What's New in PROCESSING

Instrumentation, Process Automation, Chemical, Electrical, Analytical

Your automation, our passion.

PEPPERL+FUCHS
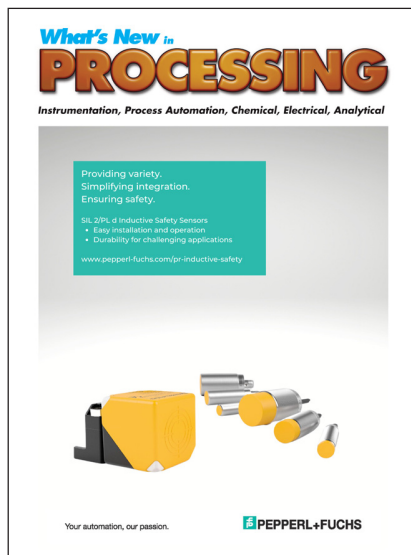
New Inductive Safety Sensor Portfolio

The new family of safety sensors from Pepperl+Fuchs - the inventor of the inductive proximity sensor - includes four cylindrical and rectangular series with cable and plug connection. The sensors are TÜV-certified in accordance with the Machinery Directive (EN 13849) Performance Level PL d, Category 2, and SIL 2.

They are used to safeguard machines and plant components as well as for reliable position detection within this environment. Inductive sensors with an increased temperature range, as well as increased EMC resistance and E1 approval for the use of mobile machinery and vehicles in safety-critical areas, round off this new portfolio.

These safety proximity sensors do not require a special coded target and can therefore be used with standard metal actuators. The sensors from Pepperl+Fuchs have no blind zone and can therefore be mounted easily and without any additional adjustment.

The sensors are equipped with standardized OSSD outputs (Output Signal Switching Device) for signals and diagnostics that can be connected to a safety module or a corresponding control panel.

The inductive safety sensors from Pepperl+Fuchs have very high characteristic safety values due to the electronics used.

As a result, the regular functional inspections are required significantly less often, and integration into the safety loop is notably more straightforward.

At a glance:

• Inductive sensor portfolio consisting of various cylindrical and rectangular designs for flush and non-flush mounting
• Inductive sensor technology, use of standard metal actuators
• No complex adjustments required during installation and operation as there is no dead band in front of the sensor
• Approval in accordance with the Machinery Directive Performance Level PL d, and Functional Safety SIL 2 (Category 2)
• Mobile equipment versions with extended temperature range and E1 approval are available.

Kgomotso Makhobela
Pepperl+Fuchs
Tel. +27 10 430 0238
kmakhobela@za.pepperl-fuchs.com
www.pepperl-fuchs.com

Magnetic-Inductive Flow Meter

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 or both

• 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 encapsulated, which guarantees permanently reliable, precise measuring results even in very harsh environments with 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.

• Always accurate: Automatic signal processing ensures correct measured values even when changing media (e.g., milk/CIP cleaner)

• 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: ±0,5% ±2mm/s

• For liquids, mashes and pastes with a conductivity of > 5mS/cm

• Process temperature up to 100 °C (212 °F) permanently

• CIP-/ SIP-cleaning up to 130 °C (266 °F) / max. 30 minutes.

Raymond Karsten
Instek Control
Tel. +27 12 998 6326
raymond@instek.co.za
www.instek.co.za

PlantPAx Is Well Positioned To Drive Sustainability

David Rapini, PlantPAx global business manager at Rockwell Automation

Just as too much of a good thing can be wonderful, PlantPAx isn't resting on its many advantages and achievements in recent years, and is instead building on its gains to give process industry users even more capabilities, efficiency and productivity.

This was the main theme kicking off a Process Solutions Users Group (PSUG) meeting at the recent Rockwell Automation Fair 2021.

"As we've learned lately, the most important thing is personal networking, so we're trying to make the best use of the privilege of being together this week," said Jim Winter, global process business director at Rockwell Automation. "And wow, it's been a challenging couple of years. We're seeing workforce changes with many professionals retiring early. Plus, we're finding new people rely on overview courses and just-in-time (JIT) learning. Capital and operating costs are shifting, too, with just about everyone moving from thinking, designing and commissioning to considering 20-30 years of lifecycle costs and total operating costs (TOC).

"Finally, recent supply chain disruptions and market volatility are driving manufacturers to seek greater flexibility and modular manufacturing solutions, which is good news for our PlantPAx distributed control system (DCS). Everyone's also seeking more sustainable operations, whether they're making or using water, gas, electricity, steam or renewables, and PlantPAx is well-positioned for those applications, too."

Users ask, PlantPAx provides

In response to input from the PSUG community, Winter reported the latest release of PlantPAx 5.0 in late 2020 featured a variety of much-desired capabilities, including:

- FactoryTalk Logix Echo emulation,
- IEC 62443 certifications with reference architectures,
- 50% fewer servers needed by larger PlantPAx systems,
- Object alarm configuration with one click,
- Library migrations via simple firmware flash,
- New PID object in controller, and
- Organization, ownership and arbitration of equipment.

Up to now, Winter added that PlantPAx and its users have also notched some impressive gains, mainly in the areas of reliability, productivity and profitability:

- Natural gas system integrator BXG stated that, "Standardizing on PlantPAx across the company allowed our customer to focus on the improvement of its natural gas process. Being able to do this, unscheduled downtimes dramatically improved."
- System integrator ACC added that, "PlantPAx Design provides the out-of-the-box experience for accelerated design and reduced risk with a fully integrated system from control to information. Its standardized code lets users get up to speed and into production quicker."

- Mining equipment provider Proensi reported, "PlantPAx improved silver tailings recovery from 15% to 70%."

More advantages-new controller and I/O

As if its previous and upcoming gains weren't enough, PlantPAx is also working with more open technologies, pursuing low-code/no-code capabilities that let users employ software building blocks, and participating in digital transformation initiatives that will further decrease downtime, increase productivity, and make its users even more competitive, according to David Rapini, PlantPAx global business manager at Rockwell Automation.

All these capabilities are already getting an assist from Rockwell Automation's release last October of two new superset, conformally coated controllers, namely ControlLogix 1756-L85EP and CompactLogix 5380. They feature native objects, integrated HART, ownership and arbitration, reduced architectural footprint, regulated industry compliance, automatic hardware diagnostics, alarms in object, harsh environment readiness, analytics enablement, and cybersecurity.

"Embedded objects are integrated onto the design environment of these controllers, so they're faster to engineer and commission, easier to upgrade and are future-proof, enabling consistency from plant to plant because there's only one place to configure them," explained Rapini. "PlantPAx and our new controllers let users focus on where their value is, instead of having to maintain code. We've made it consistent in the firmware. In fact, they don't even need to look at the code, and can see what's happening in the graphic displays. This also eases migration, which doesn't have to be a coding exercise anymore."

Rapini reported the two new controllers also have highly integrated HART communications. Users can add and replace HART devices online; indicate HART signals and connections on the Logix Designer I/O tree; include integrated device diagnostics; and provide PlantPAx connection type selection. As a result, benefits include intuitive integration; devices diagnostics included in PlantPAx data type connections; and out-of-the-box faceplate rendering of HART content.

"To further aid digitalization efforts, PlantPAx is also offering System ID, which is a unique identifier for your installed architecture," added Rapini. "This allows simplified license management, consistent user experiences, especially when working with tech support, and better lifecycle management."

In 2022, Rockwell Automation will also be releasing a new family of Configurable I/O, FIEX5000HA. It has full redundancy capabilities including Networks, Interfaces, Backplane Models, Wiring for Universal I/O per channel configuration for flexible deployment.

Michelle Junius
Rockwell Automation
Tel. +27 11 998 1000
mjunius@ra.rockwell.com

KV Controls (PTY) Ltd. Reg No: 2016/378940/07

KV CONTROLS
Control & Isolation Valves

Life Is On | **Foxboro**
by **Schneider** Electric

Foxboro® Valve Positioner SRD998 Intelligent Control

CVP**PLUS**

99.8
Position-[%]

The intelligent positioner SRD998 is designed to operate pneumatic valve actuators and can be operated from control systems, controllers or PC-based configuration and operation tools such as the FDT/DTMs or VALcare™. The enhanced functionalities of the SRD998 Intelligent Valve Positioner enable a significant reduction in commissioning time and reduction of the total installation cost.

The new device offers an improved control performance with or without external accessories such as volume boosters for optimal efficiency of your process. The modular design makes maintenance simpler, and the advanced technology increases the total life time of the device.
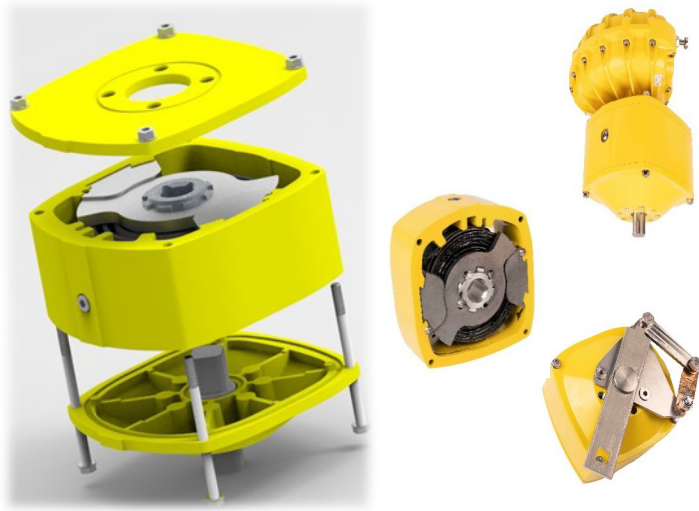
SRD998 Basic Diagnostic Version at a Glance

- **Fast Commissioning** with user-friendly LCD, rotary selector and intuitive menu

- **Full Valve Compatibility** with improved control performance and largest range of mounting kit and accessories

- **Seamless DCS Integration** – based on HART® 7

Now in Stock !!

www.kvcontrols.co.za
Tel: 016-100-4592

New Patented Reversible Spring Unit

- Patented design
- Internal spring stops - No need for a Keeper plate
- End stop redundancy gives higher SIL data
- Can be converted from male to female drive or vice versa.
- Can be converted to a manual fail-safe spring unit or a fire-fail safe unit.
- Stainless steel output shaft as standard
- ATEX Category 2 approved as standard
- Option for both male / male or female / female drive for machinery applications.

ISO Adaptor and special output shafts possible to allow fitting to more devices. Reversible Spring Return Part Numbers and Torques.

The Model 07 reversible spring unit is available to order as clockwise or counter clockwise but can also be ordered as the spring core assembly only without the actuator mounting plate or the spring output flange for greater stocking.

Kinetrol is pleased to announce the introduction of a new patented reversible spring unit. Initially available for the Model 07, the design takes the expertise and low stress range clock spring to a new level allowing the direction of the spring to be reversed with only simple tools and can be completed in minutes.

Features and Benefits:

- Fully reversible direction from clockwise to counter clockwise or counter clockwise to clockwise
- No air or special tools required and can be completed in minutes.

Zjaan Haarhoff
Rotatech
Tel. +27 11 708 6455
zjaan@rotatech.co.za
www.rotatech.co.za
LinkedIn: www.linkedin.com/company/rotatech-sa/

Digital Pressure Gauge For Refrigeration Performance Monitoring

Instrotech is offering Keller's digital pressure gauge for refrigeration systems. The exact vapour pressure curves of five different refrigerants are stored in Keller's dV-2 Cool digital pressure gauge.

This enables the prevailing cooling temperatures in closed cooling circuits to be derived and displayed by the integrated microprocessor.

