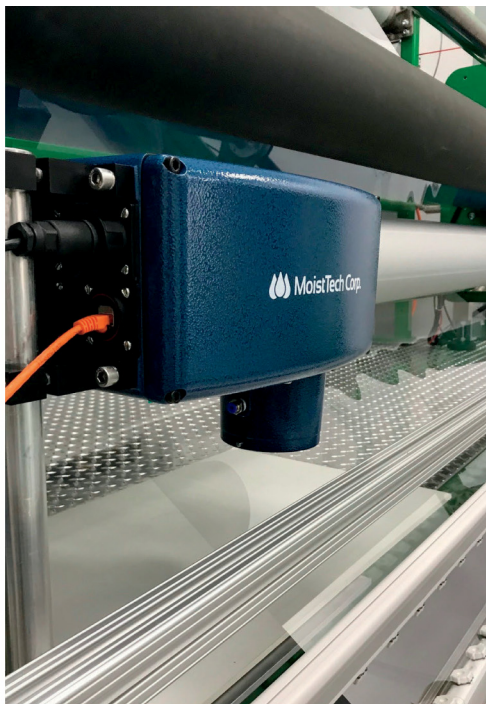


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Increasing Efficiency Can Decrease Human Error: Moisture Measurement Systems Automate the Process

Reducing front-end expenses and increasing quality and efficiency has always been a top priority for producers, highlighting the need for companies to thoroughly evaluate their current methods of reducing waste – wasted efforts, wasted energy and wasted product.

Evaluating and implementing lean manufacturing principles assists in eliminating waste and improving overall plant production. With the implementation of moisture control systems, manufacturing plants can save a large amount of money in a short amount of time.

When considering the many challenges that plant operators are tasked with, moisture control plays a large role.

Moisture content can affect product quality and equipment function, making it a crucial focus point in proactive avoidance of quality control issues.

Dryer effectiveness is critical, as dryers consume a large amount of energy during operation. The implementation of moisture measurement before and after the dryer provides immediate control over the temperature and operational efficiency.

Moisture measurement and control sensors are located in countless applications all over the world, saving manufacturers time and money by quickly detecting the variable manufacturing process, allowing corrections to be made in real time. Near-infrared (NIR) technology is best suited for instant online, offline and laboratory moisture instrumentation.

Controlling moisture levels in powdered and granular applications production is a critical process during various stages of production, as the product can easily become too wet or dry, causing immediate production and quality issues.

Ideally, a moisture control system should be able to accurately detect moisture at different stages of the manufacturing process, be easy to maintain and be tough enough to withstand the harsh, abrasive nature of the raw materials and production environment.

The installation of an NIR moisture detection device prevents out-of-specification product due to undesirable moisture levels, allowing the facility to fine tune the set-up to make sure a more consistent, higher quality product is produced – ultimately improving the bottom line. In other words, clients save money and time, and prevent negative results due to inconsistencies and human error.

Over-drying a product can result in a dusty environment that can lead to a fire or dust explosion. As such, greater plant safety is achieved with a proper moisture measurement system and cost savings are enhanced.

The overuse of dryers results in overpaying on energy costs. By implementing a moisture detection process, producers can monitor 100% of their product quality instantly and consistently.

Additionally, active adjustments can continuously be made to the process, optimizing the outcome.

Preventing airborne dust and controlling the weight of the ash residue can be controlled by reading the moisture levels during processing. Data collection and analysis during the production process helps to determine the



characteristics of the material prior to final processing, which provides process efficiency and optimization.

Regular measurement of moisture in powdered and granular product manufacturing lines remains necessary for drying control, which reduces treatment costs.

NIR spectroscopy and imaging are fast and non-destructive analytical techniques that provide chemical and physical information of virtually any matrix. NIR can tell us things about a product in a similar way to visible light.

When light hits a product, it will interact in various ways – transmitted light will pass through the product; backscattered light will reflect from the product; and some light will be absorbed into the product, which is the key to NIR analysis.

Other common technologies experience issues such as constant recalibration and height interference, resulting in drifting over time and less reflective light energy. The user is there provided with more of an estimated guess, rather than accurate data.

NIR moisture control technology helps provide high-level equipment to manufacturing facilities in a multitude of applications. A ratio-based measurement with prime beam eliminates sensitivity to distance; improves stability and accuracy; and provides a non-drifting design.

These features allow for extremely accurate measurements with high sensitivity. NIR technology is specific and stands out among other options because it is non-destructive, never comes in contact with the product and provides instant, repeatable results.



Optimizing the manufacturing process to include a moisture measurement and control system improves product quality and production efficiency and reduces the amount of dust and build-up created.

Small variations in moisture content can result in clumping, affecting the quality and consistencies in the production; absence of moisture can result in excess dust.

Non-contact moisture detection can provide real-time accurate data to help line personnel to properly control and eliminate common issues.

The ability to reduce waste and keep the production line moving is essential to plant operators.

Moisture measurement and control plays a large role in the process and catching out of tolerance readings as quickly as possible on the line allows for increased plant efficiency and product quality.

Real-time process control with moisture detection provides true product data that can be used to improve operation efficiency. This reduces wasted effort and materials, and decreases the frequency of downtime, manual intervention and defective goods. Increased plant efficiency, lower energy costs, higher accuracy, instant return on investment (ROI) and low to zero maintenance are just a handful of benefits seen when implementing a moisture control system.

In summary, there are a multitude of benefits for manufacturers with a moisture control system suited for their application, including:

- Reduced dryer usage and energy costs
- Proper control of the infeed and dryer exit
- Better quality and consistency of final product
- Dust and fire elimination
- Reduced purchase costs from water weight
- Reduced amount of wear and tear on equipment from ash and dust build-up
- Prevention of blockages on conveyor

By mounting a sensor several inches above the conveyor and/or after the dryer, the process can be continuously monitored and moisture content can be controlled either manually or automatically during production.

Another reason for moisture detection with the process is that dust from the product creates an environment prone to fires due to the dry conditions.

The sensors are specifically designed to ensure accuracy and repeatability. Additionally, there is no need to regulate temperature control, making them easy to use.

Manufacturers can experience immediate adjustments to their process based on real-time measurements, as the sensor reads and records hundreds of data points per second.

Immediate changes can be made to the production line directly through the programmable logic controller (PLC) needed, to stop extra waste and maintain the effective movement of production lines.

Additionally, costly downtime and excessive waste is avoided by catching any out-of-tolerance readings as quickly as possible.

Manufacturers can connect the sensors to a computer network or production laptop for complete software control of the production line, creating a closed loop process.



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"Gold Standard" of Industrial Temperature Calibration



The Fluke 1551A Ex and 1552A EX "Stik" Thermometers, engineered to give temperature calibration specialists the durable, intrinsically-safe digital instrument they need for precision temperature calibration.

The Fluke 1551A and 1552A "Stik" thermometers provide a highly precise and durable digital replacement for mercury-in-glass thermometers.

They are intrinsically safe (ATEX and IECEx compliant), so they can be used safely where potentially explosive gases may be present. More durable than mercury-in-glass instruments, they can be used reliably outdoors or on the production floor.

The 1551A "Stik" Thermometer covers a temperature range of -50°C to 160°C . The model 1552A Ex covers a range of -80°C to 300°C . Both models are accurate to $\pm 0.05^{\circ}\text{C}$ over their full temperature range.

Process manufacturers of chemical, pharmaceutical, food or petroleum products require accurate temperature measurements.

Since temperature sensors are subject to drift with time, regular calibration or verification against a reliable reference thermometer is required. Finding a reference thermometer that is accurate, repeatable and robust was a challenge to the manufacturer.

Although accurate and repeatable, mercury thermometers are fragile. The risk of a mercury spill poses potential hazards to the environment and to health. Many of the U.S. States and European Union countries have banned their use in industrial applications.

The stainless steel probe and digital readout of the Fluke 1551A Ex/1152A EX "Stik" Thermometers are fixed together and calibrated as a system. The accuracy specification is easy to understand since it includes all uncertainty components, including drift, for up to one year.

The large backlit LCD display rotates 90 degrees, making for easy reading from any angle. A user-configurable stability/trend indicator lets the technician know when temperature is stable enough to record an accurate measurement.

A user-settable auto-off function extends typical battery life to three hundred hours. A low-battery indicator and stop-measure function prevent erroneous measurements from being made due to low battery life. A simple three-point calibration function allows the operator to easily and accurately calibrate the "Stik" Thermometer. Data logging to internal memory of up to 10,000 time-stamped measurements is optionally available.

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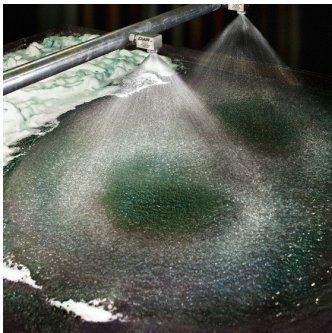
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Hollow Cone Liquid Nozzle for Cooling and Washing



Exair's new 1/4 NPT HollowStream™ liquid atomizing spray nozzle provides a hollow cone spray pattern for pressurized liquids.

They are applied to solve cooling, cleaning, foam breaking, rinsing and dust suppression applications for industry.

The tangential flow design is vaneless, with wide open internal features to resist clogging while producing a uniform distribution in a ring pattern with medium to large droplets. Their right-angle design is compact and works well with liquids containing particulate. Liquid operating pressure is up to 250 PSI.

With HollowStream nozzles, the liquid is supplied into the body of the nozzle creating a swirling action within a vortex

chamber. This vortex produces the spray pattern when the machined nozzle breaks the liquid surface tension as it exits the orifice and into a controlled spray angle.

Stainless steel construction of liquid atomizing nozzles adds to their durability and corrosion resistance.

HollowStream nozzles are CE compliant and available in a variety of flow rates. They complement Exair's large line of 1/8, 1/4 and 1/2 NPT Air Atomizing and No Drip Air Atomizing Spray nozzles.

Models come with a five year Built to Last Warranty.

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3D Machine Vision Camera Gives Robots Human Eyesight



SICK Automation now offers local industries a 3D machine vision camera that enables automated management of products or goods in any factory or warehouse environment. Called the Visionary-S CX, it integrates with robotic handling systems (e.g.

depalletisation or picking systems) or quality control solutions to enable the real-time identification, picking, and selection of goods accurately and quickly for highly optimised warehouse or production operations.

The Visionary-S CX is a rugged camera with the ability to “see” both colour and depth, as well as dimensions, even in environments with low ambient light. This means it recognises items and objects reliably, giving it the ability to identify and select individual products in densely packed boxes, for example. It also features a high recording speed, making it effective in high-speed applications. It integrates easily into existing systems using system integration (SI) software, to enable prompt optimisation. The easily configurable input and output functionality of the Visionary-S CX makes it versatile and flexible.

Previously, robotic carton handling or quality control packaging systems were limited by 2D technology. A robot could be programmed to pick or select an item, that was positioned at specific position-coordinates on a pallet, a table, or conveyor belt. If the item was not in that exact location (or not positioned accurately, at the optimal height or depth) the system failed. “The Visionary-S CX, essentially gives the robotic system human vision that identifies target items and understands where these are,” explains Grant Joyce, Managing Director, SICK Automation Southern Africa.

