmeter Type 8098 as an ATEX-certified version up to Ex zone 2 for production processes in potentially explosive atmospheres. It can be used now in Ex zones with flammable solvents such as alcohols, e.g. for the production of pharmaceutical products, spirits, semiconductors and paints.

The compact and lightweight device measures the volume flow independent of the medium's conductivity and is, therefore, also suitable for measuring ultrapure water and alcohols. It can thus be used, e.g., for the production of pharmaceutical products, spirits, paints and varnishes. The flow sensor also measures the temperature and the density factor and can quickly and reliably detect any media change, e.g. during rinsing processes. It supports Bürkert's EDIP (Efficient Device Integration Platform) for easy digital integration into the system control. The flowmeter operates according to the SAW method (Surface Acoustic Waves). When using this measuring principle with acoustic surface waves, there are no dead legs or sensor elements in the measuring tube. The CIP/SIP-capable flowmeters can thus be cleaned just as easily as normal pipelines, which reduces operating costs. All media contacting parts are made of stainless steel. The sensors thus meet the highest hygiene standards and facilitate the validation processes.

►► 60544 at www.pcne.eu

More Solutions, Less Pollution – How gas analyzers are helping reduce industrial emissions

While the wheels of industry need to keep turning to produce the everyday items that we take for granted, there is a growing realization that this cannot be done at the continuing expense of the environment.

With signatories representing almost 200 countries worldwide, the Paris Agreement emphasizes the need for countries to significantly reduce their industrial emissions to air to help limit global temperature increases to 1.5°C. Many industrialized nations have already made significant progress in tackling their emissions, while developing nations are also increasingly demonstrating their ability to achieve growth while minimizing their environmental impact. Several countries are demanding that polluting facilities and plants install Continuous Emission Monitoring Systems (CEMS) to meet strict new levels or monitor previously unaddressed pollutants. Introduced in 2018, the EU's Medium Combustion Plant Directive (MCPD) fills the gap between large combustion plants and smaller appliances like boilers. Aimed at controlling emissions of sulphur dioxide (SO₂), nitrogen oxides (NO_x) and dust, it covers around 143,000 plants with a rated thermal input equal to or exceeding 1 Megawatt thermal (MWth) and less than 50 MWth. Another example is India, where companies across polluting industries from metal processing through to oil and pesticides, must now use CEMS to monitor a range of emissions including particulates, ammonia, sulfur dioxide, oxides of nitrogen, chlorine, hydrogen chloride and carbon monoxide.

A CHOICE OF TECHNIQUES

When it comes to measuring stack emissions, operators have a choice of techniques, specifically extractive, in-situ and cross-duct, the respective merits of which are outlined below.

EXTRACTIVE TECHNIQUES

Extractive techniques are commonly used for

gases. Extractive techniques consist of two main methods. Heated extraction involves extracting the sample gas from the stack using a sample probe, heated line, gas conditioning equipment and a heated sample pump. Before analysis, condensate is usually removed from the sample and the temperature is reduced to protect the analyzers, commonly referred to as "cold/dry" measurement. The alternative is to keep the gas hot all the way through the system, known as "hot/wet". The sample must arrive at the analyzer inlet in a representative state that reflects conditions in the stack. The design of the sampling system must also protect against any sample loss or degradation. Several single component and multi-gas analyzers can be used with this method.

IN-SITU MEASUREMENT

In-situ "probe" analyzers are directly connected to the probe installed at the measurement point. Most in-situ systems use infrared measurement techniques. While in-situ analyzers have the attraction of being installed directly on the stack with no sample handling, around 80-90 percent of plants worldwide have a strong preference for extractive methods, which tend to offer a lower cost of ownership. In comparison to in-situ measurement, extracting a sample means only the probe is in contact with the gas and not any delicate optical components. After conditioning, a clean and dry sample is presented to the analyzer. The system can then be installed in an air-conditioned cabinet or shelter, protecting against potentially harsh ambient conditions. Where in-situ devices are usually limited to one or two components, multiple components can be measured simultaneously using a sequence of sensors in an extrac-



Looking inside an ABB ACF5000 Analyzer

tive system, requiring less holes in the stack. As the analyzer system is installed usually at ground level in a clean and accessible environment, maintenance is much more convenient, with components easy to work on and remove, and test gas cylinders are available nearby to easily calibrate the devices. Another popular technique is cross-duct analyzers, which project IR or UV (ultraviolet) energy across the stack and detect the change in energy state of the gas molecules as they absorb this energy at characteristic wavelengths. Most cross-duct systems measure one to two gases over a range of wavelengths. As they don't come into contact with the target gases, they also need far less maintenance and operator involvement. One drawback is that cross-duct systems can be more complicated to calibrate, although this can be overcome using an automatic calibra-





tion system that can demonstrate accurate and reliable calibration checking.