Two versions of the digital pressure gauge with stainless steel measuring cell are available: for absolute pressures within the ranges of -1 bar to 40 bar, and -1 bar to 80 bar.

These measure within the compensated pressure range of 0 °C to 50 °C with extreme accuracy and with a tolerance of ± 0.1 %FS. Because of the high resolution of 1 mbar and 2 mbar, the dV-2 Cool pressure gauges can also be used for measuring leaks in a vacuum.

The measurements are clearly legible on the LCD display, which can be rotated to the best viewing direction after installation.

Depending on the environment, a special rubber surround is available for protection.

Two buttons (Select/Enter) are available for operating the instrument and setting parameters (e.g. selecting the type of refrigerant). Users can also switch between units of bar/°C and psi/°F.

After switching on, the battery-operated instrument remains active for a period of 15 minutes and then goes into standby mode.

Continuous measurements can be made for approximately two months without changing the batteries.

Instrotech
Tel. +27 10 595 1831
sales@instrotech.co.za
www.instrotech.co.za
Facebook: www.bit.ly/3rj1SWY
LinkedIn: www.bit.ly/3rkfKjL
YouTube: www.bit.ly/3irItiy

Electronic Pressure Gauges For Areas Subject To Explosion Hazards (Ex Areas)

Instrotech is offering Keller's range of no less than five intrinsically safe electronic pressure gauges for use in areas subject to gas explosion risks.

The type approvals are compliant with the ATEX Explosion Protection Directive regarding explosive gases.

The electronic design of these devices is trimmed to minimise energy consumption, so it is also possible to replace the batteries inside areas with explosion risks.

The simplest version, model ECO 1 Ei, offers high resolution and reproducibility for both measuring ranges (-1…30 bar and 0…300 bar), together with accuracy (typical) of 0.5 %FS and an integrated min/max memory.

The application range as per the ATEX directive is defined by identification markings Ex ia IIC T5 or T6.

Keller's type LEO 1 Ei and LEO 2 Ei electronic pressure gauges feature microprocessor-assisted compensation to ensure an extremely narrow total error band (including temperature errors) of only <0.2 %FS over the entire range of operating temperatures from 0 ... 50 °C.

The zero point can be selected freely within the four measuring ranges between -1…3 bar and 0…700 bar.

An automatic switch-off function guarantees energy efficiency. Both models feature sampling rates of 2 Hz and integrated min/max memories.

The special feature of the LEO 1 Ei is its additional memory for peak values. In peak mode (as it is known), even extremely short-lived peak values for

system pressure are registered with a sampling rate of 5'000 Hz. These values are often critical for the lifetimes of hydraulic plants.

For both these pressure gauges, the application range as per the ATEX directive is defined by identification markings Ex ia IIC T5 or T6.

Another version of the "Leo" type electronic pressure gauge, the LEO Record Ei, is equipped with an integrated data memory to record pressure and temperature progressions in the measuring medium.

Outside of areas with explosion risks, the data can be transmitted via an RS485 interface to a PC, for evaluation with the Logger 4.X software (available free of charge).

The LEO Record Ei can register pressures of up to 1'000 bar with a total error band of ±0.1 %FS.

With a capacitive sensor, this type is also available for very low measuring ranges starting from 30 mbar (±0.2 %FS).

The application range as per the ATEX directive is defined by identification marking Ex ia IIC T4.

Featuring accuracy of up to 0.01% FS, the LEX 1 Ei electronic pressure gauge is a genuine reference and precision measuring instrument that has been specifically equipped with a 5-digit display for calibration and testing purposes.

Pressure measurement ranges of between -1 bar and 1000 bar are available.

The LEX 1 Ei also offers a min/max memory and a digital interface to generate PC protocols.

The application range as per the ATEX directive is defined by identification marking Ex ia IIC T6.

Features that are shared by all Keller digital pressure gauges include simple parameterisation and operation with only two buttons.

The pressure display can be shown in various physical units that can be selected freely.

Instrotech
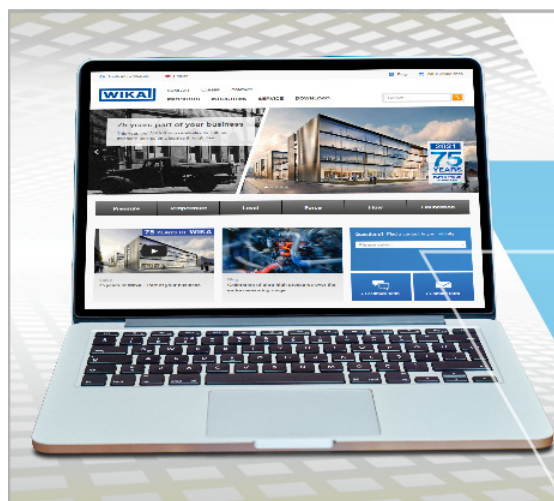*Tel. +27 10 595 1831*
sales@instrotech.co.za
www.instrotech.co.za
Facebook: www.bit.ly/3rj1SWY
LinkedIn: www.bit.ly/3rkfKjL
YouTube: www.bit.ly/3irItiy
Product: www.bit.ly/3oRtSSb

Safe Filter Monitoring With Differential Pressure Gauges

Filter monitoring is a core task of differential pressure gauges – the differential pressure increases as soon as the filter becomes clogged.

The measuring instruments thus signal when the filter needs to be cleaned or replaced.

The efficiency of such a solution can be illustrated by the example of WIKA pressure gauges of the DELTA-line series in water treatment.

In the water industry, reverse osmosis is a widely used process to separate water from unwanted substances.

The corresponding filter systems work with semi-permeable membranes.

For filter monitoring, an international solution provider for the treatment of drinking, industrial and wastewater uses WIKA model DPGS40 differential pressure gauges in its plants in Germany.

The instrument measures the pressure on both sides of the membrane.

Timely intervention at the filter

In addition to the on-site display of the differential pressure, the pressure gauge has an integrated microswitch.

This sends a warning signal to the control centre when a defined limit value is reached.

This enables the operator to arrange for timely cleaning or replacement of the filter.

Due to its mechanical measuring principle, the filter monitoring also functions reliably in the event of a power failure.

Continuous monitoring

Prompt intervention at the filter is necessary for two reasons.

Firstly: It prevents possible contamination of the water.

Secondly: The operator saves energy with the help of continuous filter monitoring. The more fouled a filter is, the harder the pump has to work for the desired media flow.

Integrated working pressure indication

The customer chose the DELTA-line pressure gauge for filter monitoring for yet another reason – because of the integrated working pressure indication.

This information is important to the plant manager because it allows him to draw conclusions about the respective pump performance.

To obtain this information without the two-in-one solution, he would otherwise have had to set up an additional measuring location.

Further measuring requirements

In addition to filter monitoring, the differential pressure gauges of the DELTA-line series are suitable for tasks in level and flow measurement. In different versions, they cover a wide range of applications.

DPGx instruments are available with analogue signal output and up to two microswitches. All have ATEX approval.

There is also a variant with SIL certification and DNV-GL approval for marine applications.

Greg Rusznyak
WIKA Instruments
Tel. +27 11 621 0000
sales.za@wika.com
www.wika.co.za

Where The Controller Becomes A Modular Control Cabinet
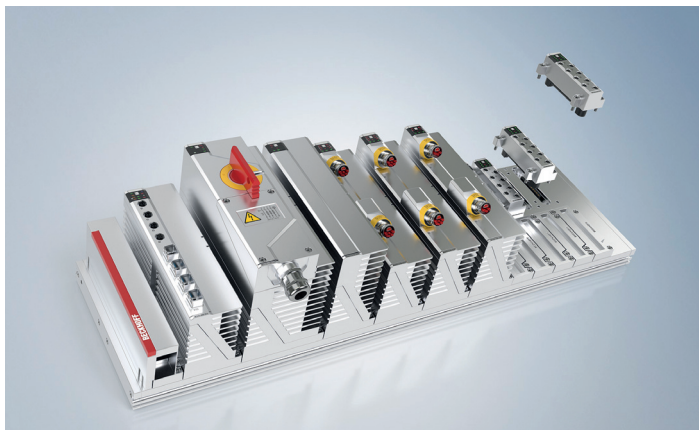
The new MX-System is quite simply a revolution in control cabinet construction. With the launch of this system, the company now offers a flexible, space-optimized, and intelligent system solution that completely replaces the conventional control cabinet in a bid to revolutionize control cabinet construction and automation altogether!

When it comes to the automation of machines or plants, system supplier Beckhoff Automation offers virtually all of the required components in a wide performance range, with TwinCAT control software, IPCs, controllers, I/Os, drives, motors, power supplies, and cables laying the foundations for high-performance automation.

At the same time, Beckhoff also has a great deal of experience in control cabinet construction, which the company that now employs around 250 staff has been involved in since it was founded over 40 years ago.

The new MX-System channels a combination of the company's knowledge of system and component technology along with its practical application experience.

The MX-System is a uniform modular automation component that can be used to completely replace traditional control cabinets with modules in many applications.

The system consists of a robust aluminum baseplate in protection class IP67 with integrated module slots that feature EtherCAT for communication and an integrated power supply (safety extra-low voltages as well as 400 V AC and 600 V DC). The largest expansion stage can even accommodate a connected load of 400 V AC/63 A.

Corresponding modules are available for the mains connection and all other control cabinet functions. When it comes to connecting the field level, the modules use connection plugs that have been tried and tested for many years in the field of automation technology. A system combination of baseplate and modules has a protection class of IP67 and can be mounted directly on the machine.

The system reduces the amount of effort involved for the manufacturer, especially during the planning and installation phases, while the integrated diagnostic functions reduce the complexity for the end user.

This all combines to result in a modular control cabinet system with a high protection class that can be mounted on the machine without the need for additional protective housings.

Dane Potter
Beckhoff Automation
Tel. +27 11 795 2898 / +27 79 493 2288
danep@beckhoff.co.za
www.beckhoff.com/mx-system

Pressure Switch with Wide Adjustable Switch Differential and High Repeatability

The WIKA model PSM-700 mechanical pressure switch has been designed for control and monitoring applications. The measuring element is a fully welded bellow made of stainless steel 316L.

This corrosion-resistant pressure switch is suitable for a broad range of media used in the process industry.

The case consists of a high-grade aluminium alloy with which the pressure switch can withstand the harsh operating conditions of the process industry. The model PSM-700 is equipped with UL listed micro switches to ensure high endurance with durable operation and long service life.

The model PSM-700 has a high switch point repeatability of d" 0.5 %, which enables reliable switching. Adjustable switch differential to a wide range of up to 60 % of the setting range to realise flexible on/off controls.

This wide setting range is often needed for the on/off control mode of cyclic applications.

The switch point can be specified on site. With the available tamper proofing, unauthorised adjustment of the switch point can be prevented.

Greg Rusznyak
WIKA Instruments (Pty) Ltd
Tel. +27 11 621 0000
sales.za@wika.com
www.wika.co.za

Thermal Camera Gets The Job Done Right First Time

Comtest is offering Fluke TiS60+ with patented Fluke IR-Fusion technology that allows users to see things that are invisible to the eye and reveal problems that cannot be detected with other tools.

The unit establishes a baseline for equipment, and is simple for the entire team to use to detect temperature differences from further away.

Fluke TiS60+ further boosts team performance with an impressive image resolution of 320 x 240. The infrared images taken with the TiS60+ capture smaller temperature differences from further away.