The Visionary-S CX solution was recently applied in the Belgium-based warehouse of a pharmaceutical company, where it optimised the depalletisation and picking of cartons, enabling the system to detect cartons at a rate of 2 000 per hour and depalletise them rapidly. As a result, the company was able to meet high demand for its products across Europe. “Through collaboration with our SI partners, we are able to build complete application solutions such as this for customers in southern Africa,” adds Joyce. Designed to deliver easy installation, programming and commissioning, the Visionary-S CX is also priced competitively for the local market.

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Collaborative Palletizer for Industrial Applications



Collaborative robots (cobots) are being used in a wide variety of applications. A recent example would be the partnership between FlexLink and OMRON. FlexLink offers flexible, modular conveyors and industrial automation equipment, including palletizing solutions to hundreds of customers across the world.

Following a request from a major manufacturer, the two companies joined forces to create a collaborative palletizer, using OMRON cobots.

Stéphane Chevalard, FlexLink’s Engineering Supervisor: “Palletisation using cobots has a wide variety of benefits as it’s very flexible. The system can be easily moved from one area of production to another. It can even be swapped between lines because it’s self-supporting and easy to move. It also allows collaboration with operators, who can work in safe proximity to the Cobot without fencing or laser scanners due to the active security we’ve added, gaining CE certification.”

Developing the system

OMRON and FlexLink were both involved in the initial design of the project, and the solution is continuously evolving as they receive feedback from users. The development of the system took place over several months, to ensure that the result would be flexible and easy to configure. The palletizing system can process both US and Euro standard pallets, up to a height of two meters, thanks to the accessories that have been added.

The Cobot has a capacity of up to 8 boxes or parts per minute (ppm); or 14ppm with a dual-pick vacuum gripper. The palletizing systems can handle boxes of 10kg or 12kg, as two different types of cobots can be used - the OMRON TM12 or the TM14.

Gary Hinault, FlexLink’s Controls Engineer, comments: “This solution meets the need for automated palletization, which relieves the operators from this repetitive task so that they can focus on tasks with more added value.”

The cobots can be delivered in a fairly short time and the installation takes just one or two days. The automated palletizing system helps operators to avoid the risk of musculoskeletal disorders or injuries caused by lifting heavy loads. The manufacturer who originally requested the Cobot has calculated the return on investment as being one and a half to two years.

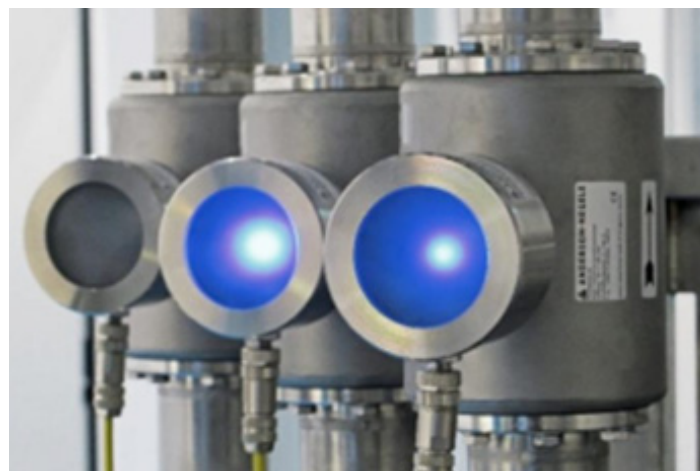
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The Compact and Cost-Effective All-Rounder - Precise Flow Measurement



The FMQ electromagnetic flow meter is a tried- and tested, extremely versatile, robust, and reliable device for all conductive media. The performance spectrum is tailored to almost all applications, including dosing and filling applications.

IO-Link in Flex-Hybrid technology: digital or analogue communication

- **Extremely compact:** Minimal size of measuring body and electronics allow easy, vibration-insensitive integration into almost all applications
- **Extremely robust:** All components are completely made of stainless steel. The magnetic field coils of the measuring system are consistently encapsulated, which guarantees permanently reliable, precise measuring results even in very harsh environments with strong vibrations or pressure surges
- **Extremely reliable:** Completely protected against moisture, corrosion, and vibrations; vacuum-proof tube lining made of high-quality PFA; process temperature up to 100°C (212 °F), CIP & pigging possible.
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- **Easy commissioning and operation:** User-friendly, rotatable display with optical buttons, no opening of the housing, no mechanical buttons, for quick and easy programming

- **Manufacturer-independent process connection:** Standard aseptic flange according to DIN 11864, with O-ring (no sanitary-sensitive surface seal), pipe standard DN10 ...DN100 (1/2"...4")

- **Remote version** (separate electronics) available, cable length from 1 to 10 m

Technical specifications

- *Flex-Hybrid Technology* with digital + analog interface (IO-Link + 4...20 mA)
- *Measuring range* from 30 l/h to 640 000 l/h
- *Measuring accuracy:* $\pm 0,5\%$ $\pm 2\text{mm/s}$
- For liquids, mashes and pastes with a conductivity of $> 5 \text{ } \mu\text{S/cm}$
- Process temperature up to 100 °C (212 °F) permanently
- CIP-/ SIP-cleaning up to 130 °C (266 °F) / max. 30 minutes

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A Wireless Addition For The Jumo Automation System



Jumo variTRON 300 provides users with a smart solution for simple automation applications. The device is based on the Jumo Jupiter platform which results in the variTRON using a large number of features from this high-quality embedded system.

The unit is based on a powerful CPU with an 800 MHz single-core processor. The software has a modular structure based on a Linux platform and uses CODESYS V3.5 programming environment SP16. Another special feature is a customer specific configuration and process data editor. In addition, individual applications can be created using the modern programming environment Node-RED.

The CPU unit has one USB host, two Ethernet interfaces, and one RS485 connection as options. Up to 32 wireless Jumo Wtrans sensors can be connected via a wireless gateway for various purposes including measuring temperature or pressure.

A large selection of connection modules with high quality, configurable analog inputs and reliable, independent PID controllers with an autotuning function can be connected using a specially developed 1-port router. Displays in various formats are available for visualization.

The intuitive evaluation and visualisation of process data from the Jumo variTrans 300 automatic system is possible with the browser-based software solution Jumo smartWARE Evaluation. Individual dashboards allow targeted and fast access to recorded process data. Manipulation detection based on digital certificates ensures high data security.

Jumo provides visualisation libraries for individual customer-specific operation via CODESYS Remote TargetVisu or CODESYS WebVisu. A high degree of flexibility is also guaranteed by the integration of all important fieldbus systems via CODESYS (such as Modbus RTU or TCP master and slave, PROFINET 10 controller, EtherCAT master, and OPC UA server).



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Water distribution systems form the backbone of modern civilisation. Huge volumes of water have to be able to travel the long distance between their source and the end consumer efficiently and reliably. Not only can leaks in the distribution system lead to the valuable liquid being lost – it can also alter the subsoil, necessitating costly repairs. Leak-tight pipelines are a key part of a functioning supply system that delivers value for money.



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New Welding Robot for Pump Protection Valves



Everything from a single source - it's more than just a marketing promise! Over 50 drawings of various components served as the basis for the automation solution developed by EWM for pump protection valve manufacturer, Schroeder Valves GmbH in Germany.

All of the leading specialist's components did have one thing in common, they were all rotationally symmetrical. This was the starting point for welding machine manufacturer EWM in their mission to develop a custom automation solution tailored to this multifaceted challenge.

Automatic Recirculation Valves / Minimum flow valves from Schroeder Valves are used all over the world for transporting liquids using centrifugal pumps.

Their areas of application include refineries, power plants and nuclear plants, in the transport of liquefied natural gas (LNG), as well as in offshore rigs.

They are also used throughout the chemical and manufacturing industry (steelworks, pulp, sugar, distilleries) and in the utilisation of renewable energies.

Different Sizes –One Application

The aim is to weld all pump protection valve components automatically. These valves are connected directly to the pumps and ensure continuous operation of the pumps to prevent them running dry or being damaged by cavitation during minimum flow conditions.

The pump protection valve is largely made up of the valve body and the cone, which moves inside the valve body. The sealing surfaces between the valve body and the cone must be absolutely air and watertight.

This is the only way to ensure proper functioning of the pump protection valve for decades to come.

Normally, these components are made using low-cost construction steel DIN 1.0460. The sealing surfaces are reinforced with stainless steel DIN 1.4370.

This process was previously performed manually, however, due to both the shortage of good welders and growing quality assurance requirements, automation of this step was crucial.

The inner diameter of the valve bodies and the cone diameters were between 32 mm and 400 mm. The components

being moved also differed vastly in weight, ranging from a few hundred grams to two and a half tonnes.

But all of the parts had one thing in common: they were all rotationally symmetrical, making them perfect for an automated process. With this as a starting point, EWM was able to get the system planning ball rolling.

From Small to Big – Multiple Processing Stations

It soon became clear that only a robot system would fit the bill when it came to automating this particular process. Having to deal with so many different part sizes was a cause for concern. Large parts require a large welding positioner. These, however, cannot provide the dynamics required for the smaller components.

This quickly gave rise to the idea of three processing stations: one large L-positioner with tilting function for the large valve bodies, one small turning/tilting positioner on a system bench for the small valve bodies, and a third station with a system bench without positioners for any other components.

The height of the building was also a particular challenge. The parts had to be able to be placed on the benches with the crane. The crane hook, however, was only approximately three metres high – extremely small for an industrial application.

To guarantee accessibility while ensuring extraction, either the extraction hood or the system benches were made to be mobile.

The robot was fitted in an extremely small booth in the centre between the three stations. This booth also includes both the power source and a Titan XQ. These are positioned behind the L-positioner at the large processing station.

The Rob 5 drive 4X wire feeder mounted on the robot arm ensures secure wire feeding. Access to the Fanuc Arc Mate 100 iD in all three stations at all necessary positions is also ensured thanks to the extreme arm length of two metres and optimised space inside the booths.

Special Torch for Extreme Spaces

Each valve body is equipped with a cone guide which is welded from above. With an inside diameter of just 32 mm, access is extremely difficult.

Pump, Valve & Actuator Technology

For manual welding, the welder is unable to see the weld seam and instead must rely on their experience. Even for automated welding, these spaces are very unusual. EWM was only able to accept this job because they manufacture the torches, emphasising the significance of the welding torch for this application.

The welding torch for Schroeder Valves is a special construction with a particularly small torch head and unconventionally long torch neck.

Of course, the special application had to be adapted to accommodate this unusual design: because dilution between the parent metal and the armouring needs to be as low as possible, only a little energy is used. This ensures safe heat dissipation despite the extreme welding torch dimensions.

Secure Welding Results Through Defined Parameters

As the parts were rotationally symmetrical, it was easy to teach the components; teaching is always based on the same programs. Even new components can be welded automatically quickly.

Users simply have to set the radius, number of passes and the geometric dimensions of the surfaced parts and the robot control will take care of the rest.

The desired welding result is always guaranteed because the welding procedure is defined with all of its parameters. The

quality can also be proven retrospectively as all welding parameters are continuously monitored and recorded.

Even though the system was originally designed and intended for one specific application, Schroeder is already thinking of new ideas and uses.