MAKING OPERATION EASIER

In the past, many operators have preferred to use single gas analyzers, believing them to be less complex and less prone to failure than systems that measure multiple gases. With the increased requirement for plants to monitor an expanded range of gas emissions, many users are using FTIR spectroscopy, which can measure multiple gases without needing frequent calibration. One example of where legislation is driving a requirement to measure multiple gases is China's 'Blue Sky' legislation, which demands the measurement of a variety of parameters, including particulate matter, carbon monoxide, chlorine, oxides of nitrogen, sulfur dioxide, hydrogen chloride, and ammonia. Most of these can be monitored using modern FTIR gas analyzers and suitable data processing software. Systems that can measure multiple components can offer greatly reduced cost of ownership, with fewer detection elements and less equipment to maintain and calibrate. Calibration is a significant cost for CEMS operators, accounting for some 24 percent of operating expenses. It is needed for all types of gas

analyzers, but the frequency of calibration can be much higher in some types than for others, with the US EPA, for example, requiring daily calibration. The effort and costs involved can also vary widely depending on the approach. One solution is to use internal gas filled cells. Proven to cut calibration costs by up to 95 percent, these cells are filled with a test gas of known concentration and are sealed to prevent them leaking, allowing them to offer a stable sample against which to test instrumentation performance. They are also accepted as a viable alternative to flowing test gas, meeting the requirements of both EN 14181 and US EPA 40 CFR part 60 regulations. An alternative is to use internal validation cells, which use films or cells for all FTIR components. Particularly suited to FTIR based CEMS, these cells conduct automated drift checks by rotating into the optical path to check precision and drift of all FTIR components. Digital solutions are also making their way into CEMS applications. The ABB Ability™ range of digital solutions, for example, enable operators to ensure regulatory compliance, reduce complexity and get the most from their CAPEX investments. These innovations include remote assistance. Allowing rapid problem solving, this solution cuts costs and downtime

and reduces the training needs of staff. Remote Insights is a solution that makes maintenance safer and more effective, while features such as dynamic QR Codes allow the user to share diagnostic information to enable remote trouble shooting. Another development is remote condition monitoring using real time data. ABB's condition monitoring system, for example, enables emissions equipment condition data to be relayed to its service experts for analysis. By allowing potential issues to be identified in advance, the risk of unplanned outages and downtime is reduced, providing system uptimes of 98 percent and enabling users to ensure continued compliance with availability requirements through optimum performance.

CHANGE IS IN THE AIR

As the impact of climate change becomes increasingly apparent, there is a growing awareness of the need for more stringent gas emissions monitoring. With new technologies that are more capable and accurate than ever and the support of vendors offering digital services to keep CEMS operational, keeping your emissions within limits has never been easier.

▶▶ 60598 at www.pcne.eu

WIRELESS CONDITION MONITORING SYSTEM

For rotating equipment in hygienic environments



With Industry 4.0 making it easier to drive operational efficiencies with wireless cellular connectivity, **Alfa Laval** is introducing the Alfa Laval CM, a condition monitoring system for rotating equipment, to its portfolio of sensing and control products. The new CM is another step forward in a digital transformation journey that Alfa Laval is pioneering with customers to harness the power of digital

data for the hygienic processing industries. The Alfa Laval CM monitors the operating condition of rotating equipment, such as pumps, mixers and agitators, used in hygienic process environments. Compact, easy to use and easy to install, it tracks equipment vibration, temperature and total run-time - three of the most widely used parameters for detecting and diagnosing equipment faults. This enables manufacturers to protect critical assets, ensure process uptime, improve worker safety, reduce maintenance costs and gain competitive advantage. Maintenance staff can check equipment vibration and temperature - either by visible notification on an LED indicator on the monitor or through an intuitive mobile app on a connected iOS or Android device within a 20-metre range during a periodic walk-around.