So, if users are new to thermal imaging, or if the camera is being used by a team with varying levels of thermal imaging experience, the TiS60+ offers easy-to-use fixed focus. Some of the key features of the TiS60+ are:

• 320 x 240 resolution for clarity and image details that are crucial for a good result

• 9cm (3.5 inch) LCD screen allows for easy 'in-field' issue recognition

• Fixed focus means the Fluke TiS60+ is easy to use, just point and shoot

• Temperature: up to 400 °C can be measured and this covers most application variations

• One-handed image capture, review and 'save' capabilities

See the problem and the location in one image with IR-Fusion™ technology

IR-Fusion technology, patented by the Fluke Corporation, automatically captures a digital visible light image at the same time as an infrared image. The camera blends the two images together, pixel for pixel, in a single display. Users can then view the image in full infrared, full visible light or at several degrees of blending in between. The location of an infrared target can be precisely identified even if the infrared contrast is low and there is very little structure in the infrared image.

Fluke's TiS60+ thermal camera is compatible with Fluke Connect with its modern visual design and intuitive navigation, making it easier to learn and easier to work faster. Simplified work flows and reporting as well as better report templates, are all part of Fluke Connect's powerful, easy-to-use software.

Comtest
Tel. +27 10 595 1821
sales@comtest.co.za
www.comtest.co.za
Facebook: www.bit.ly/3iuk4cg
YouTube: www.bit.ly/2V4nc6j
LinkedIn: www.bit.ly/3rpTu86
Product: www.bit.ly/3DyymS4

PC-based Control Simplifies Integration of S7 Controllers

The openness of PC-based control and the resulting array of connectivity options with other systems number among the fundamental advantages of TwinCAT automation software from Beckhoff. A new add-on now also enables easy and efficient communication with Siemens S7 controllers.

TwinCAT 3 offers numerous options for connecting TCP/IP-based third party systems to the main control program: OPC UA, MQTT, HTTPS and Modbus are only a few prominent examples of an entire range of communication protocols.

The TwinCAT S7 Communication (TF6620) function now expands this broad spectrum to include the S7 communication protocol.

This product implementation enables reading and writing of variables from an S7 controller. The PLC application program carries this out directly – either via dynamically parameterizable PLC function blocks or via easily configurable I/O mapping. No additional hardware is required and the local TCP/IP network serves as the transport medium.

Dane Potter - Beckhoff Automation
Tel. +27 (0)79 493 2288
danep@beckhoff.co.za   www.beckhoff.com/twincat3

Doubling Troubleshooting Power And Lightening The Load

Comtest is offering the Fluke 787B and 789 ProcessMeter™ that doubles the troubleshooting capabilities by combining the power of a safety-rated, digital multimeter and mA loop calibrator into a single, compact test tool.

Based on the trusted measurement capabilities of the Fluke 87 DMM, the 787B and 789 add the ability to measure, source and simulate mA with the accuracy and resolution that can be expected from a Fluke mA loop calibrator.

This gives users the ideal tool for troubleshooting and calibrating current loop applications.

The 787B and 789 key features:

• 20 mA dc current source/measure/simulate
• Simultaneous mA and % of scale readout
• DMM designed to meet 1000 volt IEC 61010 CAT III and 600 V CAT IV standards
• Precision 1000 V, 440 mA true-rms digital multimeter
• Frequency measurement to 20 kHz
• Min/Max/Average/Hold/Relative modes
• Diode test and continuity beeper
• Manual step (100 %, 25 %, Coarse, Fine) plus Auto Step and Auto Ramp
• Externally accessible battery for easy battery changes

The 789 has the additional features of 24 V Loop power supply and HART mode setting with loop power (adds 250 ohm resistor).

Fluke Connect® compatibility for wireless data logging (with IR3000FC module)

Saves time and improves the reliability of maintenance data by wirelessly syncing measurements using the Fluke Connect® system

Preventive maintenance is simplified and 'reworks' are eliminated.
• Data-entry errors are eliminated by saving measurements directly from the tool and associating them with the work order, report or asset record.
• Maintenance decisions are made with trustworthy and traceable data.
• Access baseline, historical and current measurements by asset.
• Move away from clipboards, notebooks and multiple spreadsheets with a wireless one-step measurement transfer.
• Share measurement data with Team using ShareLiveTM video calls and emails.

Comtest
Tel. +27 10 595 1821
sales@comtest.co.za
www.comtest.co.za
Facebook: www.bit.ly/3iuk4cg
YouTube: www.bit.ly/2V4nc6j
LinkedIn: www.bit.ly/3rpTu86
Product: www.bit.ly/3p6HIAb

1/4 NPT 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 their 5 year Built to Last Warranty.
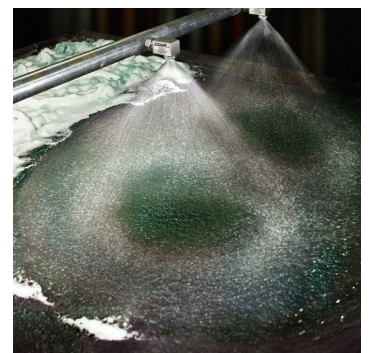
Terri Carlson
ETEST
Tel. +27 82 781 8557
terri@etest.co.za

instek CONTROL

Magnetic-Inductive Flow Meter FMQ

- Hygienic 3-A & FDA Conformity.
- IO-Link Communication.
- CIP/SIP Cleaning.
- Food and Pharmaceutical Versions.
- Swivel housing with graphic display.
- Easy set-up.
- PFA Liner (Piggable).
- Vacuum-tight, rigid meter tube.

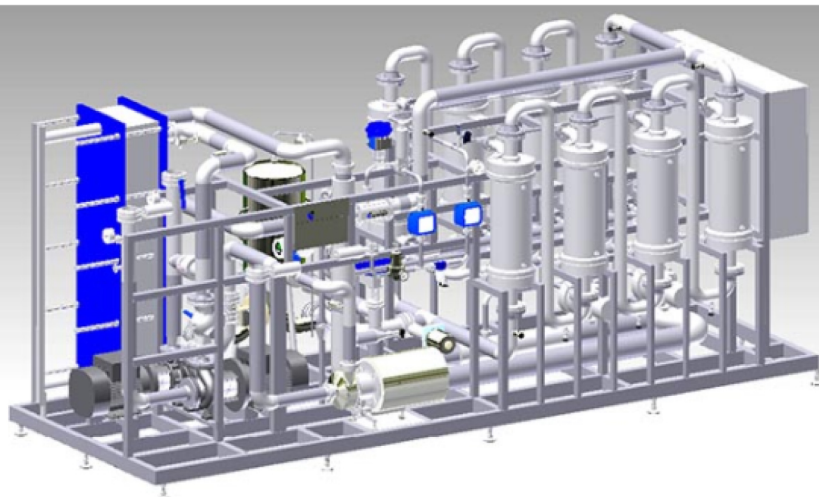Metering value
15,24 gal
0.0 gal/min
ZERO

ANDERSON-NEGELE
PREFERRED PARTNER 2021
★ ★ ★

ANDERSON-NEGELE
ANALYTICAL INSTRUMENT
SPECIALIST 2021

HYGIENIC BY DESIGN

ANDERSON-NEGELE

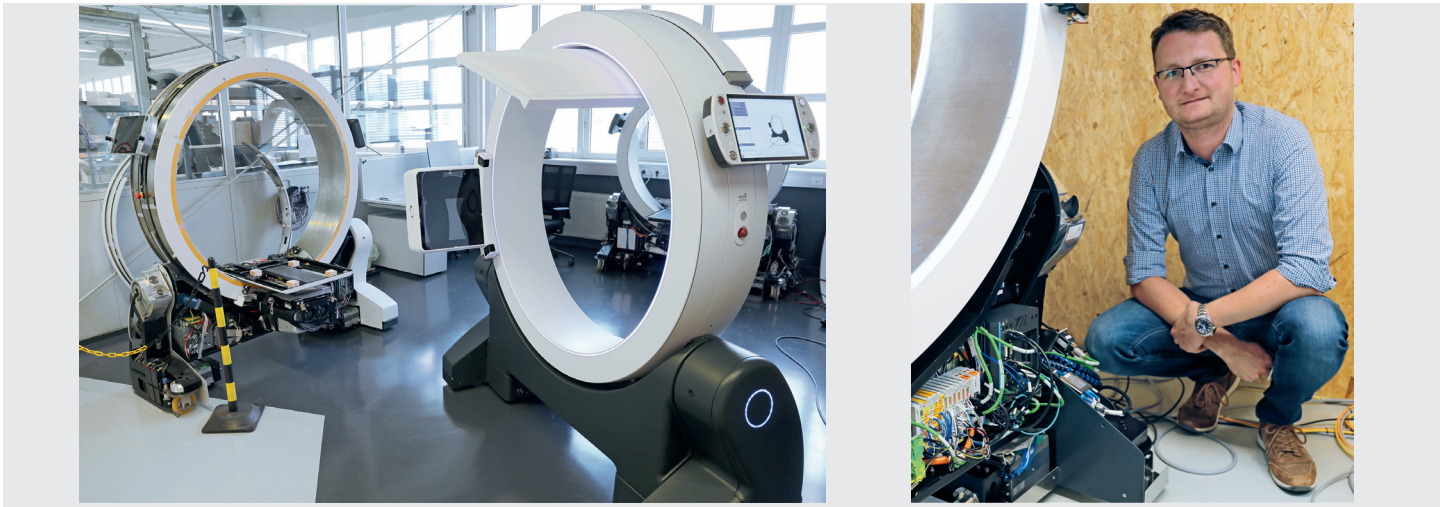# centec

DeGas

- High precision OXYTRANS sensor for DO readout.
- Easily expandable and low consumption of strip gas.
- Customized modular design.
- PLC Controlled.
- Skid mounted.
- Hygienic design.
- CIP Cleaning.

PC And Ethercat-Based Motion Control For Intraoperative X-Ray Imaging

Austrian medical technology company medPhoton presented its imaging solution for radiation therapy for the first time back in 2014. This Imaging Ring is now also available in a mobile version, which makes it possible to view the inside of the body on surgical wards before, after and even during an operation. PC- and EtherCAT-based control and drive technology from Beckhoff is used to achieve the desired viewing angles and millimeter-precise alignment of the X-ray source to the patient.

The company medPhoton GmbH was founded by Heinz Deutschmann in 2012 as a spin-off of Paracelsus Medical Private University and the Salzburg State Clinics (SALK). Together with what was initially a small team of medical technicians and software developers, the distinguished physicist pursued the vision of creating a 'Swiss army knife of diagnostic imaging' and launching it on the market when he became self-employed. Fast-forward to today and around 35 universally applicable devices like these are now being built every year.

"Our imaging ring is a high-resolution computer tomograph that not only provides two- or three-dimensional images, but also enables fluoroscopy with pulsed X-rays. This type of functionality is ideal for tasks such as capturing and digitizing intraoperative anatomical changes," explains Michael Hubauer-Brenner, executive director operations at medPhoton, describing a solution that can be integrated into a wide variety of treatment processes.

In oncology, the invention from Salzburg plays to its strengths when it comes to visualizing tumours and offering targeted irradiation, while its surgical applications include facilitating 3D guidance for the operating physicians.

"Our company background stems from the field of radiation therapy, where our devices are usually mounted on the ceiling or on the treatment table. These environments offer enough space for two to three control cabinets, but the situation is completely different in computer-assisted image-guided surgery," notes Andreas Schippani, executive director finance at medPhoton, in reference to the usually very cramped conditions in operating rooms.

With this in mind, efforts were made to accommodate the entire automation technology in the arms, legs and supports of the latest CT generation Imaging Rings. This design was facilitated by the compactness of the Beckhoff components used and a decentralized system architecture complete with distributed control and drive intelligence.