Schroeder would like to try out some of the various welding procedures that are included in the Titan XQ welding machine as standard.

This will allow to further optimise different kinds of surfaced components. Schroeder are also looking to expand and improve the range of welding tasks.

There are hundreds of Schroeder Valves installed in plants in southern Africa protecting assets at companies like Sasol, Eskom, Mondi and Sappi to name a few. Sulzer and KSB routinely use Schroeder valves to protect their pumps.

Full repair and reconditioning facilities are available at Valve & Automation's Secunda and Durban Valve Repair Centres.

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Limit Switch Box

The Kinetrol VLS/ULS Limit Switch Box offers a wide range of signaling options in a fully enclosed corrosion resistant metal case. Available for direct mounting onto Kinetrol rotary actuators, or discrete mounting via an

industry standard VDI/VDE interface onto any make of rotary actuator. Easy to wire and set up with industrial standard robustness.

Internally fitted options include AS Interface digital communication and a 4-20mA, 2-wire modulating angle retransmit circuit.

The range of switch and terminal arrangements includes 2 or 4 switches, extra connections allowing single point termination of wiring for limit switches and solenoid valves, ATEX approved Ex d (Category 2) explosion proof and Ex ia intrinsically safe packages (Category 1).

Integral sealed Clear Cone Monitor and red/green Led indicator options also give high visibility external visual indication of position.

Features

- Units sealed to IP67/NEMA 6 (Atex units IP66/NEMA 4X, IP67 option available)
- Robust corrosion resistant epoxy painted diecast box
- Easy and accurate setting of switch position
- Available for direct mounting to Kinetrol models 03 to 15 (for minimum height). Discrete Kinetrol 05 square drive insert for use with Kinetrol actuator models 16 to 60
- Quick access - No special tools required
- Discrete VDI/VDE (NAMUR) interface option for use with industry standard actuators
- Two or four cable entries as standard to allow back wiring of solenoid valves
- Multiple switch options available for general and hazardous areas
- AS Interface bus circuit option inside box reads up to 4 switch inputs, drives up to 2 solenoids powered by bus only
- Optional Clear Cone monitor available
- Integral LED indicator lamps and angle retransmit circuit options are available
- Compact SPST version of type 004 available for model 02 actuator.

Ceramic Ball Valves in Water Treatment Applications

Compared to solenoid valves, ceramic ball valves offer improved longevity and wear resistance, and lower costs. According to Anelia Hough, water treatment consultant at Allmech, they're ideal for water-saving systems, industrial automatic control systems, automatic sewage systems, environmental protection projects, water supply and drainage, food and water treatment, and irrigation systems.

Hough says that the proprietary 3-way Runxin valves have proven especially useful in water treatment applications.

"One of our customers installed a filtration plant to treat surface water coming from a nearby river," she says. "Water turbidity was the main challenge. Due to the quality of incoming water, the backwash cycle needed cleaned, filtered water.

"The objective was to ensure the filter media beds were thoroughly cleaned during backwash cycles. During a backwash, the media should be adequately raised and mixed to get rid of contaminants.

"We installed a single L-shaped 3-way ceramic valve instead of two solenoid valves, switching or diverting the flow direction of the incoming water between raw river water and filtered water. When multiple units need clean water diverted, there is an exponential saving." In the service position, the 3-way valve allowed raw water from the river to be treated, but once the control valve position was changed back to start the backwash, the 3-way valve changed position to allow clean water for backwash cycle to enter the valve.

Another customer operates a dairy manufacturing facility that operates 24/7. Part of the company's operation is its boiler, which provides steam into the facility. A duplex water softener was installed with two softener control valves.

"The Runxin F74 softener control valves have a function to interlock valves in parallel system to have one valve in regeneration, but the other valve is in service," says Hough.

"Allmech installed a 3-way valve to change the water flow from standby unit to the service unit within seconds. The objective in this application was to ensure soft water would be supplied 24/7 to the boiler. Because the system ensured that one valve was regenerating while the other was in service, the customer only required one brine tank, which resulted in further cost savings."

Runxin's ceramic ball valves provides several design features to improve performance compared to ball valves made from traditional materials, the biggest of which is the longevity of the parts. The valves are hermetically-sealed, so they have extremely high resistance to corrosion, abrasion, and chemicals, to stand up to the toughest water treatment challenges. The ball cores and seats are precisely ground in pair to ensure zero leakage. Each of the plastic options comes with a choice of connection between metric female thread and uPVC Glue and some of the valves are available in different grades of steel.

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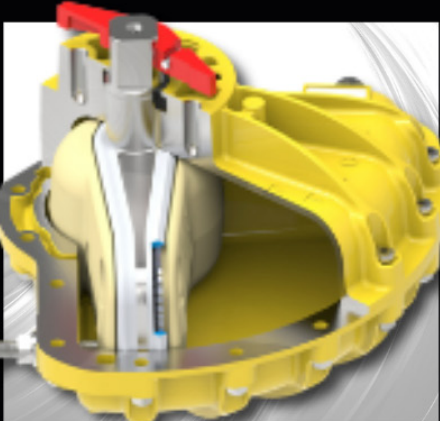


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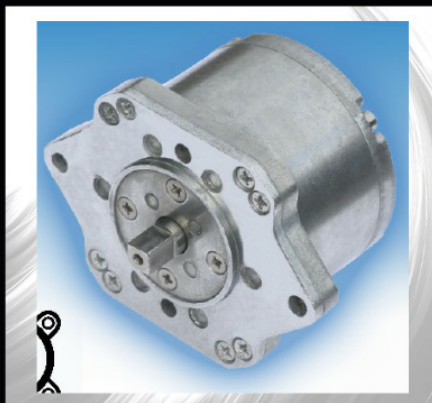
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Pump, Valve & Actuator Technology

Hygienic 2-Way Bellow Control Valve for Small Flow Rates

With the Type 2380 Bürkert proves that it is possible to combine standard features with custom options in one advanced valve concept.

The compact bellow control valve with a hygienic design for neutral and aggressive media opens up possibilities for numerous applications, including innovative modular solutions.

The new 2-way bellow control valve is a pneumatically actuated process valve with a single action diaphragm actuator.

A PTFE bellow ensures the reliable separation of the media from the actuator.

The valve is constructed in full compliance with hygienic design requirements and is ideal for demanding control tasks with small flow rates, for which diaphragm valves are not suitable.

Applications include food and beverage production, pharmaceuticals and biopharmaceuticals, cosmetics and speciality chemicals.

The bellow control valve is available for different port connections from DN6 to DN20 and can be combined with seat sizes from 3 mm to 10 mm.

The space-saving drive has a low internal volume, resulting in the compact design and short response times of this valve type.

The Type 2380 valve features good control action due to the low-friction design, in addition to a linear characteristic. The correction time is generally less than one second.



Numerous combination options

The standard bellow control valve is a new addition to the unique ELEMENT system.

In combination with four different Type 869x positioner and process controllers of the ELEMENT series, as well as different connections (sleeve, clamp and welded connection) and a large choice of bodies and block solutions, it enables creation of a modular system with numerous options.

Type 2380 is designed for control functions such as the control of gases in fermentation processes and bioreactors, as well as dosing applications with small flow rates.

On the basis of this valve type the fluidics experts at Bürkert have developed an innovative solution for nitrogen

blanketing in liquid storage tanks or fermenters. The block solution consists of a pressure sensor, two bellow control valves and two ELEMENT positioners.

As opposed to the previous control concepts available on the market, this solution reliably prevents contamination, foaming and cleaning problems common in fermenters.

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New Motorized Actuator

In addition to the existing GEMÜ R629 eSyLite plastic diaphragm valve, the 629 diaphragm valve with stainless steel body and the 519 and 529 globe valves are now also available for simple, motorized open/close applications.

A total of four eSyLite valves now offers plant engineers and operators the opportunity of operating electrically driven plants more efficiently than before. In plants in which, for example, solenoid valves of large nominal sizes consume a relatively large amount of electricity, the globe valves from the eSyLite series are a cost-effective alternative. With low switching cycles and medium switching speed, they take on shut-off tasks just as precisely as solenoid valves, while at the same time scoring points when it comes to operating costs with their low electricity consumption. The eSyLite series also opens up new opportunities for plant optimization for applications where there have so far been no affordably priced alternatives to electrical ball valves. Automation with the new eSyLite valves

can thus be further advanced. Where pneumatic valves could not previously be used, and manual valves were relied on instead, a motorized alternative is now available with which the plant can be automated cost-effectively.

The new valves complete the GEMÜ eSyLite series. The robust and self-locking motorized linear actuator has a safety switch-off function including overload protection. A manual override and an optical position indicator are integrated as standard. The valves are optionally available with the eSyLite actuator, with the GEMÜ 1215 electrical position indicator or with an integrated emergency power supply module.

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Pump, Valve & Actuator Technology

Reliable Quarter Turn Pneumatic Actuator



With millions of actuators performing reliably around the world, the Kinetrol vane actuator's outstanding cycle life, smooth and precise movement, and environmentally rugged design makes it the best choice for all of your valve actuation needs

Kinetrol engineered the first rotary vane actuators in 1958. The rotary design is based upon a single moving part which eliminates additional parts required to convert linear motion to rotary motion

This simple and innovative design provides a highly accurate and extremely reliable actuator for operating valves, drives and dampers, and is perfectly suited for the most demanding process control applications.

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Contaminated or adhesive media, such as waste oil and fat, often cause blocked control bores. Our servo-assisted valve 5282 is the exception: The 2/2-way allrounder has no pressure compensation bore in the diaphragm in which foreign objects could get stuck. What's more, no medium flows through the pilot valve in open position, which is unique among servo-assisted valves with 2-way pilot control. Last but not least, additional safety is provided by the material concept: The main valve housing and return springs are made from high quality stainless steel or plastic. This way aggressive media can also be controlled safely. A neat piece of work!

We make ideas flow.

Want to know more?

Just call: +27 (0)11 574 6000 or e-mail

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The Solution to Brewery's Valve Controller Problem

SICK Automation Southern Africa provided a safety controller solution to the South Africa Breweries (SAB), whose relay controllers for the valves at its Rosslyn plant brewhouse kettle section had been discontinued.

The relay controllers were experiencing intermittent breakdowns, exacerbated by the fact that the manufacturer no longer provided support or spares for the range.

Further, there was no documentation or drawings for the existing controllers to the client's application, rendering repair attempts futile.

SICK installed the CE-certified SICK Flexi Soft safety-rated controllers as the relay solution. It offers fail-safe conditions, incorporates additional design modularity and allows for straightforward expansion and reduction. It increased control intuitively compared to the previous relay, and its programmable flexibility allows for customisation into any application.

Flexi Soft resolved the control and monitoring function of the brew kettle valves and helped decrease wastage by optimising production processes and runtime.

A unique achievement

Reverse engineering the application facilitated Flexi Soft's adaptability to the SAB-specific system, which resolved the challenge caused by lack of documentation.

"Achieving this without electrical drawings and standard operation procedures was a unique achievement," says Chris McDaniel, Engineer, SICK Southern Africa. SICK engineers also included an innovative button-controlling functionality, negating the need for SAB to update the controller via PLC.