▶▶ 59892 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

SMALL ELECTRIC SUBSEA VALVE ACTUATOR

Replacement for hydraulic cylinders and pipes



Bosch Rexroth presents at Hannover Fair digital edition the new SVA R2 Subsea Valve Actuator is the world's first electric actuator that can replace conventional hydraulic cylinders

with field-proven safety technology and without taking up additional space. The integrated electric controller offers precise motion control. Thanks to condition monitoring and a safety spring, the SVA R2 satisfies Safety Integrity Level (SIL) 3 in accordance with IEC 61508 and IEC 61511. The use of internationally standardized interfaces throughout means even more standardization in the subsea process industry. The actuator minimizes energy consumption and is geared toward delicate ecosystems. At the same time, the installation and operating costs are reduced. The functions, operating life and safety of the actuator have already been successfully tested in accordance with international standards. When the SVA R2 is used in subsea factories at a depth of up to 4,000 meters, hydraulic pipes or power units are no longer required. The electric supply pipes which are already installed for sensors are adequate to ensure the reliable operation of the actuators. The actuator is designed for high volume production. The electronics for the motion control system are from the automotive division and offer proven robustness and reliability. The SVA R2 is designed to operate for 25 years.

▶▶ 60611 at www.pcne.eu

Enterprise Mobility Concepts – Process Optimisation in Industry 4.0

The modern employee increasingly works in an agile environment. This also includes the workplace. Here, access to all relevant information and data is necessary when working from home, in the office, in the factory or on the factory premises.

In order to fulfil this task and support customers as innovation drivers, providers of mobile devices for industrial use such as the Pepperl+Fuchs brand ECOM Instruments are focusing on further developing their own portfolio. Employees are supported and protected by the solution, while companies save time and resources when setting up a mobile worker concept thanks to a customised single-source approach.

SECURE DATA EXCHANGE ACROSS ALL BORDERS

Based on different industry sectors and international locations, each infrastructure differs in terms of processes and requirements. Nevertheless, the requirements for mobile work-

ing solutions can basically be divided into three areas: Interoperability, compatibility and security. Products by ECOM pay close attention to these requirements and thus offer companies and their employees' significant advantages in their daily work – especially in the areas of lone worker protection, maintenance, push-to-talk, resource management, operations and asset management and augmented reality.

For example, fast data transfer and communication between employees with different expertise enables closer cooperation, which results in better maintenance of the plant, among other things. This not only reduces staffs workload, but also cuts costs thanks to

lower material and personnel costs. Implicit online and on-the-fly documentation also makes compliance much easier.

ACCESSORIES FOR HANDS-FREE OPERATIONS AT WORK

Apart from this, appropriate accessories ensure hands-free operations for workers on site. Thanks to suitable carrying devices, headsets and cameras, they can be guided by experts in real time, even in complicated applications, without being restricted in their work. A comprehensive range of peripheral equipment, which is not only perfectly tailored to the brand's mobile devices, but also to the needs of workers in industrial and/or hazardous environments, should therefore be part of the basic equipment of the mobile worker. This allows work processes to be carried out without errors and faults to be quickly rectified by the employees on site.

MOBILE DEVICES ARE PERFECT COMPANIONS IN EVERYDAY INDUSTRIAL LIFE

To ensure flawless support with digital drawings, descriptions of maintenance steps or experts from a distance, a multifunctional terminal is needed. This must display complex applications without any problems even in strong sunlight. ECOM therefore offers tablets such as the new Tab-Ex® Pro with a 10-inch screen in addition to its smartphone series. The Tab-Ex® Pro combines industrial use in the field with that in the office thanks to an integrated desktop mode that makes the tablet usable as a desktop alternative in no time.



The Tab-Ex® Pro combines industrial use in the field with that in the office thanks to an integrated desktop mode and up to 15 hours runtime





Pogo-pin charging as well as a powerful and replaceable battery with a capacity of 7,400 mAh for a runtime of up to 15 hours additionally ensure flawless operation and long use of the Tab-Ex® Pro in the field. The high-resolution screen also guarantees a flawless image when assisted by remote maintenance or video tutorials. Samsung KNOX and Android 9 (Android 11 is planned) guarantee high data and device security. The Tab-Ex® Pro is available with ATEX/IECEx approval for Zone 2/22 and NEC/CEC approval for Div 2. This makes it the world's only 10-inch Android tablet for hazardous areas and optimally complements the already existing product portfolio of mobile devices by ECOM.



FROM HARDWARE PROVIDER TO DIGITISER

Companies should make sure that all products can be combined individually and according to the requirements of the respective company. There are different solutions for digital products, from simple stand-alone protection applications to all-encompassing and evaluating enterprise solutions. Interfaces and a cloud concept allow a combination with different end devices and other software solutions. For this reason, it is important for companies to identify their specific requirements and choose the appropriate software.

Taking care of all areas of requirements for mobile working solutions: Interoperability, compatibility and security

Digital solutions offer new ways for mobile workers in the oil and gas, chemical, petrochemical, pharmaceutical, energy, environmental and mining industries. Innovations and holistic solutions in mobile computing and communications technologies help companies increase productivity, improve the quality of their data, and accelerate and optimise decision-making. With mobile devices, complex systems can be realised that facili-

tate the daily work of mobile workers.