Flexibility in movement and imaging

The Imaging Ring m/Loop-X mobile imaging robot was developed in close cooperation with Brainlab – a world-leading specialist in software-based medical technology. It measures just 182 x 87 x 189 cm and offers an exceptional range of movement.

"It stands on two legs, each of which have two wheels that can rotate independently in different directions. This is what allows it to move forward, backward and twisted, and perform rotations around its own center of gravity or any other point in the room, and even switch from one operating room to another in battery mode – all completely autonomously. All the operator has to do is enter the corresponding navigation commands on the control tablet," explains Armin Schlattau, head of automation development at medPhoton.

It is also important to note that the robot offers maximum flexibility not only in terms of mobility, but also when it comes to imaging. The radial arrangement of radiation source and detector combined with simultaneous but independent motion offers a host of advantages, which include the ability to achieve a particularly large three-dimensional field of view and the possibility of non-isocentric imaging.

"This means that patients do not have to be in the center of the gantry opening during the X-ray, as the system positions the scan region fully automatically in the relevant area," describes Andreas Schippani. His colleague Armin Schlattau adds, "Although we have a small detector area, we can dynamically generate panoramic images with views from different angles by continuously moving the individual axes at different speeds."

The interaction between the total of 26 axes is orchestrated by a C6015 ultra-compact Industrial PC with an Intel® Atom™ quad-core CPU. Its dimensions of just 82 x 82 x 40 mm mean it requires minimal installation space, making it a perfect fit for the design concept of the imaging robot, according to medPhoton.

On the one hand, the IPC coordinates all motion control tasks and, on the other hand, it functions as a TCP/IP server that establishes the connection to the higher-level data processing computer via the TwinCAT ADS Communication library.

Path-controlled 3D X-ray imaging

Using the TwinCAT NC Camming cam function, medPhoton generates laser projections in the form of lines, crosses or rectangles on the patient as an optical positioning aid for all available imaging processes. This function establishes non-linear relationships between master and slave axes.

"To calculate a volumetric 3D image from hundreds of 2D projections, we need to know exactly at which point in time and from which angle the individual images were taken. Any errors would have fatal consequences; after all, we are talking about medical interventions here," stresses Michael Hubauer-Brenner with regard to the importance of the exact, time-stamped signals. "Not only do we depend on precise positional information, but we also measure how long we X-ray from each direction with nanosecond accuracy," says Armin Schlattau, describing a process that uses equipment such as the EL1252 digital input terminal with XFC timestamp function.

Product diversity from a single source

More than 10 different terminal types from Beckhoff are installed in the imaging robot, including TwinSAFE components such as EL1904 or EL6910, as well as EL7037 stepper motor terminals, and EL7221-9014 servomotor terminals with One Cable Technology (OCT). "When we were looking for a control technology supplier for the mobile version of our Imaging Ring back in May 2017, Beckhoff impressed us right away with its extensive variety of products available in a compact format," recalls Armin Schlattau.

According to the automation development engineer, the main arguments in favor of the automation specialist from Verl included the stepper motor terminal with incremental encoder, the integration of a full-fledged servo drive within an EtherCAT Terminal that measures just 12 mm wide and the bundling of power supply and a digital feedback system into just a single motor connection cable for the AM8121 servomotors.

"While we certainly increased the complexity and performance of our system, we were also able to reduce the space required for the automation technology to a tenth," says Michael Hubauer-Brenner, delighted with the results of a productive collaboration that has exceeded all expectations to date. But it would seem that the finish line is still quite some way off: "There will certainly be some further developments to our Imaging Rings and we continue to hope for creative input from Beckhoff," Andreas Schippani concludes.

Balázs Bezeczky, head of the Beckhoff sales office in Vienna, responds by putting forward an initial optimization idea of his own: "With our new ELM72xx servomotor terminals in metal housings, it would be possible to get even more compact in terms of drive technology. What's more, the ELM72xx-9018 model makes it possible to map a comprehensive Safe Motion function package including Safe Limited Speed and Safe Limited Position options." His invitation to a test run with the two-channel ELM72x2 model has already been accepted.

Dane Potter
Beckhoff Automation
Tel. +27 11 795 2898 / +27 79 493 2288
danep@beckhoff.co.za
www.medphoton.at
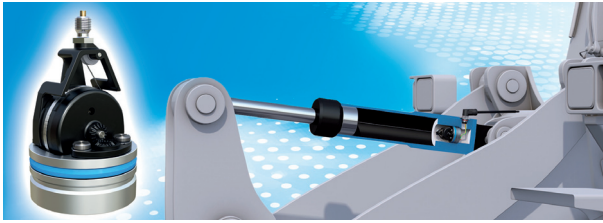*www.beckhoff.com/compact-drive-technology*

What's New in PROCESSING

Stroke Measurement In Hydraulic Cylinders - Say Goodbye To Drilling Pistons!

Whether it's agricultural machinery, construction equipment, or municipal vehicles, intelligent sensors are indispensable throughout the mobile machine market.

Accurately recording paths and angles is an integral component of intelligent operating concepts and functions. These functions improve not only the convenience, but also the safety of mobile machines.

Using intelligent sensors also increases the performance and efficiency of mobile machines, allowing repetitive work processes to be automated and therefore relieving machine operators at the same time.

Measure and monitor motion sequences

Since most motion sequences for mobile machines employ hydraulic cylinders, one of the most important measurement tasks for sensor technology is precisely determining the stroke of the cylinder to enable measurement and monitoring of the motions to be carried out.

No wonder, then, that both machine and sensor manufacturers are always looking for new innovations in stroke measurement for hydraulic cylinders.

Measuring system for stroke measurement in hydraulic cylinders

Instrotech is offering SIKO and unique SGH10, a measuring system for direct stroke measurement in hydraulic cylinders. This specialised, integrated and innovative measurement solution is based on customer feedback and many years experience in path measurement technology. The cylinder stroke is measured precisely using Bowden cable sensor technology installed directly in the cylinder. The high quality plug ensures the system fulfills protection class IP69K.

A minor technical revolution

Technologically speaking, the innovative SGH10 cylinder stroke measuring system pursues an entirely different technological approach than measuring systems commonly found in the market, which are based on magneto-restrictive, inductive, or hall based technology.

In contrast to these systems, a Bowden cable mechanism installed directly in the cylinder is used to measure the stroke. The cable of the Bowden cable mechanism is mounted in the piston head. If the cylinder is extended, the cable, which is wound up in a cable drum, is pulled out.

The rotation of the cable drum that is thereby created is detected without contact by the sensor electronics and used to calculate the linear travel. This makes it possible to detect the position of the cylinder precisely and completely at all times.

The magnets that are used to detect the rotation are scanned by the electronics through the pressure-resistant base plate of the SGH10. The electronics are fully encapsulated on the unpressurized side of the system.

This means the entire measuring system is built into the cylinder and is optimally protected from external environmental conditions. This provides a clear advantage: in contrast to a measuring system mounted externally on the cylinder, the sensor system cannot be influenced or damaged by loose parts or by environmental influences.

Piston drilling unnecessary

Another revolutionary aspect is the reduction of costs for integrating the system into the cylinder. This is because in previous measuring systems, the sensor rods had to be integrated into the piston over the entire measuring path; this often required long and highly precise bore holes in the piston. This is not only expensive, but also weakens the structure of the piston.

In the SGH10 stroke measuring system, just one small thread is needed in the piston to mount the cable. This allows the system to offer major potential cost savings, which affects production times and, ultimately, overall costs for hydraulic cylinders. The greater the stroke length, the greater the potential for monetary savings.

Cylinder manufacturers, mechanical engineers and end-use customers reap the benefits.

Also integrates into telescopic cylinders

Another highlight is that, in contrast to the alternative measuring systems described, the SGH measuring technology can even be used in telescopic cylinders. It provides design engineers with entirely new options when developing forward-thinking assistance systems and supplemental functions in mobile machines.
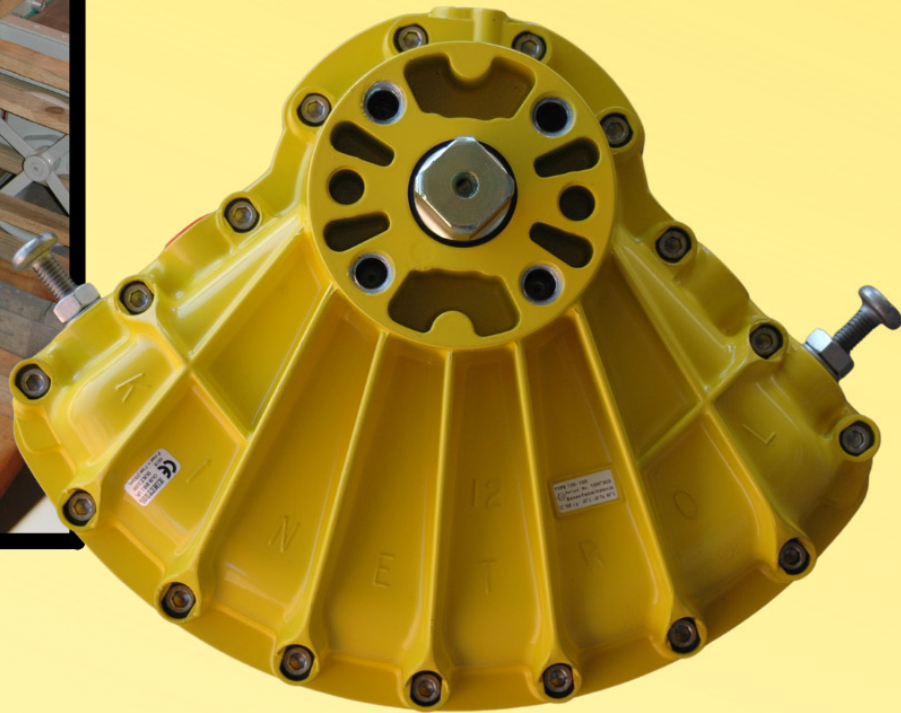
Sensors & Transducers ...

Instant Process Optimization - Manufacturing's 'Moist' Valuable Player

SECO Process Instrumentation is a consulting company in the field of instrumentation, providing niche analyser, pneumatic and VSD solutions. The company offers cutting-edge technology and integrated services to customers, including engineering designs, field instrumentation, calibrations, installations, plant commissioning, instrument repairs, plant maintenance and instrumentation training. The company is the local agent for the US-based MoistTech, a world leader in moisture measurement and control.

MoistTech is responsible for the industry's first patented method of non-contact, non-destructive moisture analysis and detection for a multitude of sectors. Improved over time, the company's near-infrared (NIR) technology provides robust and reliable moisture measurement and control for businesses the world over.

"We delivered the moisture measurement and control industry's first big breakthrough in the 1970s and we are now 40-year veterans of the sector," John Fordham – MoistTech's CEO – explains. "Near-infrared moisture control technology helps us provide top-of-the-line equipment popular all around the globe. We are represented in every continent, though all our products continue to be manufactured and assembled in the US."

Primarily, MoistTech manufactures a substantial range of on-line and at-line sensors for the real-time process control of numerous applications. Capable of providing true data regardless of gaps and interruptions in product flow, these sensors are insensitive to material variations, such as height, colour and particle size.