SAB's brew kettles operate 24/7, barring scheduled weekend maintenance downtime. To ensure the brewer's processes remained uninterrupted, SICK and SAB engineers alternated their work per kettle, conducting the installation during scheduled downtime only.



"We worked in the short windows of opportunity provided during maintenance intervals," McDaniel explains, "and still managed to complete the project in two months." Additional product training for SABs engineers and operators forms part of SICK's solution.

Functionality and configuration

The SICK Flexi Soft safety controller can be programmed via software. Through its modular hardware platform,

it provides a tailored and efficient solution for numerous safety applications. It has a wide range of available modules, which include main modules, gateways, digital and analogue input/output modules, motion control modules and relay modules.

The license-free Flexi Soft Designer configuration software enables intuitive programming, rapid commissioning, and continuous diagnostics down to the automation level. Functions to enable safe controller networking, safe series connection, or safe drive monitoring reduce costs and boost productivity.

Flexi Soft at a glance

- Safety controller with modular hardware platform
- Configuration saved in the system plug
- Safe controller networking with Flexi Line
- Safe series connection with Flexi Loop
- Safe drive monitoring
- Safe analogue value monitoring
- Flexi Soft Designer license-free configuration software

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PROFINET Gateway Seamlessly Integrates Device and Process Data



With the new LB PROFINET gateway, Pepperl+Fuchs is connecting LB remote I/O systems to the PROFINET world.

End-to-end communication also ensures optimal use of existing intelligence in the field, representing a crucial step toward making plants suitable for future requirements and Industry 4.0.

The new LB PROFINET gateway delivers not only conventional PROFINET functionality but also full access to all connected HART devices.

In practical terms, this will give users access to HART auxiliary

variables as a second measuring value in addition to process variables.

Furthermore, the diagnostic data from the field devices can be read out via HART-IP, thus significantly increasing transparency and plant availability.

The new gateway also offers maximum flexibility since different protocols can run via the same cordset (e.g., PROFINET and HART-IP), and, of course, it represents a high-performance solution: up to 80 field devices can be connected to a fully occupied remote I/O system. These devices communicate without a time delay.

Maximum Safety and Easy Handling

Another highlight of the gateway is the intelligent redundancy concept. An integrated switch ensures the functionality of the network at all times based on the medium redundancy protocol (MRP).

If a line fails, the ring network is reconfigured to send the data packets via the alternative route. Since the potential for hazards increases as a result of big data being used alongside increased networking of industrial plants, the new PROFINET gateway also fulfills the appropriate safety requirements.

The large display, the largest available on the market for this device type, is another highlight that makes the new gateway from Pepperl+Fuchs easy to use.

The device status and additional diagnostic data can be read at a glance via RGB LEDs.

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Comprehensive Energy Logging and Reporting



The Fluke 1730 logger is specifically designed for energy conscious consumers - the Fluke 1730 Three-Phase Electrical Energy Logger – rated for its simplicity in discovering sources of electrical energy waste.

Its ability to profile energy usage across facilities allows the user

to identify opportunities for energy savings and provides easy-to-understand data required to take the appropriate action.

The 1730 shows when and where energy is being consumed in the facility, from the service entrance to the individual circuits. It compares multiple data points over time and builds a comprehensive picture of energy usage with the energy analyse software package. It facilitates the rapid understanding of specific points of energy loss, which can in turn reduce energy bills.

The 1730 Energy Logger in conjunction with Fluke's Infrared Cameras can take energy surveys to the next level, quickly identify opportunities for energy savings both electrically and thermally. When using an infrared camera along with the 1730 Energy Logger, users are able to discover potential problems that could be wasting energy and then quantify them electrically with the 1730 Energy Logger.

This combo is touted to be the perfect tool set to uncover hidden operational wastes such lighting, air conditioning and other large loads that could be switched off when not in use.

Some outstanding features of the 1730 are:

- **Comprehensive logging:** More than 20 separate logging sessions can be stored on the instrument. In fact, all measured values are automatically logged and can be reviewed during logging and before downloading for on-the-go analysis.
- **Complete “in-the-field” setup through the front panel:** no need to return to the workshop for download and setup or to take a computer to the electrical panel. Battery life: four-hour operating time (backup time) per charge on lithium-ion battery.
- **Highest safety rating in the industry:** 600 V CAT IV/1000 V CAT III rated for use at the service entrance and downstream.

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Ultrasonic Distance Sensor Combines NFC and IO-Link in a Standard Housing



Low installation depth and easy integration of the sensor via an M18 thread or drill holes on the housing – the advantages of the established R format have been appreciated for years in the field of photoelectronic sensors.

Wenglor's ultrasonic distance sensors from the new U1RT series combine this format with the tried-and-tested ultrasonic technology of the U1KT and UMD product series, setting new standards in terms of range and integration options.

With IO-Link 1.1 and NFC interface, the sensors offer flexible setting options and data storage. In through-beam mode, the device operates reliably up to 2 000 mm, in reflex operation up to 1 200 mm.

In addition to the application range at temperatures between -30 and +60 °C, it is also possible to use the sensors in synchronous mode.

Two independent switching outputs enable the measurement of minimum and maximum levels.

All round visible LED indicators and high IP67/IP68 degree of protection are just two of the many reasons why this format is so successful.

Flexible and Smart Communication

The high flexibility in use is made possible not only by the low installation depth, but also by the availability of PNP and NPN variants.

The integrated IO-Link 1.1 interface with COM3 standard enables fast and secure communication with controllers.

With the Smart Sensor Profile, the product can be easily integrated into IO-Link in a standardised way and regularly sends status messages.

The integrated NFC interface even allows the sensors to be configured without power and wirelessly via the WenglorApp which is ideal for applications with high quantities and saves a lot of time.

The sensors can be adjusted directly via the teach-in key with just a few buttons.

The long ranges combined with the tried-and-tested R format and smart integration options make the U1RT series and real all-rounder for the industry.

Versatile Portfolio for Every Application

In addition to extremely compact formats such as the U1KT housings (32 x 16 x 12 mm) and the R format (56.5 x 26 x 24 mm), the ultrasonic sensor product category also includes the metric designs in M18 and M30 format (UMD and UMF) made

of stainless steel as well as the cuboidal UMS sensors (81 x 55 x 30/47 mm) for large working distances up to 6 000 mm and the special U1H format as a fork sensor.

Almost any application can be achieved with a sensor in this category.

Ultrasonic Technology

Ultrasonic sensors are ideal for contactless detection of transparent, glossing and dark objects, reflective surfaces and materials of all kinds – whether solid or liquid, rough or smooth, porous or translucent. Environmental conditions such as dust, steam, dirt or the influence of ambient light do not disturb them.

By emitting and receiving pulsed ultrasonic waves, the sensors, like bats, use the time it takes for sound to be reflective by the object to determine its distance.

Level measurement, stack height checks, checking slack in roller material or even checking for the presence of, for example cans or PET bottles in automatic return machines, are just a few applications that can be solved with this technology.

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Precision Measurement for Heavy Weights



Millimetres can make all the difference when it comes to the stability of cranes and lifting platforms. When safety is jeopardized, cranes can tilt or even topple over. If loads are lifted unevenly, this can result in strain and damage.

What is needed in these cases are easily integrated measurement solutions with a good price-performance ratio and first-class product quality.

Siko has solved this task by developing the impressive SG 30 wire-actuated encoder with its extremely compact yet robust design and wide range of applications.

Instrotech is offering Siko innovative wire-actuated encoders for a wide spectrum of applications with measurement lengths ranging from 600 millimetres to 40 meters.

The functional principle of the wire-actuated encoders is fairly simple: A measurement wire is wound onto a drum. When the wire is pulled out, it causes the drum to rotate. A sensor connected to the drum axle records this rotation and generates a measurement signal proportional to the wire movement of the drum, which indicates the position.

When extending crane arms, exact position detection of the supports is essential to prevent the crane or truck from tilting or toppling over. This is done by measuring the current values of the extended supports and comparing them directly with the length of the extended crane arm.

This means that complete extension of the crane arm is only possible if the supports are also extended to the maximum width.

Special case: lifting platforms

Wire-actuated encoders are not only used for cranes operating at great heights. Optimum precision is also needed

when extra-long loads have to be lifted. Wire-actuated encoders ensure even lifting e.g. of trains, underground trains or trams using a lifting platform. Failure to observe this can cause strain, which can result in damage to the entire construction.

Space-saving and resistant to cold

A redundant system is often necessary for safety reasons and in space-constrained situations. With these precision requirements in mind, Siko has developed the SG 30 wire-actuated encoder with its particularly slim, compact design.

Despite its space-saving size and lightweight of approx. 500 grams, no compromises have been made with regard to stability. The outer housing is made of sturdy zinc die-casting and the spring housing of fiberglass-reinforced plastic.

Another unique feature of the SG 30 is its wide range of working temperatures, which enables it to be used from minus 40 to plus 80 degrees Celsius. Four lockable aeration holes are integrated to avoid condensation.

The wire outlet has a special protective seal. The wire pullout is flexible so that 100 % alignment with the extension direction of the outlet is not necessary.

The SG 30 has a measurement range of up to 3,000 millimetres. A high degree of measurement accuracy over the whole measurement range is ensured by winding the wire on the drum in just a single layer. The SG 30 is ready for connecting encoder types CAN/CAN-Bus, MWI and MWU.

One particular advantage offered by the standardized connection method is the Plug & Play system, which guarantees swift, easy installation and immediate use.

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Universal Code Reader for Optimal Reliability

If you want to control and automate a process, you first need detailed information about it. This task is performed by sensors covering a wide range of sensing principles, and also involves reading 1-D and 2-D codes for identifying and detecting parts, workpieces, and means of transport.

Camera-based code readers have proven their worth in this domain, which can be adapted very flexibly to suit different tasks. The new VOS-I series code readers show what the top range of this technology can do.

The requirements for reading barcodes, Data Matrix codes, QR codes, etc. in factory automation are much higher than just scanning packaging at the supermarket checkout.

Reading codes under industrial conditions is a real-time task that is integrated into automated, quick production, processing, and transportation processes. Speed and reliability are the top priority.

Solutions for Multiple Applications Covered by Numerous Functions

Securely reading all common 1-D and 2-D codes including DPM codes is the core functionality of the VOS-I series universal code reader from Pepperl+Fuchs.

The fixed-installation vision sensors support large distance and sensing ranges, read codes on objects that move at speeds up to 4 m/s, and read very small codes.

The readers also offer a multitude of intelligent functions that allow users to carry out all conceivable reading tasks. These functions include match code, multi-window and multi-code readings, output string formatting via scripts, and the ability to group together several VOS-I devices.

All device versions have a LAN connection for PROFINET IO, EtherNet/IP, Ethernet TCP/IP, a serial RS232 interface, and three freely configurable digital inputs/outputs for integrating the code readers seamlessly into existing control and networking systems.

The new code readers are typically used in applications in the automotive industry, in the production of electronic assemblies, and in the logistics sector. DPM (Direct Part Marking) codes are often used in the automotive industry.

Mechanical needles and laser light burning techniques are used to apply these codes to the metal surfaces of parts such as engine blocks.