MORE THAN JUST COMMUNICATION TOOLS

Guidance from experts at other locations and digital workflows support technicians in performing complex tasks directly in the plant. The integration of mobile devices and tools helps to get one step closer to a digital production, maintenance and repair. ECOM therefore adapts its entire product portfolio perfectly to the needs of the modern mobile worker. Solutions support the technician sensibly in his daily work and at the same time meet the conditions of a harsh industrial environment and hazardous areas. The devices are also usable worldwide. In addition to general availability, this also requires compliance with various requirements and the ability to be used in diverse infrastructures and networks. The safety of the workers always comes first, so compliance with the highest safety standards and the prerequisites for setting up a solution for emergency alerting in the event of an emergency are given for all devices from ECOM. Mobile devices are more than just communication tools. As part of an overall digital solution, they support mobile technicians in retrieving live data, recording and evaluating data and reacting quickly to any eventuality on their own while also keeping them and your data safe.



Support your mobile technicians with all asset information they need

➤ 60599 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

N° 5 - MAY 2021

www.pcne.eu

(Co-)operating Efficiently and Safely from a Distance

Restrictions relating to the pandemic are currently affecting all economic sectors and no one knows how long this will last. But one thing is certain: production processes must continue or restart and interrupted new projects must be resumed as soon as possible.

Plants have to be regularly maintained, commissioned, optimized or quickly converted to the production of alternative products, even though technicians cannot be personally on site. In addition, employees should undergo in-depth training in order to be able to carry out and maintain processes and workflows safely. For example, current travel and contact restrictions require efficient and secure solutions for engineering, commissioning, operations, service and maintenance from a distance. In short: individually adapted "home office" solutions for everyday industrial production tasks.

SECURE REMOTE ACCESS FOR SERVICE PERSONNEL AND COMMISSIONING

The 'new normal' affects both service personnel and programmers. Travel restrictions

continue to have a negative impact on the commissioning of new plants as well as the maintenance and adaptation of existing ones. One solution for these restrictions is offered, for example, by the Siemens management platform Sinema Remote Connect in combination with Scalance industrial routers. This allows simple, secured remote access to machines and plants which can be set up and managed from almost anywhere in the world.

VIRTUAL COOPERATION ON A SECURE PLATFORM

The common Remote Service platform (cRSP) from Siemens even goes a step further. Via this platform, remote access can be set up to satisfy even the most complex requirements. This means that even challenging engineer-

ing, commissioning, and maintenance tasks can be carried out conveniently on automation systems from a distance. For example, Sipix SD (Siemens Process Industry Expert Service Devices) for remote-assisted collaboration can be used to instruct and guide on-site service technicians via video.

VIRTUAL COOPERATION VIA THE WEB – EVEN FOR CONTROL TECHNOLOGY

For years, Siemens has been pursuing a secure web-based approach to the central remote control and monitoring of globally distributed plants with the established Simatic PCS 7 process control system, which provides secured access to local HMI functions as well as to current production data. This approach is also perfectly suited for remotely managing and optimizing unmanned plants. Global cooperation between various project teams working on the same engineering project via web is an integral part of the architecture of the fully web-based Simatic PCS neo process control system. The system provides for the necessary transparency and consistency of engineering data, thus automatically avoiding conflicts. Both plant operators and maintenance teams have device-independent access to the complete plant information all over the world. Installed on a tablet or laptop, they can bring their control system along with them to the plant.