Consequently, MoistTech equipment can deliver instant, non-contact moisture analysis of manufactured goods to ensure the accuracy and quality of the final product. Not only does this make for a reduction in waste, but also a decrease in downtime, manual intervention and defective goods. Serving a wide variety of sectors and disciplines, including adhesives, biomass, chemicals, coatings, food, forest products, minerals, renewable energy, textiles and wood products, MoistTech solutions are valued by a diverse range of clients. Alongside the firm's flagship IR3000 sensor, which can be used for most applications, the company offers a number of more specialist products.

"In 2018, we developed improved filters for our converting sensor, enabling enhanced readings in any type of glue, coating base, adhesive strip, silicone release paper or pressure sensitive adhesive," John reveals.
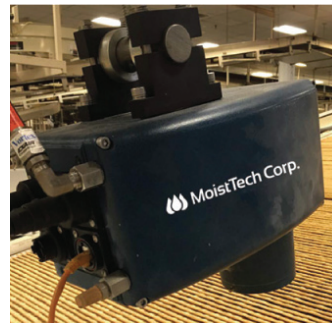
"We have the CCS3000 for dark materials like coal, the IP67 for harsh conditions, the 828-model designed specifically for tobacco and less sensitive blends, and two laboratory units that are considered 'at-line': which are the 868 and 858 models," John remarks.

"The IR3000, however, is our most state-of-the-art smart sensor. For any application, it will have a measuring and repeatability accuracy in the +/- 0.05% range depending on the application specifics. The sensor is drift free and recalibration will never be required.

As standard, there are three isolated 4-20mA outputs along with an Ethernet connector and a second one for RS-232/485 serial communication. For display, included in the quotation as an option, is a remote LED meter with 3.5-inch digits for excellent readability. "Furthermore, our PC software suite is supplied with the MoistTech sensors at no additional cost," John continues. "This software is available for configuration and calibration, as well as trending and data collection. It is, nevertheless, not required for the sensor's operation as the MoistTech NIR sensor is all self-contained."

"MoistTech NIR technology is a ratio-based measurement with prime beam, which eliminates sensitivity to distance, improves stability and accuracy, and provides a non-drift design. This allows for extremely accurate measurements with far more sensitivity than that of the firm's competitors. While other technologies require constant re-calibrations, have height interference, experience drifting over time, and produce less reflected light, MoistTech solutions provide the user with true data rather than an estimated guess. The advanced design gives much more reflected NIR energy to the product, less height interference and, most importantly, one-time calibration with zero drift," John says. "MoistTech is the original pioneer of NIR and we still have the backing of the patent holder for the principle, which means there's much more to come."

Sensors & Transducers ...

"NIR technology is specific and stands out from other moisture control technologies as it does not ever come in contact with the product, is non-destructive – meaning it does not destroy the product it is measuring – and provides instant, accurate and repeatable results.

It is not only a fast-analytical technique with the ability to deliver the chemical and physical information of virtually any matrix, but it can tell us 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, while backscattered light will reflect from the product. Light can also be absorbed by the product, and absorption is key in NIR analysis.

By harnessing this core technology, we then attempt to produce variants and new, more efficient product types like the Linear Belt-Driven Slide."

All sensors are pre-calibrated to the customer's exact application prior to shipment, allowing for plug-and-play operation. All samples are calibrated in the lab at the Sarasota production facility. This calibration is used to program the sensor to be exactly what the customer is measuring, in order to avoid errors and sensor adjustments. Additional options and parts are added in this facility along with all shipping and repair requests.

Sean Frost
SECO Process Instrumentation
Tel. +27 63 929 9669
sean.frost@seco-pi.com
www.seco-pi.com
LinkedIn:
www.linkedin.com/company/seco-process-instrumentation-pty-ltd

New Sensing Technology Detects Difficult Targets And Reduces The Need For Complex Installation Design

Omron has launched a new E3AS-HL CMOS Laser Sensor[1] with industry-first[2] sensing technology that significantly improves detection capability.

Reliable detection of difficult-to-detect targets helps eliminate the need for time-consuming installation design and adjustment at equipment commissioning.

Detection using conventional reflective photoelectric sensors is affected by the target colour, material, or surface, and human experience and skills are required to design and adjust the sensor installation for each target.

This issue often arises in the automotive and food industries where various targets with complex shapes and glossy surfaces are detected.

The new E3AS-HL CMOS Laser Sensor can reliably detect targets that cannot be detected with reflective photoelectric sensors.

Its industry-first sensing algorithm reaches high-speed sampling at 10,000 times per second and OMRON's unique accumulation processing increases sensitivity by amplifying the slightest amount of light bounced off the target.

The manufacturing technology adjusts the receiver lens position in the sensor to the micro meter[3] level, enabling reliable detection of any target colour material, and shape.

These technologies allow the E3AS-HL Sensor to reliably detect curved and irregular shaped glossy automotive parts and multi-coloured and glossy food and packages.

Large and easy to press teach button

The E3AS-HL Sensor can be used where reflective photoelectric sensors were used and helps significantly reduce the time required to adjust the sensor installation position and angle and the threshold values.

Key Features:

• Reliable detection of difficult objects reduces equipment design and commissioning time

• Increased equipment design flexibility reduces design time

• Antifouling coating on sensing surface ensures stable operation even in harsh environments (Patent Pending[4])

• OLED display and teaching enable easy, quick, and optimal setting

*(*1) CMOS laser sensor is a type of reflective photoelectric sensor. It uses the triangulation principle and has a laser emitter and CMOS image sensor receiver.*
*(*2) Industry-first Laser Class 1 CMOS laser sensor equipped with an FPGA. Based on Omron investigation in September 2020.*
*(*3) Micrometer is one thousandth of a millimeter. 1 micrometer = 0.01mm*
*(*4) "Patent pending" means that Omron applied for a patent in Japan, and "Patented" means that Omron obtained a patent in Japan.*

Laetitia de Jager
Omron Electronics (Pty) Ltd
Tel. +27 :11 579 2600
info.sa@omron.com
www.industrial.omron.co.za

Sensors & Transducers ...

Ultrasonic Sensors Can Improve Your Production Efficiency

Ultrasonic sensors use sound in the same way dolphins and bats locate their prey in movement

The technology has produced a durable, consistent and accurate means to track and manage a large number of applications and feedback requirements for your automation installations.

Microsonic is an acknowledged specialist in the field of ultrasonic, edge guide and distance sensors for industrial automation applications and commercial vehicles.

Microsonic Sensors now come standard with IO-Link on all their sensors. With analogue feedback 4-20mA and 0-10 V and selection of PNP/NPN, there is a sensor for every application and are easily integrated as an upgrade to your current proximity or monitoring sensors.

• 1 or 2 switching outputs in pnp or npn variants
• Analogue output 4–20 mA and 0–10 V with automatic switching between current and voltage outputs
• Analogue output plus 1 pnp switching output
• 5 detection ranges with a measurement range of 30 mm to 8 m
• Microsonic Teach-in by using button T1 and T2
• 0.025 mm to 2.4 mm resolution

Whether its level detection and management in realtime for water or chemicals. edge detection and web alignment, double sheet or proximity, grains, rice or beans, space limited availability or just presence applications. We have you covered.

Eric Beneke
Motion Tronic
Tel. +27 31 701 1620
sales@motiontronic.co.za

Temperature Sensors - RTDs and Thermocouples

Energi Solutions Africa, a wholly owned South African company, is both ISO 9001 and ISO 45001 accredited for Application Engineering, Supply, Project Management, and Installation of Industrial Heating Solutions.

The company is an authorised distributor for leading international heating and control system OEM's. Our local manufacturing facility provides export quality heating products and solutions.

Resistive thermal devices (RTDs) are also called resistance thermometers or resistance temperature detectors. They are temperature sensors that exploit the predictable change in electrical resistance of some materials with changing temperature.

Thermocouples made of 2 dissimilar metals and produce a millivolt signal in proportion to temperature.

We manufacture a wide range of temperature sensors and also offer mineral insulated thermocouples as small as 0.5mm in diameter and Pt100 sensors down to 1.6mm diameter.

Temperature sensors

Our range of temperature sensors includes numerous designs found on well-known brands of machines throughout the world. The construction and materials have been carefully matched to satisfy the requirements of general as well as plastics and packaging industries.

There are two sensor families:
• RTDs which change resistance in proportion to temperature
• Thermocouples made of 2 dissimilar metals and produce a millivolt signal in proportion to temperature.

Thermocouples can be made in small sizes and their measuring points are well defined (ie. good for surface measurements).

Generally, RTD's are not as compact as thermocouples, are less suitable for surface measurements, but ideal for when accuracy is critical.

Operating temperature limit at the tip of sensor:
• with PVC insulated cable inside .... -40°C +100°C
• with teflon insulated cable inside .... -250°C +250°C
• with glass fibre insulated cable inside .... -40°C +350°C
• mineral insulation sheath .... up to +1000°C (can be higher using special alloys)

Insulation (between sensor cable and sensor stem):

Thermocouples are normally non-insulated ("grounded") unless otherwise specified.

Cable:

The sensor cables are glass fibre insulated with steel overbraid, unless otherwise specified.

Rushka Pillay
Tel. +27 21 762 8995
Rushka.Pillay@energisolutionsafrica.com
www.thermon.co.za

Sensors & Transducers ...

Differential And Head Pressure Control In One Unit – Simple, Accurate, Systematic

The D3, a hygienic sensor for processors of food, beverage, and dairy products is designed to be the go-to transmitter for any level applications with pressure and/or vacuum conditions in the head space of the vessel.

With accurate, reliable, and repeatable level measurement, the D3 ensures efficient process control and continued production with less unplanned downtime.

Dual mA output is a standard feature of the D3 which eliminates the specific need for HART® interface or an additional transmitter to monitor the head pressure in a closed vessel. This decreases the risk of over-pressurization and helps reduce safety risk and continue the quality and stability of the product being produced.

The D3's integrated tank and density compensation allows mA output to be scaled to the mass or volume of the product in the tank, removing the dependency on PLC programming for basic volumetric conversion and saving time and effort during commissioning.

While the sensor comes ready for easy installation, the simple graphical interface makes field setup and programming straightforward.

The D3 transmitter display can be direct mounted to either of the two sensors or can be mounted remotely for easy access.

Advantages of the D3

• Electronic detection and digital transmission without capillaries: high-precision output of the fill level, even under quickly varying process conditions. Result: optimum efficiency due to maximum use of the tank content

• Detection and evaluation of temperature and pressure directly in the sensor stem: Extremely short response time, data output in real time, superior resistance to temperature shocks
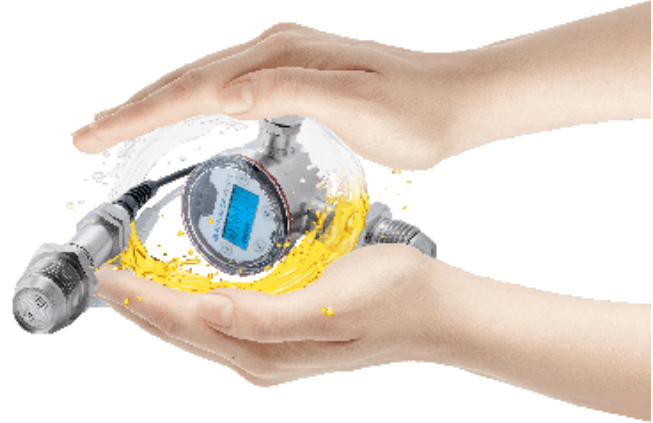
• Integrated tank linearization: four typical tank geometries are pre-defined, others can easily be added.