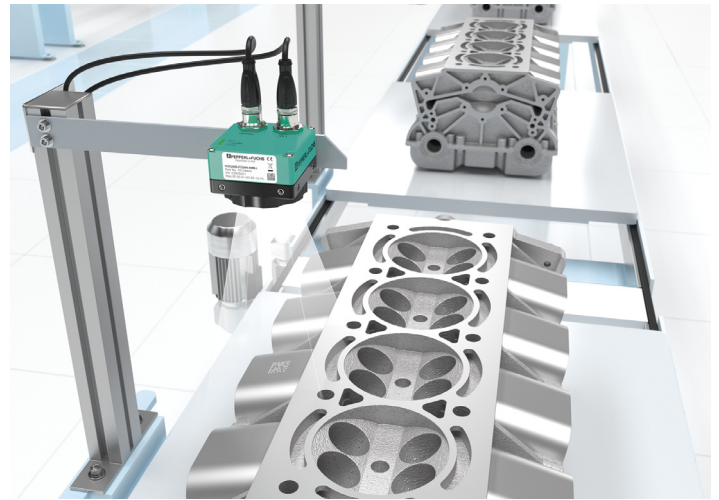
Reading a thinly needle-punched code can sometimes be difficult, so developers have created a special decoder for this application.

It is supplemented by an electronic filter bank that prepares raw images to suit the needs of the user and enable reliable reading in the future.

This type of filter ensures that these thinly needle-punched modules are enlarged before the actual evaluation. With additional external lighting, the VOS-I is even able to reliably read difficult DPM codes up to two meters away.

Small Codes with a Module Size of 0.1 mm

When manufacturing and equipping printed circuit boards in the electronics industry, very small codes need to be



detected, possibly from several printed circuit boards at the same time. Since there is usually limited space on printed circuit boards, very small lasered Data Matrix codes are often used in these applications.

The VOS-I can decode Data Matrix codes with module sizes of only 0.1 mm and can perform multi-code readings. This allows up to 64 codes to be read at the same time in a single reading window or even more codes if several reading windows are used.

The vision sensor can even read different code types simultaneously, so mixing different code symbologies in the same application does not pose any issues.

Multi-code readings are also often required in logistics, such as when detecting Odettes. Data is distributed over a number of different codes in the labels used for standardised information exchange when delivering goods.

VOS-I code readers feature another interesting functionality that proves advantageous in logistics applications. Boxes and packages are often strung in a random order on conveyor belts and the codes may be on any side.

To capture all of the packaging codes simultaneously, multiple VOS-I code readers can be logically interconnected.

One of the devices acts as the main device, which collects the read results of the network, and works with the other devices to transmit this data to the higher-level plant control system.

Evaluation of Code Quality Based on ISO Criteria

The new code readers from Pepperl+Fuchs have a code quality output based on the original criteria set out by the ISO.

The output is only “based on” the criteria because there is no ISO standardised lighting in productive operation.

It should be noted that the quality output also applies to DPM codes, as per ISO/IEC TR 29158, which is especially relevant to DPM codes.

Powerful script functionality allows the collected data to be processed according to user requirements, processed further, and assigned to specific outputs.

Together with the output string formatting, data—including that from multi-code readings—can be broken down into

substrings, reassembled differently, and therefore perfectly adapted to the field formats and structures of ERP systems.

The “match code” function is often used in industrial processes. This involves the code reader comparing the currently read value with a previously taught-in reference value or a reference value specified by the control panel.

The output only has to indicate whether the values are a “match” or “no match.”

If the product is changed, the new reference value can be taught in by setting a hardware input on the fly. The next read value is adopted as the new reference value.

Several match codes can also be stored in the code reader's memory and used as reference when comparing values.

Emulator for Offline Optimisation

The VOS-I can store captured images in the sensor or on an FTP server. These can be analysed using an emulator to determine the ideal sensor settings for the relevant boundary conditions.

Multiple images or entire image sequences can be evaluated as part of the optimizations.

The result is a rugged and reliable code reading that the user can take in their plant.

The VOS-I stores up to 32 jobs, which can be activated remotely via the fieldbus.

Versions of the code readers with different fixed focal lengths and different resolutions up to 5.2 mega pixels are available.

Furthermore, the lens and lighting of C-mount versions allow the code readers to be precisely adapted to any special features of the application.

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Total Solution for Weighing, Level Control Stress and Fatigue Monitoring



Vishay's Model 178 extensometer is a load sensor designed for force measurement on any load-bearing structure. This extensometer provides the total solution for weighing, level control, stress and fatigue monitoring.

The design also allows multiple sensors to be permanently mounted for more complex stress profiling and analysis.

The Model 178 extensometer provides the solution for non-intrusive level measurements for materials that are subject to uneven buildup, bridging, or sidewall collection. Also, liquids or wetted materials that are not suited for direct contact level measurement are an ideal application for the Model 178 extensometer.

The design of the Model 178 makes it an excellent solution for retrofitting existing structures without compromise of the integrity of the vessel or structure.

The 178 has application in tank weighing or level systems, agricultural equipment, rolling mill sensing, moment sensing, structural loading measurements and bridge structures.

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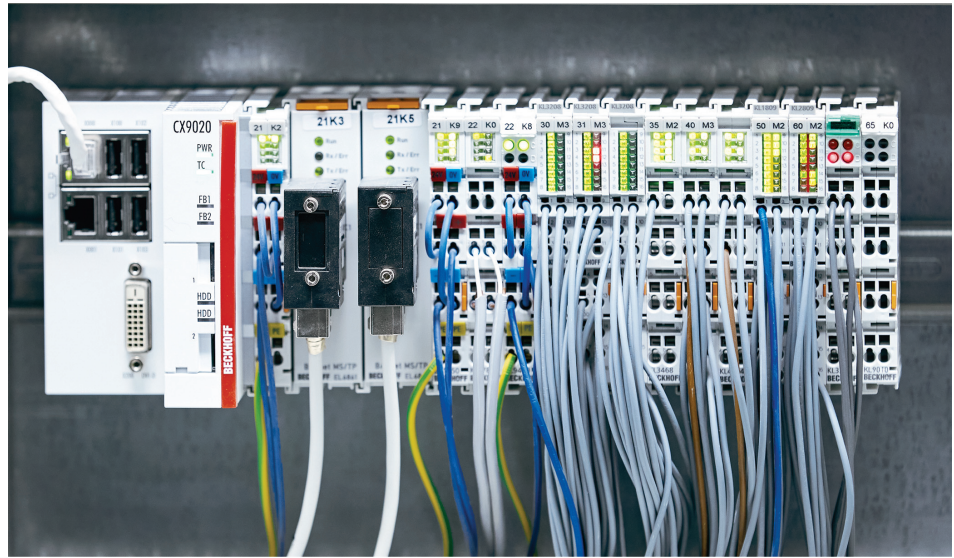
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Embedded PCs Used as BACnet Controllers in Building Air Conditioning System



Steigenberger Alsik Hotel & Spa in Sønderborg is not only the largest hotel in the Region of Southern Denmark, but also one of the most sustainable and climate-friendly hotels in Northern Europe.

High-tech solutions ensure energy-efficient control of heating, ventilation and air conditioning (HVAC) systems, while offering guests the greatest possible comfort. The automation is a result of the ongoing collaboration between Beckhoff and Danfoss.

Alsik Hotel opened up in May 2019, adding a new attraction to the small town of Sønderborg and the Als region, which is rich in tradition.

This is not only due to the public viewing platform on the 16th floor, from which visitors can enjoy a panoramic view of the former industrial harbor and the German-Danish border region on the Flensburg Fjord.

The hotel's architecture, design and ambitions draw many guests and attendees of major conferences and events to the city. With 24,800 m² of space and a height of 70 m, the 19-story building is a new landmark on the waterfront.

In the hotel's basement and on the 18th floor, HVAC systems combined with state-of-the-art building automation ensure comfortable temperatures and air conditioning in the public areas, a spa with a floor space of 4,500 m² and the conference rooms.

Exceeding Danish energy efficiency building regulations

Alsik Hotel was financed by the Danish pension fund PFA together with the Bitten & Mads Clausen Foundation. Danfoss, the company behind this foundation and one of the leading manufacturers of components for HVAC, equipped the hotel accordingly.

A wide range of I/O components from Beckhoff, including 1,170 analog and 712 digital I/Os as well as 43 BACnet MS/TP EL6861 EtherCAT Terminals and 7 M-Bus KL6781 Bus Terminals, are used to network the Danfoss solutions.

In addition, a total of 48 Embedded PCs from the CX8091, CX9020 and CX5020 series in the large, scalable Beckhoff product portfolio are used as BACnet-compliant floor or equipment controllers.

They provide the PLC functions for the building climate control and integrate them with the hotel's building management and booking system.

According to the Danish building regulations (BEK2020), which is two levels higher than the requirements to the hotel at design freeze in 2015, buildings may consume a maximum of 25 kWh/m² of energy, which is equivalent to a CO₂ neutrality of 75%.

Hotel Alsik is designed to even slightly exceed these specifications with a CO₂ neutrality of close to 76%.

The energy frame for the hotel is designed to be four times better than the requirements to the hotel at design freeze in 2015.

"Our vision from the beginning was to create a state-of-the-art hotel with the highest possible level of automation to achieve maximum comfort for our guests.

"In addition, we wanted to achieve the highest possible energy efficiency and a CO₂ neutrality of 76%. We want to be one of the most sustainable and CO₂-neutral hotels in Northern Europe at all times," says Michael Kurth, facility manager at Alsik Hotel.

Booking system communicates with the rooms

As a special feature, the hotel's booking system is connected to the HVAC system control via an IBI (Intelligent Building Infrastructure) solution.

As soon as guests check in at the front desk, the temperature in their room adjusts automatically and the ventilation system turns on. However, guests can also regulate the air in the room if they wish.

When they check out, all functions are automatically switched off again. "We don't just keep the heating and

ventilation systems running when a room is vacant. That would be a waste of energy," says Michael Kurth.

Energy efficiency is also being optimized in other ways. For example, shower heads and faucets are equipped with water savers. Waste heat from all areas, including the large wellness area, is reused.

Sensors inside and outside the building take all relevant measurements in real time, and the data is collected and processed to ensure the most efficient building operation possible.

Open standards are crucial

Close cooperation between Danfoss and Beckhoff since 2017 paved the way for Beckhoff as a supplier in these kinds of building automation applications.

For Hotel Alsik, automation solutions were needed that would be freely programmable and would work smoothly with Danfoss components, including valves, ventilation units (AHU, Air Handling Units), frequency converters, measuring devices and wireless components.

"The open standards supported by Beckhoff allow us to reach our goals and create solutions tailored to our requirements. In addition, Beckhoff has already developed a software function block for the NovoCon digital valve from Danfoss, which can be used to collect a wide range of data. This makes it easier for us to configure the controller.

"Beckhoff has also developed special programs and protocols for controlling our wireless components. The close cooperation since 2017 has strengthened our choice of Beckhoff as a supplier for Hotel Alsik. We know the stability of their solutions and the innovative power of their employees," Michael Kurth concludes.

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Bringing Solar Power to Reservoir Monitoring

Remote monitoring has brought about many benefits for utility managers, but how can telemetry devices be used to monitor sites that have no power infrastructure?