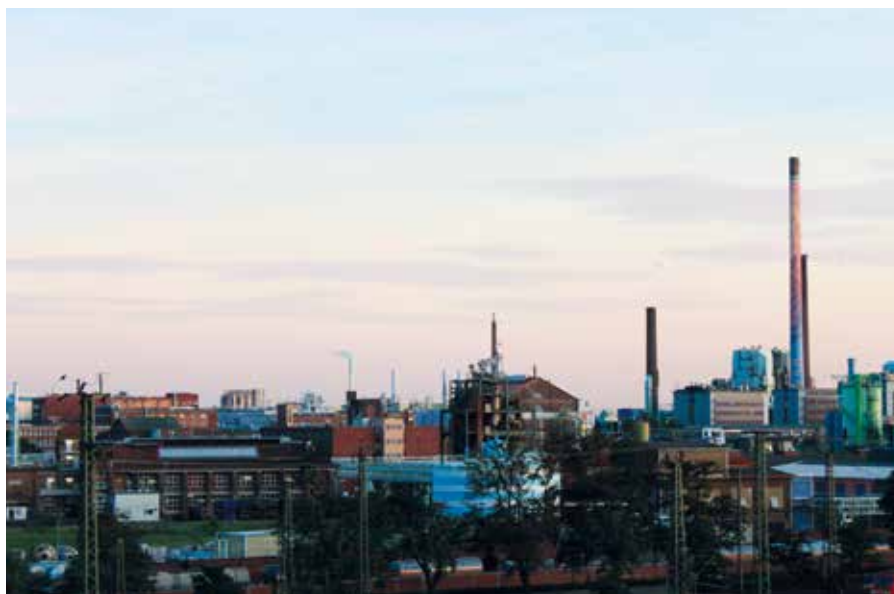
VIRTUAL COMMISSIONING AND OPERATOR TRAINING FROM THE HOME OFFICE

The simulation and virtual commissioning of automation systems are also playing an increasingly important role. For this purpose, the company offers scalable solutions that can





avoid impending project delays due to contact restrictions. Based on the digital twin of a real automation system, the Simit simulation platform allows the simulation, testing, and optimization of a plant's behavior on a PC and even the virtual commissioning of more complex software. Projects can thus mature in the home office, minimizing delays and the number of contacts during real-life commissioning. The digital twin can also be used for location-independent, low-contact training outside the plants. Comos, the software solution for holistic plant project management, also plays a major role: Comos Walkinside enables the 3D Virtual Reality visualization of plants still under construction. It is simply perfect for providing the future maintenance and operations teams with realistic training on the virtual model – much like a computer game. With these digital remote applications, Sie-



mens supports manufacturers and operators in a variety of ways to maintain the availability and productivity of their machines and plants at the highest level. This aspect will

also be of prime importance for industrial production under 'new normal' conditions.

►► 59819 at www.pcne.eu

NON-SEAL PUMPS WITH E-MONITOR

Advanced system for bearing condition monitoring



Tried and tested **NIKKISO** (a brand of the German Lewa GmbH) centrifugal canned motor pumps are mainly used for transfer and circulation tasks involving highly flammable, explosive or toxic fluids in the chemical and petrochemical industry. To further improve their operational safety and reliability while carrying out these demand-

ing tasks, all Non-Seal models are equipped with an E-monitor that indicates the wear condition of the slide bearings during pump operation, thus enabling predictive maintenance. The control unit is the most advanced monitoring system of its kind for pumps in high pressure and high temperature service. Since the centrifugal canned motor pumps' rotor may move out of its original, operationally safe position due to bearing wear, sensors have been integrated into the stator to monitor the assembly's actual radial and axial positions in real time. As soon as the rotor is no longer correctly aligned, the sensors detect the deviations and indicate the condition of the bearing via a display with a traffic light system. A green LED indicates to the personnel that the pump is in good condition, while a yellow light signals that the pump should be continuously observed. If the LED lights up red, the pump must be shut down immediately.

►► 60511 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

FLEXIBLE INDUSTRIAL VISUALISATION

Stainless-steel housings for harsh environments



Eaton with its brand MTL Instruments is making plant visualisation more flexible than ever with the introduction of the new GECMA Workstation (GWS) Industrial and the Industrial Flex-Line. The new products have been designed to bring greater connectivity, image quality and ease of use to plant automation systems in

harsh production environments, indoors and outdoors. Both are designed to meet GMP requirements for hygienic environments typically found in pharmaceutical or biotech applications, but are also ready for the harsh operating environments typically found in oil and gas processing and offshore extraction. The new GECMA Visualisation solutions are designed to allow the same system, setup and interfaces worldwide. Terminals are available in 19", 22" and 24" screen sizes. They are provided as floor-mount units as standard, although customers can select ceiling or wall mount options. Manufactured with casings of high-quality stainless steel, the GWS Industrial and GWS Industrial Flex-Line are suitable for use in production environments with operating temperatures between -10°C and +50°C and are rated to IP66 against the ingress of dust and water.

►► 60499 at www.pcne.eu

Transporting and Lifting in Sensitive Areas

Stainless steel forklifts and pallet trucks for use in hazardous areas and clean rooms

Safety has the highest priority in sensitive areas such as clean rooms or hazardous areas. Even forklifts need to meet the highest statutory requirements. EAP Lachnit offers pallet trucks, forklifts and lifts made of stainless steel for the transport, lifting and moving of goods. The established manufacturer's units are considered to be extremely robust and powerful. Further variants of the pallet trucks, forklifts and lifts are also possible for special requirements.