• Integrated pressure compensation: Pressure values for 10 food types are integrated, others can easily be added

• Easy installation, even in cases of retrofitting, due to variable mounting of the electric cables up to 30m distance

• Easy commissioning: "Plug and play" intuitive operation and simple selection of pre-defined parameters

• Superior efficiency by reduced maintenance, avoidance of downtimes and higher degree of product utilization
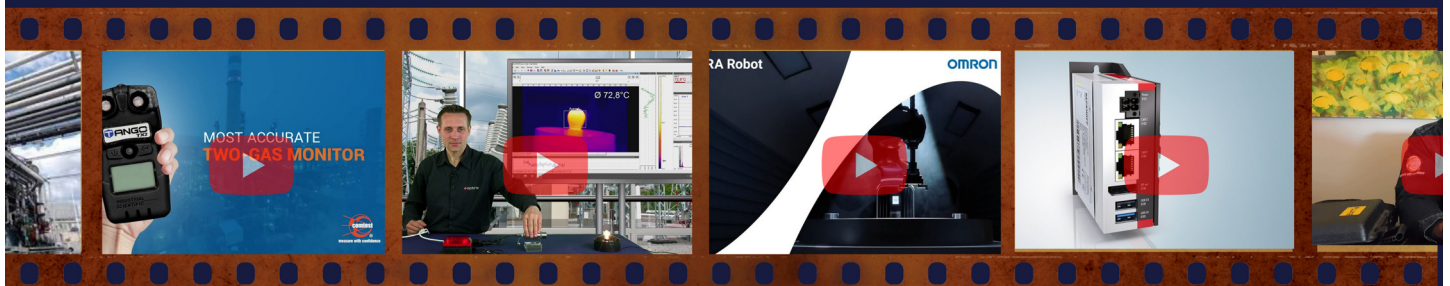
Application examples:

• Fermentation tanks in breweries and dairies

• Aseptic storage and processes in dairy and high-purity water (WFI) production

• Juice storage tanks

• Pressure drop measurement in diaphragms

Ian Morton
Morton Controls
Tel. 0861 000 393
sales@mortoncontrols.co.za
www.mortoncontrols.co.za

Sensors & Transducers ...

High Performance Photoelectric Sensors

Suitable for harsh and demanding environments, Wenglor's Type 2K photoelectric sensors within the PNG/smart product range have robust stainless steel 316L housings with IP69K protection.

This means the units can withstand aggressive cleaning agents, coolants and lubricants, as well as mechanical influences and corrosion.

They are able to measure distances, detect objects and communicate intelligently via IO-Link.

The miniature design which can integrate into any system is available to users in six functional principles: energetic reflex sensors and reflex sensors with background suppression, universal retro-reflex sensors, retro-reflex for transparent objects, through-beam sensors and long-range laser distance sensors. A total of three light sources – red, blue and laser light – are available.

With these comprehensive combination options the right sensor can be selected for any application.

In the food and packaging industries, production facilities must be regularly cleaned with high pressure and aggressive cleaning agents. Splash water, high water pressure up to 100 bar and 80 °C water temperatures do not influence the 2K sensors.
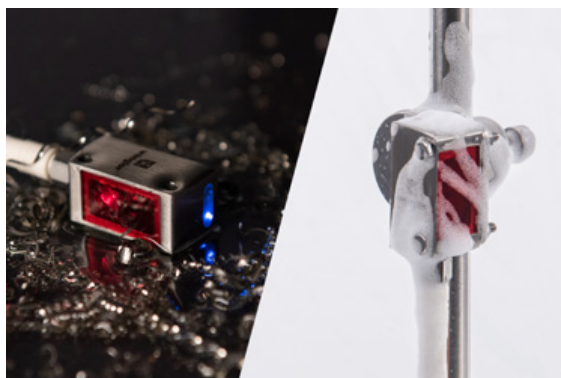
Mounted in a compact housing of 35.5 x 18.5 x 17 mm), the sensors are also suitable for applications in mechanical and plant engineering such as milling machines. They are not affected by impacts, corrosion or coolants and lubricants.

In addition, the 2K also impress with their wellknown PNG/smart properties. A calibrated switching point and an aligned optical axis ensure precise photoelectric performance and easy integration, adjustment and commissioning. With the laser class 1 – harmless to the human eye – the sensors are also suitable for moving system parts such as robot arms.

The integrated IO-Link interface also enables touch-of-a-button programming. Condition monitoring and data storage makes maintenance easier and batch size 1 production is easy to implement.

Anastas Schnippenkotter
ASSTech Process Electronics & Instrumentation
Tel. +27 11 708 9200
info@asstech.co.za
www.asstech.co.za

Smallest Laser Motion Control Sensor

The new Speetec laser motion control sensor is a non-contact optical sensor that accurately measures the speed, length and position of almost any material, from metal sheeting to newsprint paper.

"It's one of the smallest – if not *the* smallest – devices that offers non-contact measurement, as well as a host of other benefits," says Stephen Eltze, Market Product Manager, SICK Automation. These benefits include:

• **Accurate, high resolution, slip-free measurement with high reproducibility**

Since Speetec doesn't make contact with the material it measures (or with the conveyor moving the material), it delivers slip-free measurement with enhanced accuracy, boosting productivity. Additionally, it does not contaminate or damage the material, making it ideal for measurement of sensitive, soft or smooth materials.

With a measurement resolution of up to 4 µm and high reproducibility, Speetec proves its reliability.

• **Delivers ROI and reduces costs**

The unit is priced at between a third to a quarter of that of existing laser speed sensors. Additionally, the minimal engineering effort and maintenance requirements translate to further cost savings over time.

• **Simple, quick installation (plus, zero wear and tear)**

The unit's small size, basic mounting requirements and simple electric connections make it easy to install and wire up (whether for a retrofit or a greenfield project). For optimal performance, it should be mounted 50 mm from the target material. "It does, however, have a decent tolerance should the mounting deviate from this ideal positioning," explains Eltze.

With no moving parts (and zero contact with materials), Speetec is not susceptible to wear and tear. All that's required to ensure optimal performance is to keep the measurement screen clean.

• **No additional safety measures required**

Many laser-equipped motion control sensors use Class 3 lasers which are hazardous for eyes and therefore require specialised housing to prevent harm to operators. Additionally, operating personnel require specialised safety training and PPE.

Speetec comprises Class 1 lasers, which are safe for eyes and thus, it does not require additional operational safety measures.
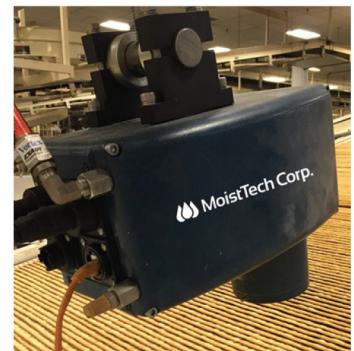
Ajanth Sewpersad - SICK Automation
Tel. +27 10 060-0550
ajanth.sewpersad@sickautomation.co.za

Instant Process Optimization

Delivering instant, non-contact moisture analysis
to ensure accuracy and quality of the final product.

Sensors & Transducers ...

Stopping The Flow At The Right Time

*T*he name says it all – Ceres, the jewel in the Western Cape of South Africa, was appropriately named after the Roman goddess of fertility and agriculture. Protected by majestic mountains, the region offers breath-taking natural landscapes and ideal conditions for growing fruit. The fruit is in turn the basis for high-quality fruit juices. VEGA sensors have been monitoring the production here for many years – the latest one in use is a level switch of the new VEGAPOINT series. It is deployed in a pulp residue container that is extremely problematic when it comes to level measurement.

Decisive for the success of the fruit business here is the Mediterranean climate, which provides ideal growing conditions. Crops can be harvested here all year round.

Since 40 years ago, the fruit juice company has been growing steadily and has won many prestigious food and beverage awards at home and abroad. One reason for this is that the fruits are harvested and processed directly – the route from the Ceres Valley to the consumer is therefore very short.

Long-term partnership

VEGA sensors have been used for many years in the entire production process, for example in the numerous water and chemical tanks, in wastewater treatment as well as in the pasteurisation process.

One special challenge was a measuring point in a tank where the residues from production are collected. This aqueous pulp contains a mixture of cellulose and other solid materials. The mixture is dewatered and the remaining sludge ends up in another tank.

In the past, this tank overflowed now and then and the pulpy substance spilled onto the plant floor. This happened because the vibrating level switches used at that time often failed to function properly.

The problem: The accumulation of cellulose on the tuning forks caused them to malfunction, not switching properly when the tank was emptied.

What is more, the fruit acid caused further difficulties. The result was an overfilling of the tank, as the pumps did not start in time or even switched off too early. Cleaning the floor and area around the tank was very time-consuming and laborious.

Deployment before the official launch

A new sensor from VEGA for capacitive point level measurement sounded promising, but it wasn't yet officially on the market. Nevertheless, the fruit juice company offered to be a tester of the sensor even before the official product launch.

The new VEGAPOINT 21 is a level switch with adjustable switching point for detection of water-based liquids. The sensor and the tank form the two electrodes of a capacitor. Any change in capacitance due to a level change is converted into a switching signal.

Installation can be carried out by the customer. The connection was quite simple and there were no problems during setup and commissioning.

Advantages of the new VEGAPOINT series: The level switches can be easily adapted to any application. VEGAPOINT 21 is largely independent of medium properties and therefore adjustment-free. Due to its small size, the sensor can be installed not only on tanks and containers but on small, narrow pipelines as well. The compact size was an important factor in the decision. In addition, the fact that this is a very cost-effective solution was decisive, especially in view of future applications.

VEGAPOINT has also proven to be extremely easy to use in practice. The sensor works even under difficult measuring conditions such as turbulence, air bubbles, strong external vibrations or changing media. Features that were decisive for the application at the fruit juice company.

Even when deposits accumulate on the end of the probe, the level switch still switches as soon as the residual water reaches the probe. It then returns to its normal state as soon as the level drops.

Sensors of the VEGAPOINT series can be used for overfill and dry run protection as well as oil/water and foam detection. The optional universal connector with hygienic adapter ensures reduced installation costs and a smaller spare parts inventory. The series meets the requirements of hygienic processes in the food, beverage and pharmaceutical industries.

Another advantage: The small level switch version has a compact stainless steel housing and is available in two electronics versions: simple transistor output and transistor output with additional digital IO-Link communication.

The sensor can be operated wirelessly via Bluetooth with a tablet or smartphone and an app. This allows the switching behaviour, the application and many other parameters to be set or adjusted as needed.

A special highlight is the colourful, all-round switching status

Sensors & Transducers ...

display of VEGAPOINT that allows quick and easy recognition of the switching status. With it the user can keep an eye on the status of the tank at all times. Workers at the fruit juice company also appreciate this feature, as it allows them to concentrate on their other tasks in juice production and not have to worry about something going wrong inside the tank.

Interview with Florian Burgert - product manager responsible for the food and pharmaceutical industries at VEGA.

Why was the new VEGAPOINT series introduced?

Florian Burgert: VEGA is known for the high quality and accuracy of its measuring instruments, which are often used for complex and challenging measuring tasks. However, there are many applications, in auxiliary systems in particular, that require sensor technology that is especially easy to install and reduced to the bare essentials. By introducing the new VEGAPOINT series, VEGA has completed its portfolio for the entire range of existing point level applications and is now able to offer the optimal instrument for every measuring task – whether highly complex or standard.

What sets the series apart from previous models?

Florian Burgert: The new VEGAPOINT instrument series includes IO-Link as a communication platform. The advantage of IO-Link is that the technology can be flexibly implemented in almost any application – whether new or already existent. With the option of bidirectional communication, device data and status information can be called up "on demand" in addition to mere process data.