Ian Loudon from Omniflex discusses how solar powered wireless telemetry systems are a cost-effective, secure and reliable solution for remote reservoir monitoring.

Whether it's a single water tank or a large water dam, powering a monitoring system on a remote site, several kilometres away, with limited access to grid infrastructure is challenging.

Often, these sites go unattended for long periods of time and vulnerable to overfilling. Because these systems are critical to ensuring continuity of supply and the preventing overflow and waste, water utility managers often must fund costly infrastructure projects to support installation.

Because manual inspections cannot be feasibly carried out regularly on a remote reservoir, utility managers will feel caught between a rock and a hard place when it comes to balancing cost, security and efficiency. So, what is a suitable solution?

Simply solar

It's a misconception that all solar powered devices require an infrastructure. Yes, it was once the case that solar panels, battery chargers, back-up power supplies and telemetry devices were fitted separately in costly and complex installation projects.

However, with a growing reliance on automation and the need for monitoring devices to protect assets, new solar powered telemetry systems have been developed that are cost-effective and easy to install.

Device manufacturers are now making programmable RTUs with integrated solar charge regulators in small footprints. These RTUs have terminals that directly plug in to the batteries, so all the system requires is for the device to be connected to a solar panel and a backup battery.

Water utility managers can save considerable costs in upgrading the existing infrastructure by using devices such as Omniflex's Teleterm S3 Series, weighing just 350 grams.

Being solar powered, the device does not dissipate as much heat as mains powered electronics.

This, coupled with its compactness, allows it to sit comfortably in a secure, weather-proof IP 67-rated enclosure with its backup battery.

Considering the concerns

It's understandable that reservoir managers will have concerns over the efficacy and reliability of solar powered devices.



Power budgeting for batteries is a particular design constraint and battery selection is made considering worst case scenarios.

For example, on days where there is less sunlight, panels can't produce charge at maximum capacity and the batteries must take up the slack for repeated charge and discharge cycles.

However, modern batteries have advanced quickly and now have greater tolerance for

deep discharge cycling. This allows more technology to be deployed in these power constrained applications.

Battery life concerns have been considered by device manufacturers. For example, the S3's power consumption is low, at just 35 milliamps at 12 Vdc.

To save power, the devices are programmed to store data locally and only transmit intermittently on a cyclic basis. On a reservoir you might want to know the usage profile over a 24-hour period.

The S3 series can be programmed to take a reading every hour, but report back every once every 24 hours, saving power.

All data is backed up and secured on a SD memory card, and power is used sparingly making the Teleterm S3 the ideal deployment for reservoir monitoring.

To avoid uncertainty when power is low, an internal backup battery is provided for the processor, to power the real-time clock and keep synchronisation.

If the external main batteries were to fail, the backups allow the device to shut down gracefully without corrupting any stored data.

When communication comes back on, this data can then be securely transmitted back to the control room either via a cloud-based Data2Desktop network or license-free band radio.

Solar powered devices will continue to push the boundaries of what remote monitoring systems can offer.

For remote locations where power is limited, safety is critical and cost-effectiveness is desired, water utility managers can be rest assured that their system remains reliable and secure in any eventuality.

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Sensor Technology Now in Use in Explosion-Protected Areas

Automation is a key factor in ensuring that a plant is able to achieve a high level of productivity. However, implementing automated processes in a plant requires suitable tools and components.

Reliable sensors are among the most important of these tools.

For example, these sensors help to monitor processes, detect and pass on information regarding errors, and control process flows.

To enable customers to use Pepperl+Fuchs sensors in explosion-protected areas, the company has made a range of selected factory automation sensors suitable for use in Zone 1 or 21, and 2 or 22.

Digitalisation as the Basis for Automation

The digitalisation of process information is vital to enabling the implementation of automated processes. Only by digitally processing information can we remotely monitor statuses, carry out measurements, and check maintenance documentation.

Supporting devices, such as sensors from Pepperl+Fuchs, are used to digitise analog information and signals. These devices record, analyze, and convert the process information, then use a suitable interface to pass this information on to a central control interface.

Technology that has long been considered standard in factory automation is now gradually making its way into process automation and therefore explosion-protected areas as well.

Sensors used in these areas should be capable of simplifying sensitive process flows and increasing safety. Mechanical integration of sensors should therefore be simplified and standardized wherever possible.

Automation of the Process Industry

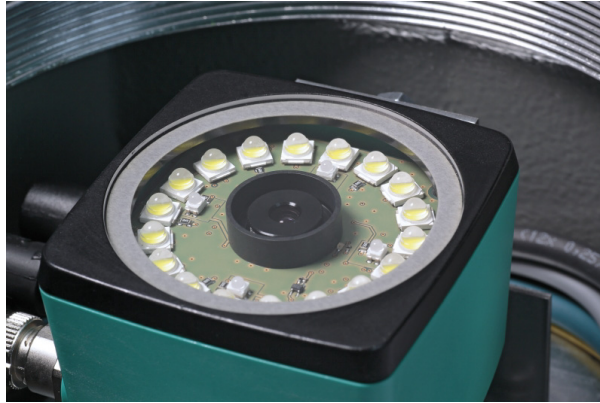
Advancements in the automation of process plants have resulted in changes to customer requirements. It is becoming increasingly common for plants to be networked and automated, which subsequently increases the complexity of explosion protection.

The complex requirements for explosion protection are not due to changes to processes in particular, but rather they are due to the changes in technical capabilities in general.

In turn, this means that approaches to problem solving are constantly changing, thus increasing the need for solutions that use tried-and-tested industrial sensor technology, including for explosion protection.

One thing that is clear is that sensors that increase the productivity and safety of plants in factory automation can also be used in process automation. This results in increased customer requirements for hazardous areas requirements that can be met using sensor technology.

Difficulties implementing this technology are often due to the significant purchase and maintenance costs of sensors, and especially the complex approvals and certifications required for explosion protection.



Customers often want sensors to be fitted in potentially hazardous locations, posing even greater challenges. Based on this premise, our engineers have developed the ideal solution for optimising customer processes.

This is demonstrated by a project undertaken with a manufacturer of fall protection systems for filling tankers with liquids. Fall protection systems are necessary because the process of filling tankers with liquid

chemicals is not fully automated, instead it is always carried out by workers on a platform.

This means that one wrong decision by an individual can have far-reaching consequences for people and the environment.

Pepperl+Fuchs helped these customers to implement the existing process for non-hazardous areas in hazardous areas. During this process, the R2000 2-D LIDAR scanner monitors the position of the fall protection device. The scanner is mounted under the platform railing and scans the area below the device.

Before the filling process, if the personnel lower the lifting platform too close to the tank carriage below, the scanner triggers a dual warning signal—a flashing light and audible signal.

In addition, the movement of the platform is automatically stopped to allow the personnel to react and use the controls to move the lifting platform into the right position.

This eliminates the risk of damage to lifting platforms and railings and even eliminates the risk of crashes, which often result in injury to personnel.

This process was implemented in hazardous areas by housing the scanner in an Ex d aluminum housing with an integrated viewing window. The scanner is installed in the housing at a 15° angle to prevent refraction from scattering and distorting signals.

This guarantees that the scanner is fully functional. The solution was approved for hazardous zones 1, 2, 21, and 22.

This solution allowed the customer to maintain existing structures on the plant and, in turn, enabled its customers to safely monitor the filling process for chemical substances, even in hazardous areas.

Versatile Applications for Sensors in Hazardous Areas

The use of sensor technology is becoming increasingly common, even in harsh environments such as oil platforms. An example of this is an oil platform in Malaysia. To increase safety for its employees, the oil company was searching for a solution that was capable of enforcing access restrictions for critical areas and documenting employee locations.

Pepperl+Fuchs developed a solution by working together with a tracking software company that specializes in this type of application.

The software is visualized using a human machine interface (HMI) device that is connected to the central computer. Persons are recorded by a radio frequency identification (RFID) system,

which is housed in an Ex d housing and is therefore specially approved for use in potentially explosive environments.

Just like in any production facility, employees must first register their presence using a tag to access each area of the oil platform. All process-related information is stored locally on the tag itself, thus enabling track-and-trace applications. Unique identifiers allow raw materials, products, or, in this case, personnel, to be assigned and tracked.

The backend software determines whether the employee is authorized to access the area in question. If so, the software unlocks the relevant cabinets and doors.

The software simultaneously documents the employee's current location. This is particularly important in emergency situations.

When an alarm is triggered, information about the exact location of personnel is essential for evacuation purposes.

Other sensors are also suitable for use in hazardous areas—for example, sensors using pulse ranging technology (PRT) for object detection. This same technology is also used by the R2000. The sensors are installed in Ex d housings to allow them to monitor a wide variety of different processes.

A powerful light source in the sensor emits short pulses that are reflected by the target object and then captured by a highly precise, light-sensitive receiver element. The distance to the target object is then calculated from the values recorded.

A Norwegian manufacturer of hoses and flexible tubes for oil production uses this technology to determine the fill level of its storage facility—as you would expect, this involves hazardous areas.

The VDM28 sensor installed in the Ex housing enables a measuring range of up to 50 m from the reflector. If the fill level is not reached, this triggers automatic processes for filling the position or ordering more materials.

Inclination sensors such as the INX360 are placed in Ex d housings, enabling them to be used in tunnel drilling plants for monitoring the angle of the drilling arm. 360° control allows any unwanted movement of the drill to be detected and limited immediately.

The unique technology used means that the measurement result is not influenced by the changes in speed that are unavoidable in mobile applications. The error-free inclination detection in this dynamic application therefore enables high-precision drilling.

Stationary readers such as the OPC120 are used to read 1-D and 2-D codes quickly and reliably in hazardous areas. The devices are so precise that even reflective surfaces can be reliably recorded.

Pepperl+Fuchs not only offers “engineered” solutions for specific customer requirements and applications. The company also offers standardized, “off-the-shelf” products that are capable of simplifying a number of process operations when placed in Ex d enclosures. A selection of standardized and certified sensors that are permitted for use in zones 1, 21, 2, and 22 and have been released for sale.

In addition to the aforementioned INX inclination sensors, OPC readers and VDM28 distance sensors, IQH and IUH read/write heads, and VLM350 laser light sensors are also available. These devices have been reinforced for use in the approved areas and are able to help companies take the next step toward automation.

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HOT High Temperature Infrared Thermometer



Comtest is offering the highly accurate Fluke 572-2, high temperature, infrared thermometer for extreme heat conditions over long distances.

Typical applications are:

- **Manufacturing:** repair and maintenance of motors, pumps with data logging;
- **Electrical HVAC installation:**

repair and maintenance of panels, fuses, circuit breakers, compressors, ducts, and remote access vents;

- **Power utility:** measurement of nodes between power transmission and distribution;
- **Metals:** maintenance and quality control where there is monitoring of temperature during the process; and,
- **Petrochemicals:** maintenance of the exterior of the kiln (temperature), monitoring the surface temperature of the reformer tubes.

The Fluke 572-2 measures between -30°C to 900°C with ±1% accuracy. Measurements from further away are accurate with a 60:1 distance-to-spot ratio with dual laser sighting for fast, accurate targeting. It displays current temperature plus MAX, MIN, DIF, and AVG temperature with adjustable emissivity and predefined emissivity tables.