SLIM AND AGILE: ELECTRIC PALLET TRUCKS

Classic pallet trucks are used for many transport tasks in hazardous areas and clean rooms. EAP Lachnit also offers special versions for such applications: The 411 K electric pallet truck is suitable for the simple but rapid loading and unloading of goods. And if heavy loads need to be transported over longer distances, the powerful 412 K electric pallet truck with a driver's platform is the ideal solution. The structure of the electric pallet truck is very robust. A warp-resistant load frame with round fork ends allows the goods to be handled carefully. Rollers that drive in and out ensure that pallets can be picked up easily. Overload protection and a gentle lowering valve are integrated as standard. The pallet trucks exhibit a high degree of stability thanks to a central drive with bevel gearing and offer a high level of driving comfort, thresholds can also be overcome without any problems. It is operated via a safety steering drawbar with control and operating elements. For emergencies, the electric pallet truck is equipped with an emergency stop switch and a safety button with automatic return. The maximum load capacity is 3,000 kg, and it has a lifting height of up to 205 mm (optionally up to 300 mm). Thanks to a small turning radius of 1,600 mm, the pallet trucks are very manoeuv-



The electric forklift type 422 is the right choice for more height and a load capacity up to 1.250 kg

vable. A travel speed of 4 km/h allows you to get around quickly.

PROTECTION UP TO IP67

For use in sensitive areas or in environments with a high degree of humidity, the key switch is fitted with a rubber cover, and the control unit, battery and hydraulic unit are encased in a waterproof stainless-steel housing that meets IP67 protection. The material used, stainless steel (1.4301/ V2A/AISI 304), as well as the glass bead-blasted surface, enable easy and thorough

cleaning. The electric pallet truck is in compliance with EC Machinery Directive 2006/42/EC and has the CE marking.

For conveying tasks that require a higher lift, the electric forklift type 422 is the right choice. With a load capacity of 1,250 kg, it is powerful and offers a wide range of applications. A large steering angle and full mobility to both sides make the pallet truck very manoeuvrable; the bevel gear drive also ensures a high degree of stability.

►► 59818 at www.pcne.eu





Continuously Operating Ploughshare Mixer

"All-in-one" process for feed and fertiliser production



Solution for the production of MCP, based on a type KM Ploughshare Mixer for continuous operation.

Monocalcium phosphate (MCP) is formed by the reaction of pure phosphoric acid and calcium carbonate. Powerful process technology is just as important to the production of high-quality MCP as the quality of the raw materials used. Lödige Process Technology offers a solution that is specially designed for this application, based on a type KM Ploughshare® Mixer for continuous operation.

MIXER WITH APPLICATION-SPECIFIC DESIGN

The Ploughshare Mixer for continuous operation uses the mechanically generated fluid bed system that was introduced to mixing technology by Lödige: Ploughshare shovels in their basic shape patented by Lödige in 1949 rotate close to the walls of a horizontal, cylindrical drum. The circumference speed and geometric shape of these plough-like mixing tools are designed so that they pick up the raw materials for the mixture completely and throw them into the free mixing

compartment. During this process, the material is lifted off the drum wall against the centrifugal force. This generates a mechanical fluid bed, in which the entire product mixture is constantly gripped, resulting in extremely thorough mixing, even with high mixture throughput and short retention times. The mixing elements are shaped to ensure product transport. Additional choppers in the mixing drum break up agglomerated material and permit systematic granulation during the mixing process.

The result is a continuous "all-in-one" process. This means all process phases of MCP production can be performed in a single machine. Other units and process steps are no longer necessary. Moreover, the mixer offers great stability and optimised cleaning intervals. A special wear protection shields mixing tools and shovel arms against the high mechanical and corrosive stress caused by contact with the mixture.

PRODUCTION PROCESS

The MCP production process has three phases: mixing – reaction – granulation. In the first step, the two base materials, phosphoric acid and calcium carbonate, are mixed to form a highly homogeneous substance. In the second phase of the process, an exothermic reaction is produced under defined conditions, resulting in a conversion of the base materials into monocalcium phosphate. This is followed by granulation in phase 3. The granulate properties can be adapted specifically to the customer's requirements. The final process step, granulation, offers a variety of advantages over ungranulated MCP: It improves the pourability of the substance and makes transport and storage easier. It allows the product to be packaged dust-free and permits perfect dosing. A variety of different machine sizes is available for throughput rates in a range from 1t/h to 50t/h.