The all-round, 360° switching status display is also new. Switching states can thus be easily discerned from any direction. The display remains perfectly visible even under difficult lighting conditions or at great distances; not least because its colour can be freely selected from a palette of 256 colours. At first glance you can clearly see if the measuring result is what it should be or if there is a malfunction in the production process.

For whom or for what applications is the series best suited?

Florian Burgert: We've reduced point level detection to the absolute basics in the new VEGAPOINT instrument series. With the usual VEGA quality, it reliably meets all standard requirements without the extras that extreme ambient conditions or highly specialized applications would require. The new instruments can optimally cover all important aspects: above all, plant safety and reproducible product quality, but also efficiency and economy.

Leandi Hendrikse
Vega Controls SA
Tel. +27 11 795 3249
leandi.hendrikse@vega.com
www.vega.com/en-za

Sensors & Transducers ...

Compact Ultrasonic Sensors for Safety Applications

The USi-safety ultrasonic sensor system from Pepperl+Fuchs combines the robustness of ultrasonic sensors with intrinsically safe electronics.

The device is therefore suitable for the safe control of machines and automated guided vehicles (AGV), among other things. It meets the requirements of Category 3 PL d of ISO 13849 and is the only safe ultrasonic sensor on the market.

The protection of personnel in industrial environments places high demands on safety engineering: Protection systems must be robust and completely reliable while also meeting strict guidelines and standards.

The higher the degree of automation, the more important this aspect becomes.

An example of this is in production and warehouse logistics, where automated transport systems are being used more and more.

They move in areas where people work and therefore need to be able to stop quickly at any time to avoid collisions. Since multiple AGVs are often moving around at once, safety technology is also used to protect the vehicles themselves in the case of encounters with other vehicles.

Robust Measuring Principle

It is essential for obstacles to be detected by the sensor system under all circumstances. This is where the design of ultrasonic sensors has an advantage over other technologies such as photoelectrics.

Optical sensors rely on the unimpeded dispersion of light. If their light beam is obstructed, deflected, or insufficiently reflected, they cannot reliably detect the target object.

In outdoor use, vapour and dust or fog, rain, and snow can "swallow" the light pulse.

Object-specific properties such as irregular contours, holes, and recesses in the surfaces can also cause the optical measurement to be disrupted.

Ultrasound is almost completely unaffected by these interference factors. By definition, the optical properties of a surface are not relevant.

When detecting irregular contours, design-related properties are helpful: The sound beam always hits the target object on a surface, and the sensor detects far more than just a point or a scan line.

It is therefore unaffected by holes and recesses in the target object.

Dust, vapors, and precipitation have little effect on the sound. In addition, ultrasonic sensors are almost entirely unaffected by contamination or coatings adhering to the surface.
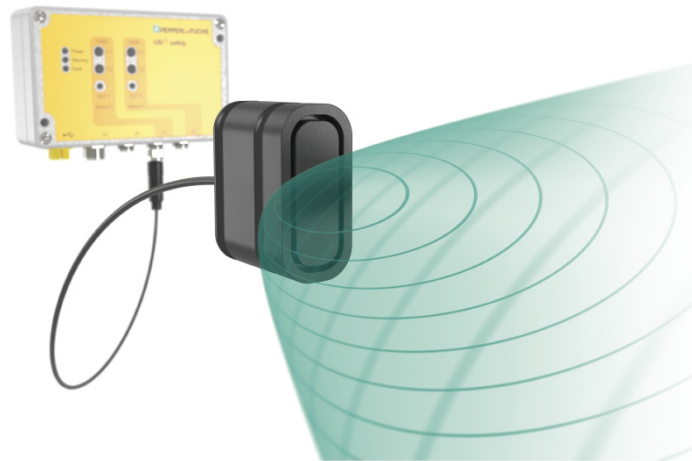
Elliptical Sound Beam

The sound beam of an ultrasonic sensor is usually radially symmetrical. By contrast, in USi-safety it is very wide in one axis and very narrow in the other.

This asymmetry gives the sound beam a distinctly elliptical shape and enables the sensor to cover a large area.

The resulting safety zone is 80 cm wide at a distance of 1.5m.

The various adjustment options offered by the device also make it possible to detect small objects or body parts from a long distance.

The maximum detection range is 2.5m, which allows the AGV to monitor the entire space in its direction of travel.

The ultrasonic transducer itself is extremely compact, at just 27×21×13mm, meaning that it can be readily installed in forklift arms, for example.

This miniaturization is possible because the actual sensor is separated from the control interface and can be placed up to a cable length of 3 meters away.

It has connections for two sensors, allowing both forklift arms to be protected during forward and reverse travel. The high IP69K degree of protection makes the ultrasonic transducers particularly resistant to dust, and they can even withstand high-pressure cleaning.

Reliable Electronics, Intuitive Parameterisation

Each ultrasonic sensor unit is assigned two fail-safe outputs via the electronics. Two microcontrollers in the control interface monitor both the sensor function and each other.

Noticeable deviations of the sensor units or between the controllers automatically trigger the safety circuit. Reliable protection is possible from each of the two independent sensor channels.

Thus, the requirements for a safe sensor system are already fulfilled when only one sensor unit is connected.

For signal output to a safety controller, one signal output is available for each sensor unit as well as safe OSSD outputs with short-circuit and cross-circuit monitoring.

If multiple AGVs are moving through the warehouse and encounter each other, interference between the ultrasonic sensors of the different vehicles is suppressed by dedicated software.

Fixed interference variables and reference objects for tamper protection can be hidden.

Switching points, output logic, the initialisation of periodic tests, and safety- and ultrasound-specific parameters can all be set intuitively using the parameterisation software.

This also automatically generates safety records for the plant documentation.

Sensors & Transducers ...

Practical Example: Collision Avoidance in Forklift Arms

In the case of automated guided vehicles, in addition to the main direction of travel, the secondary directions—such as travel in the fork direction and the lateral zone—are relevant for protection as well.

The small sensor units of USi-safety can be integrated at any point, for example directly in the forks of automated forklifts.

The decoupled control interface can be located further away in the chassis of the vehicle.

The three-dimensional sound field of the sensor units thus secures the hazardous area directly in front of the fork arms.

Airborne dust and other environmental influences do not affect detection.

Practical Example: Personal Safety with Track-Guided AGVs

Track-guided AGVs follow markings on the ground. The track is often located in areas where people are also moving around.

Collisions must be reliably avoided without unnecessary interruptions to transport.

Optical systems, which are used for free navigation and the protection of personnel, can be supplemented or even replaced by alternative protective equipment such as USi-safety.

The sensor units are flexibly integrated into the AGV.

The parameterisation software can be used to quickly and easily adapt the detection range of the sensor units to the conditions.

The signal output can be used for reduced speed or to output a warning signal, for example. The safety outputs reliably trigger a stop in a hazardous situation.

Practical Example: Machine Protection

In machines, critical areas are usually protected with photoelectric light grids. In some environments, such as the wood industry, such sensors often cause false triggering due to the inevitable dust generation or airborne particles.

The machine then switches to a safe state, after which the light grid must be cleaned and the system restarted.

Alternatively, USi-safety produces a "sound curtain" that is unaffected by wood dust, airborne particles, and adhered contamination.

This technology reliably protects the machine without any unnecessary interruptions in the production process.

Machine parts that extend into the measurement field can be learned by means of teach-in, and are also useful as a means of tamper protection.

If such a reference target is no longer detected due to tampering, the system will go into a safe state.

Kgomotso Makhobela
Pepperl+Fuchs (Pty) Ltd
+27 10 430 0238
kmakhobela@za.pepperl-fuchs.com
www.pepperl-fuchs.com

Sensors & Transducers ...

Portable Optical Oxygen Sensor

The Oxytrans M is a Portable optical oxygen sensor for measurement of Ox in deaerated water, wort, beer, and CO. Dissolved oxygen has an adverse impact on flavour stability and shelf life.

The instrument is designed for applications requiring maximum sensitivity and highest accuracy. It is easy to operate and virtually maintenance-free.

OXYTRANS M is ideally suited for the continuous measurement of dissolved oxygen in liquids and gases. Electrolyte solutions are not required, no oxygen is consumed during the measurement.

The optical measurement technology is based on the effect of luminescence extinction, i.e., the radiationless transmission of excitation energy through molecular interaction.

A small glass component with a thin layer of indicator molecules is inserted in the measuring head, the optical window.

The indicator molecules are irradiated with blue-green light, generated by an LED in the oxygen sensor. They absorb the incident light and are promoted to a higher energy state. The molecules convert back to their ground state, emitting red light. The red light is detected in the sensor.

If O molecules are present, the energy is transferred from the excited indicator molecules to the oxygen. Other gases do not absorb this energy, so they have no influence on the measurement result.

Temperature drifts in the measurement signal are automatically compensated for. Due to its IP65 classified aluminium housing, the OXYTRANS M is a robust, portable device.

* Portable
* Sturdy aluminium housing
* Weight 1.65Kg
* Liquid Phase:
* 1ppb – 2 ppb @ +/- 1ppb ACC
* 30 ppb – 50ppb @ +/- 30ppb
* Gas 0 – 4.2% @ 0.002%

Raymond Karsten
Instek Control
Tel. +27 12 998 6326
raymond@instek.co.za
www.instek.co.za

Pressure Transducers and Transmitters

Industrial pressure transducers and transmitters by Gefran measure fluid, liquid or gas pressure in all industrial applications. Thanks to highly stable electronic components, pressure transmitters can be also used in applications requiring long distance signal transmission or in smart control systems.

Gefran TK Pressure Transmitters

The TK series of pressure transmitters are suited mainly to measure pressure in oil, air and hydraulic circuits.

* 4-20mA output
* G1/4 male thread
* 0.5% accuracy
* 1ms response time
* 4-pole connection

They are popularly used in general process measurement applications as well as for compressors, presses and mobile hydraulics.

Gefran TPF Pressure Transmitters

TPF pressure transmitters with a flush measurement diaphragm are particularly designed to check pressure of high viscosity fluids.

* 4-20mA output
* M18x1.5 thread
* 0.3%-0.6% accuracy
* 8ms response time
* 6-pole connection

They are also used in the food industry where substances must not stagnate in cavities.

Rushka Pillay
Tel. +27 21 762 8995
Rushka.Pillay@energisolutionsafrica.com
www.thermon.co.za

Sensors & Transducers ...

The Smallest Pressure Sensor With The Highest Performance

Measuring just 14 mm in diameter, the new weFlux²micro pressure sensor from Wenglor meets the challenges presented by confined mounting spaces and compact system structures for the measurement of liquid and gases.

Pressure ranges of between -1 and +25 bar can therefore be installed for the first time in hydraulic clamping systems, tight lubrication bearings or compact 3D printers.

Several design features contribute to the small size -l ess than an AA battery - of the weFlux²micro. Both the compact 14 mm size and the small process connection with M5 thread saves space.

At just 22 mm high, the pressure sensor is ideal for extremely tight systems. With a low weight of 13 grams, it can even be mounted on robot arms and moving parts.

Robust Housing

With a response time of less than one millisecond and a measurement error of less than 0.5%, the sensor is very fast and precise. The robust stainless steel 316L housing is ideal for harsh industries.

The high IP68 protection makes the sensor resistant to aggressive cleaning agents and chemicals, while the analog output signal of 4 – 20 mA allows integration into existing systems.

Positive-locking segmented cable compression provides additional protection in the event of mechanical tensile and rotational loads.

Applications

This Wenglor pressure sensor is ideal for monitoring pressure cylinders in hydraulic clamping systems.

Any pressure changes in the interior must be detected with great accuracy.