The unit features a multiple language (user select) interface and is compatible with standard K-type mini-connector thermocouple probe (KTC), and is shipped with a USB 2.0 computer interface cable; FlukeView® Forms Documenting Software and the standard Fluke 2-year warranty.

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Installation Testing That Protects Appliances, Wirelessly Shares Data



Growing concern for public safety and the increasing complexity of today's fixed electrical installations in domestic, commercial and industrial premises places extra responsibility on electrical test engineers who are charged with verifying conformity to South Africa's Certificate of Compliance (COC) safety standards.

SA's Electrical contractors are well versed in the verification requirements of the COC, and that the audit should be carried out in the following sequence:

1. Visual inspection
2. Testing of the following:
 - continuity of protective conductors;
 - insulation resistance;
 - protection by separation of circuits;
 - floor and wall resistance;
 - automatic disconnection of supply;
 - polarity;
 - functional performance;

In addition to this the following tests are under consideration:

- electric strength test;
- voltage drop.

The basic requirements for test equipment used in installation testing consists of general requirements for test equipment, specific requirements for combined measuring equipment and the specific requirements for measuring/testing:

1. Insulation resistance
2. Loop impedance
3. Resistance of the earth connection
4. Resistance to earth
5. RCD performance in TT and TN systems
6. Phase sequence
7. Insulation monitoring devices for IT systems

The Fluke 1660 Series Multifunction Installation Testers are measuring equipment which fully fulfil the requirements as described above, and the three different models in the series comply with specific parts of this norm. They are specifically designed to carry out the tests specified, and all local standards and regulations in the safest and most efficient way.

Comtest is offering the Fluke 1660 Series Installation tester with Fluke Connect®, which includes the 1664 TM Installation Tester - the only installation tester that helps prevent damage to connected appliances during insulation tests, and also allows users to send test results wirelessly via smartphone directly from the field.

They are lightweight, and feature a unique ergonomic 'curved' form that, when carried by the neck strap, makes operation in the field more comfortable.

• **Work safer, protect the installation under test, share results**

The Fluke 1664 FC is the only installation tester that protects connected appliances from damage during insulation tests, and allows users to share test results wirelessly by smartphone with coworkers or customers.

• **Insulation PreTest** The Fluke 1664 FC Installation Tester is also the only tester with patent pending "Insulation PreTest". If it detects that appliances are connected to the system during test, it will provide a visual and audible warning and stop the insulation test, avoiding potentially serious/costly mistakes and eliminate accidental appliance damage.

• **Fluke Connect®, ShareLive™ calling and Fluke Cloud™ storage ShareLive™ video calls** Users save time by eliminating data entry by wirelessly syncing measurements directly from the 1664 FC and share with a remote team using Fluke Connect®. Having access to measurements simultaneously at the inspection site and the office allows faster decision making and real time collaboration between team members.

Cloud storage allows users to retrieve stored results whether in the office or out in the field, to make urgent decisions in real time. Data can also be imported into Fluke DMS to process and generate certificates.

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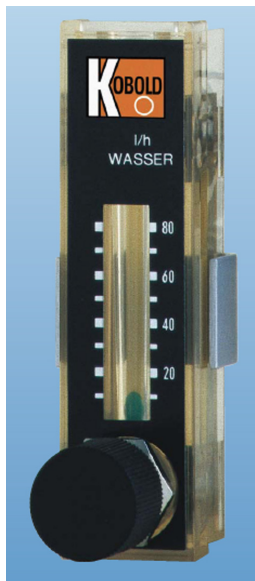
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Flow Meters for Very Low Flows



Instrotech is offering Kobold model KSV flow meters and switches for very low flows with and without control valves – so even the lowest possible liquid or gas flow rates can be measured.

Specifically for liquids or air, the KSV operates on the suspended float principle. The direction of flow is from bottom to top, and the installation position is vertical.

The indication point is the upper edge of the ball.

The device has been designed as a simple, and thus economical measuring system. The optional needle valve allows economical control and the device has been designed for panel mounting.

Kobold's KSV flow meters are acid and

caustic-proof, made of polycarbonate and brass or polysulfone and stainless steel materials.

They are highly suited for advanced applications in medical technology because these units are sterilizable, operating at temperatures of +120°C.

They can also be used for a wide range of applications in the analytical instrumentation field, within production and environmental monitoring, as well as in laboratory measurement and monitoring technology.

They are shock resistant, small (panel cut-out 93 + 0.5mm x 23 + 0.5mm), lightweight and very simple to install.

Available measuring ranges include:

- Water 0.25-1.5...10-80l/h
- Air 20-80 NI/h...0.5 – 2-5Nm³/h
- Accuracy: $\pm 6\%$ of full scale

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“One Size Fits All” HMI Platform for ATEX and IECEx Zone 2/22 and Non-Ex Areas

Pepperl+Fuchs has added a new range to its successful modular VisuNet series.

With the new VisuNet FLX, the clue is in the name—FLX stands for flexibility, with a modular system that can be individually configured as required.

In the process industry, the requirements for product quality are extremely high. HMI devices, which are used here for operating and monitoring the processes, also have to meet the highest demands.

With this in mind, Pepperl+Fuchs already developed the modular VisuNet GXP for Ex areas back in 2016. This success story is now being continued with the new VisuNet FLX for Zone 2/22 and non-Ex areas.

The modular system is the perfect solution for even the most demanding application scenarios.

This additional range supplements the existing VisuNet GXP series and therefore enables a uniform solution from Zone 1 to non-Ex areas.

A Highly Flexible Modular System

The fully modular design of the new platform allows for highly customised configuration of the HMI systems and enables fast, simple, and cost-efficient service in the field.

Each user can choose from a wide range of technologies, mounting options, and peripherals.

Every HMI system consists of at least one computer and display unit, which can be individually configured.

In order to optimally support each application, the VisuNet FLX can be purchased as a thin client, PC, or direct monitor.

It is then available in three basic configurations according to the application requirement.

The HMI System or Basic Configuration 1:

Various display options, including Full HD, are combined with a thin client, PC, or direct monitor unit. The housing is made of stainless steel, with a design that is suitable in pharmaceutical applications.

Depending on the requirements, the system can be freely installed in the production plant on a stand using additional adapters or on a wall bracket.

The Panel PC or Basic Configuration 2:

This allows various display options to be combined with a thin client, PC, or direct monitor unit for panel mounting.

The Box PC or Basic Configuration 3:

This consists of a stand-alone PC or a stand-alone thin client for direct installation in a switch cabinet.

For cost-effective thin client applications, all basic configurations are equipped with Celeron processing units. For more CPU-intensive applications, i5 processing units are available from Intel's seventh-generation “Kaby Lake.”



Not only does this computer technology provide high performance for future software features, it also allows components to be easily replaced during upgrades.

Overall, therefore, it is a safe investment in the future.

For the Highest Requirements and Any Installation Situation

The new platform has been perfectly aligned to the needs of the fine chemicals and pharmaceutical industry. This means the VisuNet FLX easily meets the high requirements of one of the most regulated industrial sectors.

For instance, the devices can be used for vaccine production in pharmaceutical clean rooms. To this end, the HMIs feature special stainless steel housing and are resistant to a variety of chemicals and cleaning agents.

They are also suited for pharmaceutical applications, as the lack of steps, edges, or horizontal surfaces make them easy to clean.

Such plants are often multi-purpose production plants that produce a wide range of products. For instance, solid or liquid raw materials are mixed in steel-encapsulated containers, at temperatures from -50 °C to 160 °C under pressure or a vacuum, and react to pharmaceutical products.

In order to monitor these processes, not only do the devices have to comply with GMP guidelines, but they also need to handle a whole host of installation situations.

The new platform offers complete installation flexibility and is therefore able to cover all installation requirements of the plant with a single-device series.

Generally speaking, ceiling or wall mounting, panel installation, pedestals or variants with duplex monitors are all possible.

Any features not already covered by the large number of standard configurations can be implemented as an individual solution in one of the Pepperl+Fuchs Solution Engineering Centers (SECs) located around the world.

Complete Process Availability

Plants in the chemical industry usually run around the clock in three-shift operation. In order to ensure this continuous production, a key focus within the industry is the availability of all operator stations and the mean time to repair.

Thanks to its modular design, the FLX, like the entire VisuNet family, has a clear advantage over monolithic devices.

The latter have to be completely dismantled, sent in and repaired or replaced as necessary.

With the modular VisuNet device series, individual components can be replaced on-site by plant service personnel.

This reduces downtime to a minimum and is extremely cost-effective. Plant operators can either stock relevant components themselves or quickly obtain them from a nearby spare parts warehouse.

By using standard RDP (Remote Desktop Protocol), the HMIs not only offer high reliability but also great flexibility. The VisuNet FLX is therefore compatible with all standard process control systems and MES systems.

Due to its wide range of configuration options, the FLX is perfect for a large number of possible applications.

The devices were originally designed for the industrial indoor applications described above, such as vaccine production in pharmaceutical clean rooms and for use as an operator station for monitoring and controlling processes under GMP guidelines in batch-oriented production in the pharmaceutical industry.

For special requirements beyond these applications, however, other versions are available as well, which can be used in ambient conditions up to the extended temperature range, along with versions with Zone 2/22 approval for other applications.

Choose between an industrial-grade HMI for applications at temperatures from 0 °C to +40/45 °C or a panel for operating temperatures from -20 °C to +55 °C. Both are optimally tailored to the needs of the (petro)chemical industry and to oil and gas applications.

Backward Compatibility Ensures Investment Security

For operators of large process plants, backward compatibility is another very important criterion. Since successor products are often not compatible with older HMIs, given the large number of devices installed, replacement and updating are often an unnecessarily high cost factor.

As with the GXP, backward compatibility is ensured at all times in the VisuNet FLX, such as through assembly compatibility and thin client technology, thereby ensuring a high level of investment security.

In short: The new FLX is the ideal complement to the flexible and cost-effective HMI operator stations already on offer in the VisuNet device family.

This now guarantees a consistent portfolio from Zone 1 to the switch room—everything from a single source.

With RM Shell firmware, all thin-client devices are also based on a common software philosophy with a focus on reliability and user-friendliness.

Due to the VisuNet control center, all HMI systems can be managed from an incredibly convenient central point. This ensures simple and uniform handling of the devices for users around the world.

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Quickly, easily and confidently monitor your equipments' partial discharge.

Partial discharge is a very serious issue that you would like to be able to monitor quickly and easily. Whether you are inspecting insulators, transformers, switch gears or high voltage power-lines, you need to be sure that you spot a problem quickly and early. Partial discharge that goes unchecked can cause blackouts, fires, explosions, or death from arc flashes. In addition, there's a significant monetary risk of downtime.

Fluke ii910 Precision Acoustic Imager

Key areas to scan for partial discharge

- Transformers
- High voltage power-lines or coils
- Switch gears
- Arrestors
- Busbars
- Breakers
- Capacitors



Learn More

Mini-Mobile Absolute Encoder for Construction and Agricultural Machinery



When it comes to construction machinery, whether agricultural technology or forklift trucks, design engineers are often challenged with space limitations in these applications to fit existing rotary encoders and measurement systems.