►► 60601 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

N° 5 - MAY 2021

www.pcne.eu

Low Powered Solenoids

Providing energy efficient and safe operation at United Arab Emirates wellheads

Rotork's customer required a low power, high pressure and high flow solenoid so Bifold FP02 hydraulic solenoids were installed with low powered coils as part of the construction of new wellheads in this project and play a critical role in this application. Wellhead applications require a solution which can operate on minimal power due to the difficulty involved in providing a power supply to remote locations. Wellhead control panels are essential to the safety of the wellhead and are designed for monitoring, controlling and shutdown of valves on the wellhead. The solenoid ensures that the valves can always be opened and closed from a control panel, providing Emergency Shutdown (ESD) functionality. They were used in conjunction with Bifold quick exhaust valves to operate the wellhead actuators in the specified open/close times.

LOW ENERGY CONSUMPTION CONTROLLING HIGHER PRESSURES

The SIL3 certified solenoids are powered by solar panels installed on the wellhead and while most solenoids draw power continuously in order to operate, the FP02 solenoid uses an integrated circuit board so that when it is energised it is able to remain in place on only a negligible amount of power, 1 W is used, rather than 3.5 W continuous, while maintaining their operation at 450 bar. Within our solenoid range options are also available for 5.7 W coils, taking them down to 2.8 W continuous (dependent on application). This allows higher flows/pressures to be controlled with reduced power solenoid valves.

The power required to energise a solenoid valve is generally two to three times higher



than the power used to hold it in place. The integrated circuit board contains electronics to control the power delivered to the solenoid. Once the solenoid is energised, the circuit board limits the power to the coil in order to hold it in its energised position. When movement is required, it can reach heights of 8 W meaning that even though the overall power consumption of the solenoids remains low, they have the capacity for high pressure applications.

KEEPING COOL

Often solenoids can experience a rise in temperature by up to 45 °C when they operate at 5.7 watts, which can pose a real threat to safety in desert applications where the ambient temperatures are already high. This can be avoided with the low powered solenoids as the current flowing through it remains at a low level for most of the time and it therefore does not increase in temperature. Additionally, all low-powered solenoids are ATEX certified.

►► 59716 at www.pcne.eu



COATED SPLIT PUMPS

Reliable, easy-to-maintain and energy efficient pumps



Celeros Flow Technology produces the Uniglide-e split pumps as part of the ClydeUnion Pumps (CUP) portfolio. They have a capacity of up to 4,000 m³/hr, a delivery head of up to 200 m and operate at speeds of up to 1,800 rpm. Their innovative hydraulic design and the application of a special internal coating provides low

NPSH, stable characteristics and high efficiency. Typical applications include water treatment, processing and building services sectors, or any task requiring a highly energy efficient and economical pump. Uniglide-e pumps feature a keyless drive design that eliminates the impeller key, which is a common cause of shaft failure due to fretting and fatigue failures. While keyless drive isn't a new technology, it is more usually found on high end, high speed turbine applications and is seen as a highly effective method of guaranteeing maximum power transmission without the risk of fatigue failure. These pumps are also equipped with a high tensile shaft designed to minimise dynamic shaft deflection and provide an ample safety factor in rotation speed, ensuring extended shaft life. Radial thrust is reduced by utilising a double volute casing design on all but the smallest frames; offering improved efficiency, minimised vibration and extended bearing and seal life.

▶▶ 60437 at www.pcne.eu

RELIABLE MOTOR UNITS

Less Maintenance for mixing and agitation processes



MAXXDRIVE® industrial gear units, an integral part of the **NORD** portfolio for ten years, offer high output torques from 15 to 282 kNm and ensure smooth operation even under demanding conditions. The FEM-optimised and compact design enables operation under ultimate external loads. For agitation applications, a combination with the **SAFOMI** IEC adapter (SAFOMI = Sealless Adapter For

Mixers) is recommended, in which an oil expansion chamber is directly integrated. SAFOMI is available for MAXXDRIVE parallel gear units in the sizes 7 to 11 covers maximum output torques from 25 to 75 kNm. SAFOMI impresses with its compact design and integrated oil equalization volume, which means that there is no need for oil tanks and hoses or the shaft sealing ring between the gear unit and the IEC cylinder, which is prone to leakage and wear. Using the SAFOMI-IEC adapter instead of the standard IEC adapter on the agitator drive increases operational reliability and lowers maintenance costs. Not only is the oil level and thus the required oil volume lower, but thanks to fewer attached components the installation space is also reduced. For the further reduction of wearing parts and attached components, **NORD** recommends a combination of MAXXDRIVE industrial gear unit, SAFOMI-IEC adapter, a drive motor and **NORDAC FLEX SK 200E**. The SK 200E can be directly mounted on the motor without control cabinet.