Measurement systems are often elaborately encapsulated to withstand weather conditions, jolts, vibrations, dirt or moisture. Finding a system that satisfies all technical requirements, is resilient, and which also offers just the right construction form, has in the past, proven to be an almost impossible balancing act, because the size of the measurement systems often exceeds the available installation space.

Siko's absolute miniature single-turn AH25S rotary encoder is cost-effective and flexible, provides a unique balance between high resolution, excellent functionality, a sturdy housing design and a minimal construction form.

It can be used in a number of ways, choosing from several analogue interfaces such as 4...20 mA, 0...10V or 0.5...4.5V, and is especially suited for agricultural equipment.

The rotary encoder has the advantage of the 'wear-free' magnetic measurement principle, thus resolving the entire 360° into 4096 measurement steps. This innovative technology, packaged in a sturdy die-cast case, of only 25mm diameter, can be used easily in applications with limited installation space.

Its special design ensures Protection Class IP65 over the course of a long product lifetime, making the AH25S rotary encoder particularly suitable for positioning tasks in mechanically demanding environments.

Siko's AH25S miniature absolute analog encoder features wear-free sensorics and has an easy-mount 8mm hollow shaft.

It operates within a range of -40 to 85°C, and has a high protection category of IP65.

It features voltage (0.5 ... 4.5 V, 0 ... 10 V), and current (0 ... 20 mA, 4 ... 20 mA) outputs and a 12 bit (4096) resolution over 360°.

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Custom Air Knives For Unique Applications

Air knives are an efficient and highly effective tool for blowoff, cooling, cleaning and drying in a myriad of manufacturing processes.

To accommodate the wide variety of unique problems manufacturers face, Exair can customize and tailor air knives to different specifications.

These air knife customizations can range from size, to shape, to material, custom mounting holes and dimensions.

They are created to solve distinct manufacturing problems not already solved by the industry's largest selection of air knives. For customers with space limitations, smaller lengths or skinnier profiles can be created.

In situations where the knife may need to be installed in a very defined spot, special mounting brackets, or additional/



custom sized air inlets can be provided to fit a current system.

For applications where stock aluminium, stainless steel or PVDF won't work, other material options such as CPVC or glass filled PEEK thermoplastic have been used.

Special marking requirements for tying knives to specific machines or critical processes can be accommodated.

Unique shapes and profiles, such as double sided or curved air knives, can also be the solution to certain specialized processes.

Air knives are available in Super, Standard and Full-Flow styles, and all versions can be customized to a customer's specific needs.

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Five Reasons Why Force Measurement is Important

WIKA has been an internationally recognised partner for all measurement tasks for many decades. The product portfolio includes pressure, temperature, force and level measurement, as well as flow measurement, calibration and SF6 gas solutions. In the following article, we would like to take a closer look at the measured variable of force. These five reasons show why force measurement is of particular importance.

Reason 1: Protection of people and machinery

Protecting people from harm is the highest priority in any workplace. Likewise, the machinery should remain undamaged in order to minimise downtime and repairs. In this context, force measurement ensures a safe working environment, especially through overload protection.

In cranes, for example, this prevents heavy loads from falling. With construction machinery and robots, on the other hand, uncontrolled machine movements are prevented. This makes it possible to work safely, and completely harmlessly, next to and with machinery.

In production lines, for example, the machinery is prevented from pulling, pushing or pressing unchecked, and thereby destroying both components and itself.

Another example is port logistics, for which WIKA offers a globally unique, certified system.

Added value: Safe working environment

Reason 2: Ensuring system stability and production safety

Just collecting data is not enough. The correct measured values are also required to be able to monitor processes seamlessly. Using force measurement in linear drives, for example, thus improves process control as well as automation, while simultaneously ensuring quality.

Force measurement also provides the right data for the correct functioning of brakes and drives, conveyors, presses and weighing systems. A crucial point here is to reduce running costs. The higher the quality of the measured data, the better the data analysis.

The planning of a tool change is thus more precise, so that changing it too early doesn't cause increased costs nor does unplanned maintenance cause longer downtimes. The savings in consequential costs alone pay for it many times over.

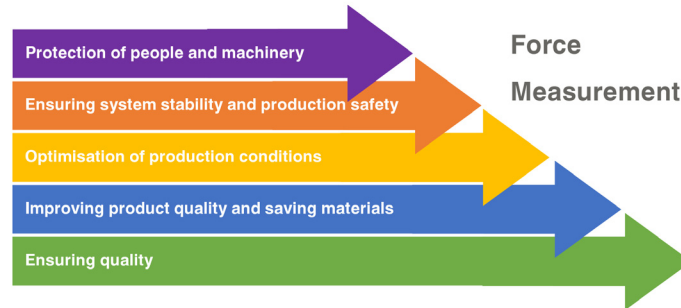
Added value: Full process control

Reason 3: Optimisation of production conditions

The savings potential, and thus the maximisation of profit, have already been mentioned in the previous section. Only through the optimal use of materials and machinery can margins be increased.

A key issue in manufacturing plants is machine availability. In addition to reducing downtime, the focus is on minimising maintenance costs.

A good example of this are welding tongs. With these, the contact force of the electrodes can be precisely monitored by using tension/compression force transducers.



In this way, optimum quality is permanently guaranteed and, at the same time, wear is minimised. Higher profits can also be achieved through saving time, for example, when containers are weighed "on the fly".

Added value: Maximum profits

Reason 4: Improving product quality and saving materials

The use of force measurement in welding tongs – as explained in the section above – is a very good example of improving product quality as well as saving materials. Force measurement provides the right data for the most accurate process control. As a result, machine tool wear is only minimal.

In addition, force measurement offers many other areas of application. For example, spreading fertiliser where this action is adapted to the soil conditions is one way to save material. This also protects the environment.

Furthermore, it is advantageous to know the (supporting) forces acting on mobile cranes. The vehicle's centre of gravity can thus be calculated exactly, which means that the safety margin can be reduced. In this case, loads can be lifted further, yet accidents, e.g. due to slipping or tipping, can be avoided.

Added value: Lowering costs

Reason 5: Ensuring quality

Finally, the use of force measurement also offers many advantages in the area of quality assurance, which has already been touched upon.

On the one hand, the machinery can be optimally controlled by registering the force. On the other hand, by recording the values, live as well as saving them for later use, conclusions can be drawn for specific batches.

In addition, the most precise force measuring instruments meet the highest requirements, for example, in materials testing machinery or in medical engineering. Incidentally, WIKA also offers a DAkkS-accredited calibration service for force measuring instruments.

Added value: Exact measured values

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Humidity Generator Calibrates Probes with Accredited 1,0% RH System Accuracy

The Fluke 5128A RHapid-Cal Humidity Generator is a portable, versatile humidity generator for calibrating a large workload of probes and loggers in the field or laboratory.

The 5128A is ideal for corporate and independent calibration labs where humidity measurement is critical to prevent spoilage of products, including pharmaceuticals, medical devices, semiconductors, chemicals, and food production.

The 5128A is lightweight and compact so technicians can easily take it to the field for thorough, reliable multi-point calibration of humidity probes and loggers.

In the lab, the 5128A reduces calibration time by at least 33 percent compared to traditional two-pressure humidity generators, which are slower to respond to humidity and temperature set point changes.

The 5128A delivers:

- Best-in-class system accuracy of $\pm 1.0\%$ RH for dependable humidity probe calibration



- Rapid humidity and temperature stabilization time for high calibration throughput
- Rate of change for temperature increase is typically $10^{\circ}\text{C}/\text{minute}$; for temperature decrease $1.5^{\circ}\text{C}/\text{minute}$.
- Rate of change for humidity increase is typically $10\% \text{ RH}/\text{minute}$; for decrease $5\% \text{ RH}/\text{minute}$.

- A six-point calibration can be done in two hours.

Easy maintenance

- A front-loading desiccant cartridge can be easily changed by removing the front cap and sliding in a new one.
- Only clean distilled water is needed to operate the 5128A.

The 5128A RHapid-Cal comes standard with an ISO 17025 accredited system calibration and is backed by Fluke Calibration's world-class metrology and support.

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Magnetic-Inductive Flow Meter FMI

This sensor is made entirely of stainless steel. It is EHEDG-compliant with a hygienic design.

All parts in contact with the product are FDA-compliant. Conforming to 3-A Sanitary Standard, with various hygienic process connections available.

- Process connection made of stainless steel 1.4404, optionally 1.4435 with inspection certificate 3.1.
- Process connection optionally with Ra < $0.4\mu\text{m}$, electropolished
- Electrodes made of stainless steel 1.4404 with inspection certificate 3.1.
- CIP-/SIP-cleaning up to max. 130°C (max. 30 minutes).
- Wide selection of process adapters.
- High measurement accuracy even at low flow rates.



- Simple and user-friendly parameterization.
- Automatic empty pipe detection avoids undefined readings for empty pipes.
- PFA lining for maximum resistance to

aggressive substances such as acids and bases.

- Vacuum-tight, rigid meter tube lining, even at high temperatures.
- Swivelling housing head with illuminated graphic display.
- Operation of device via optical keys without opening the housing.
- Minimal maintenance and care requirements.
- Pharmaceutical version available with all required certificates.

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Hydraulic Deadweight Tester for Calibrating Pressure Measuring Instruments

Deadweight testers are accepted as the most accurate method for the calibration of electronic or mechanical pressure measuring devices.

Instrotech is offering the LR-Cal LDW series of deadweight testers, which are available in the ranges from 10 bar up to 1400 bar.

The direct measurement of pressure (according to its definition as a quotient of force and area) ensures high accuracies and long term stability.

These testers are used extensively in calibration laboratories in industry, standards institutes and research facilities.

The LDW series are ideally suited to on-site use as well as for service and maintenance purposes.

The customized assembly allows set up of a complete, compact system consisting of a universal basement and the measuring systems (piston/cylinder units).

The high quality piston/cylinder units are manufactured from tungsten carbide which is known for its small temperature co-efficiency. Fast and uncomplicated changes of the measuring range are possible using a flat spanner.

In order to generate the individual test points, the piston/cylinder system is weighted with mass loads which are also



calibrated and specially adapted to the required application.

The basement is fitted with the corresponding system, depending on the measuring range of the device under test.

The pressure is set via an integrated pump or, if an external pressure supply is available, via control valves (pneumatic models).

For fine adjustment, an adjustable volume with precision spindle is available.

The weight applied is proportional to the desired pressure and provided by using optimally graduated weights.

As soon as the measuring system reaches equilibrium, there is a balance of forces between pressure and wheel

weights.

Due to the excellent quality of the system this pressure remains stable over several minutes, so that, for instance, adjustments of the device under test can be carried out without any problems.

For users who require a digital pressure display for connection to the Deadweight Tester, Instrotech can supply the Keller Leo2 that offers accuracies of 0.1%. An intrinsically safe version is available.

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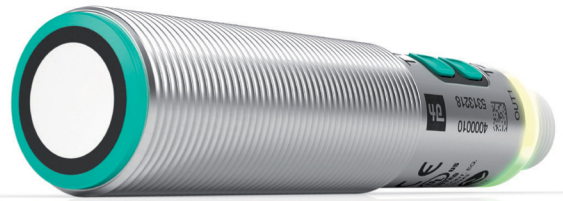
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