▶▶ 60549 at www.pcne.eu



FREE DIGITAL SUBSCRIPTION

DOME PRESSURE REGULATOR FOR GASES

Integrated digital sensor for real time measurements



The smart **Witt** dome pressure regulator measures the inlet and outlet pressures as well as the gas temperature at the inlet and outlet. Until now, these values could only be measured using additional, external sensors and transmit-

ters, which had to be installed separately in the pipeline. This ground-breaking integration enables a much more compact, reliable and economical solution. A further unique selling point: The built-in software uses the recorded data including the Cv value to calculate the gas flow rate, and thus provides the user with additional valuable information on the process performance. The measured and calculated data are displayed in real time on a small display in the valve and sent to the required location via a network connection. For example, the data can be transmitted via telemetry systems from cryogenic gas tanks. This ensures maximum operational reliability, process control and a high level of transparency. Despite built-in sensors, the dome pressure regulator is extremely compact. It can also be easily installed in the pipeline at a later date. The regulators give accurate pressure control, with the pressure curve remaining practically unchanged over the entire flow rate range. They adapt swiftly to changes in the upstream pressure, avoiding pressure fluctuations and the notorious "flutter" effect.

▶▶ 59808 at www.pcne.eu

VIDEO PYROMETER WITH USB INTERFACE

For optimal alignment and focus



Temperature measurements with pyrometers have the enormous advantage that no contact with the measured object is necessary. This also poses a challenge at the same time: The pyrometer must be perfectly aligned with the

measured object and, if necessary, the optics must be focused. This challenge can be met optimally with the new Video Pyrometer CSvideo 3M from **Optris**. In addition to a cross-shaped sighting laser, the pyrometer has an integrated video camera. This allows the measuring field to be targeted very precisely, even if the measured object is in an area that is difficult to access. The CSvideo 3M is connected to a USB interface on the laptop or PC using an adapter cable. The Compact Connect software installed there shows the video image of the integrated camera in addition to the temperature-time diagram. Using the rotary knob on the back, the optics can then be focused very easily and optimally aligned with the measured object. The software displays the current measured values graphically and saves them for documentation or subsequent analysis. The pyrometer can alternatively also be configured via an Android mobile phone. There are two variants available with measuring ranges from 50 to 400 or 100 to 600 °C. In addition to an analog output, there is also an alarm output available.

▶▶ 59826 at www.pcne.eu

Red for companies advertising in this issue

A	ABB	20			
	ALFA LAVAL	21			
	ATLAS COPCO COMPRESSORS	19			
B	BOSCH REXROTH	21			
	BÜRKERT	19			
C	CELEROS FLOW TECHNOLOGY	29			
	CLPA	18			
	CO.RA	1, 10, 11			
E	EAP LACHNIT	26			
	ECOM INSTRUMENTS	22			
	ELGI COMPRESSORS	12			
	ENDRESS+HAUSER	8			
F	FIRST SENSOR	7			
G	GEMÜ	7			
	GERHARD SCHUBERT	14			
	GETRIEBEBAU NORD	29			
I	IMC SERVICE	9			
J	JUMO	8			
K	KROHNE MESSTECHNIK	7			
L	LEWA	25			
M	MTL INSTRUMENTS	25			
O	OPTRIS	29			
P	PROMINENT	7			
R	ROTORK	28			
S	SIEMENS	24			
	SIGNALFIRE	8			
	SIKO	16			
V	VAISALA	8			
W	WITT-GASETECHNIK	29			





Read the latest **digital issue** of **PCN Europe** on www.pcne.eu

**SUBSCRIBE
FOR FREE**



Over 6,000 product news & applications for engineers and buyers in the industry!

*Explosion Protection & Safety – Measurement & Instrumentation – Industry 4.0 – Pumps, Valves & Compressors
Processing Machinery – Maintenance – Equipment & Services – Automation & Communication*

www.pcne.eu
marketing@tim-europe.com

PCN
Europe
processing & control news

TIMLAB Customer Zone™

**EDITORIAL
ARTICLES & ADVERTORIALS**



**LEADS
GENERATION**

A lead generation form titled "REQUEST INFORMATION" with fields for name, email, phone, company, and a message box.

**TIMGLOBAL MEDIA CREATES CONNECTIONS BETWEEN SUPPLIERS & DECISION MAKERS
IN THE INDUSTRIAL WORLD**

TIMGLOBAL MEDIA



PRINTED MAGAZINES



WEBSITES



E-MAILINGS



EVENTS

www.tim-europe.com

marketing@tim-europe.com