Due to its low dead weight, these devices can also be mounted on robot arms and in lubricating systems for ball bearings, gears, chains or linear guides – the sensor records the values required for correctly monitoring the lubrication quality.

Also in enclosed systems such as 3D printers or welding and milling systems, the weFlux²micro enables precise monitoring of extraction devices or vacuum chambers.

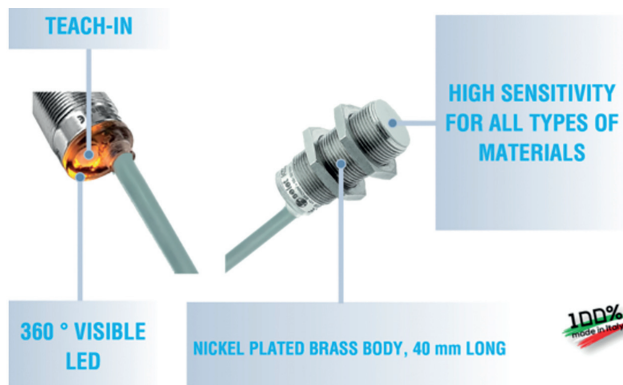**Anastas Schnippenkotter - ASSTech Process Electronics & Instrumentation**
Tel. +27 11 708 9200
info@asstech.co.za - www.asstech.co.za

New Compact Capacitive Sensor

Selet has a new design for a series of capacitive sensors with more compact dimensions than traditional sensors on the market – 40 mm in total, of which 33 mm is the threaded section for the flush version, and 50 mm in total, for the non-flush version.

New constructive technology played a large part in the development of these products. The sensitivity adjustment is not via a trimmer, but uses a 'teach-switch' located at the back of the sensor.

TEACH-IN

HIGH SENSITIVITY FOR ALL TYPES OF MATERIALS

360 ° VISIBLE LED

NICKEL PLATED BRASS BODY, 40 mm LONG

100% made in Italy

K02's key features:
- Metal casing with a compact 18 mm diameter
- Dimensions of flush version: L=40mm (thread of 33 mm)
- Dimensions of non-flush version: L=50 mm (thread of 33 mm)
- Automatic or manual teach-in mode for sensitivity calibration
- NO or NC output setting by teach-in
- Cable connection L=2 m or L=200 mm with M12 pigtail connector
- Versions: 3-cables PNP NO/NC, and 4-cables NO+NC

Instrotech
Tel. +27 10 595 1831
sales@instrotech.co.za
www.instrotech.co.za

Facebook: www.bit.ly/3rj1SWY
LinkedIn: www.bit.ly/3rkfKjL
YouTube: www.bit.ly/3irItiy
Product: www.bit.ly/3j4aqxZ

Simplified Safety Compliance Testing - Reduces The Risk Of Shock And Arc Flash

Comtest is offering a unique tester to the market, in that it sources both ac and dc steady-state voltage for Hi-Z and Lo-Z instruments, thus simplifying safety compliance testing.

The Fluke® PRV240 Proving Unit provides a safe and convenient method for "test before touch" TBT verification of electrical test tools without placing the electrician or technician in potentially hazardous electrical environments, which would generally involve using known live voltage sources.

In contrast to using a known live source, using the PRV240 does not require personal protective equipment (PPE) for tester verification.

Use of the PRV240 reduces the risk of shock and arc flash compared to verification of test instruments on high-energy sources in potentially hazardous electrical environments

because the PRV240 provides a known voltage in a controlled, low-current state in accordance with safe work practices.

The pocket-sized PRV240 sources 240 V of both ac and dc steady-state voltage for testing of both high- and low-impedance multimeters, clamp meters, and two-pole testers, eliminating both the need for multiple verification tools and the use of a known high-energy voltage source for test instrument verification.

To avoid accidental contact, the voltage is supplied through recessed contacts that are activated only when test probes are inserted into the modules insulated access points.

A single LED indicates the sourcing of the voltage to verify the test tool, simplifying test tool verification without the need for PPE.

The proving unit can perform up to 5,000 tests per set of four AA batteries and comes with a TPAK magnetic hanging strap for easy accessibility.

Comtest
Tel. +27 10 595 1821
sales@comtestco.za
www.comtest.co.za
Facebook: www.bit.ly/3iuk4cg
YouTube: www.bit.ly/2V4nc6j
LinkedIn: www.bit.ly/3rpTu86
Product: www.bit.ly/3GLrEu6

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 $\leq$ 0.4㎜, 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.

Raymond Karsten
Instek Control
Tel. +27 12 998 6326
raymond@instek.co.za
www.instek.co.za

What's New in PROCESSING

WIKA SA Opens Online Shop

WIKA South Africa is proud to announce the opening of its new online shop. Now customers in South Africa can order measurement technology directly from the manufacturer. Simple, quick, secure.

Select the right product for you from our standard portfolio of pressure, temperature and level measuring instruments.

Do you need a specific instrument version? No problem: With the configurator, you have the possibility of modifying your desired instrument and matching it exactly to your requirements.

In the brand new online shop, products from the following product groups are available in the WIKA quality you expect:

- Pressure gauges
- Digital pressure gauges
- Pressure sensors
- Process transmitters
- Pressure gauges with output signals
- Pressure switches
- Contact pressure gauges
- Diaphragm seal systems
- Valves and protective devices
- Electrical accessories
- Dial thermometers
- Digital indicators
- Resistance thermometers
- Temperature transmitters
- Temperature switches
- Thermometers with switch contacts
- Temperature controllers
- Thermowells
- Programming units
- Submersible pressure sensors
- Optoelectronic switches
- Flow switches
- Hand-helds, calibrators
- Precision pressure measuring instruments
- Portable pressure generation
- Hand-held thermometers

Greg Rusznyak
WIKA Instruments (Pty) Ltd
Tel. +27 11 621 0000
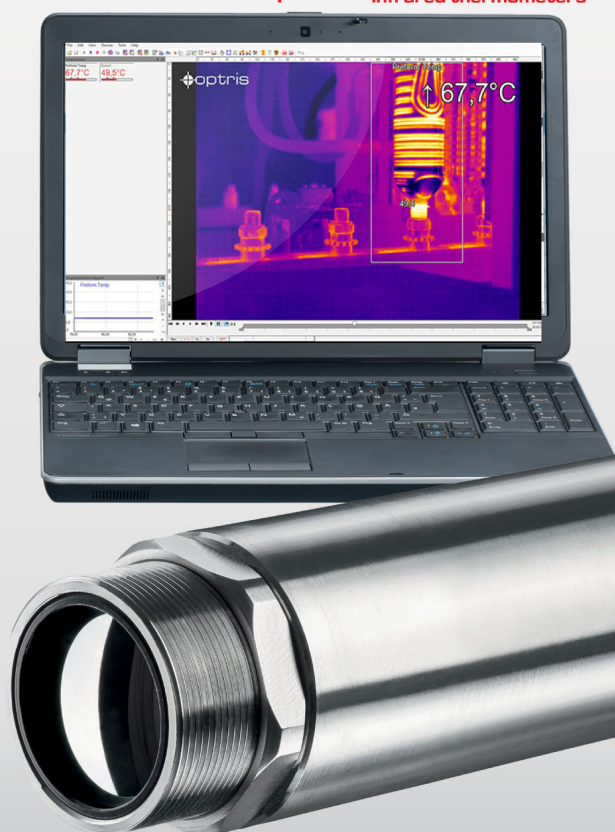*sales.za@wika.com*
www.wika.co.za

The Importance Of Signal Conditioning In Industrial Processes

Almost 150 languages are derived from Latin. But despite similarities in form, differences in letter combination mean this isn't sufficient to enable interlanguage comprehension.

The same goes for processing plants; converting signals generated in the plant into an understandable form for control systems is a challenge. The answer? Signal conditioning.

Here Ian Loudon, international sales and marketing manager at Omniflex, explains why signal conditioning is industry's Google Translate.

Processing plants often produce analogue signals in their thousands per minute, directly from sensors embedded in the process including those for temperature, pressure, flow and any other physical parameters required for control and monitoring.

This data can be analysed to trigger actions that keep operations flowing efficiently and safely. This is done by feeding information into a control system or by triggering an alarm annunciator in safety critical applications that alerts operators in the event of an emergency.

Mixed signals

Signal conditioning is a crucial process in plants, which involves preparing analogue signals to be converted and scaled for further processing for control and monitoring.

Before a data acquisition device can measure the signal, a signal conditioning unit is required to put the data into an understandable and universally accepted form.

One challenge is scaling small physical signals such as mV or even µV to a standard plant signal that can be used for control.

Signal conditioning is also essential to avoiding interference and erroneous data. In processing plants, electromagnetic noise and ground loops and signal isolation issues are problematic to PLCs, SCADA and DCS that run the plant.

If input data is incorrect, this can adversely impact the industrial processes that rely on it. For safety critical applications, like nuclear and petrochemical plants, ensuring this data is as accurate as possible is not an option, but a necessity.

Unfortunately, noise and ground loops are common. Two devices that are connected within the same circuit but grounded in different locations can result in a difference in potential.

This difference can lead to a flow of electrons, which generates a loop current known as a ground loop.

Since the ground loop runs along the same wires as the analogue signal that the control system needs to accurately interpret, it can interfere and produce erroneous data.

Clear conditioners

Mitigating the potentially catastrophic impact that erroneous signals can have on industrial processes is a task assigned to signal conditioning units.

By taking signals from sensors across the plant, the signal conditioner is responsible for converting the input signal into the desired output signal, the most common being 4-20 mA.

Typically, a different signal conditioning module is required for each input signal. So, plant managers could require several different units, and replacements, for each signal in a plant, which is both complex and expensive. However, Omniflex's Omniterm TXB Universal Input unit can eliminate this complexity.

The Omniterm TXB unit has dip switches on its sides, which allow operators to set the input and output signals as required, meaning just one type of module is needed to process a range of different signals from various applications.

It also means that less stock is required, as the same replacements can be used with all input signals, making for more cost-effective and streamlined inventory management.

For signals being collected from harsh or hazardous areas, IECEx and ATEX certification is provided, verifying that the unit has been fully tested and is approved for use in hazardous or explosive atmospheres.

It also has been independently tested for IEC61508 SIL-1, which certifies that the unit can be used as part of a plant safety system when required.

Since TXB is pre-certified and universal, Omniflex can speak directly with engineers and analyse system data to create a signal isolation solution for any application.

The high quality and broad suitability of the TXB also reduces the time required for installation and validation, allowing Omniflex to solve a plant's signal issues efficiently and quickly.

Like languages, getting just one element wrong can change the entire meaning of a signal, which can create a muddle of detrimental machine misunderstandings.

But like Google Translate, signal conditioners are the hero at hand, translating these signals and disregarding inaccuracies to ensure clear communication for safe, efficient operations.

Ian Loudon
Omniflex
Tel. +27 31 207 7466
sales@omniflex.com

Differential Transmitter Performs Under Pressure

PAD

PAS

Model: PAS-P

Instrotech offers Kobold differential pressure transmitter models PAD & PAS. These microprocessor-based, high-performance transmitters have flexible pressure calibration and output, with automatic compensation of ambient temperature and process variable configurations of multiple parameters and HART® protocol communication.

Applications are varied and include media like steam, gases, liquids and other critical media.

Pressure, flow and level measurement are done by the application. The input of all data for sensors is added, modified and stored in EEPROM. As an option, the Kobold PAD-F is also available as a flow meter with a totalizing function in the PAD transmitter, and so it can check the flow rate and totalizing flow.

Flow rate is measured by using differential pressure without compensation of temperature and static pressure.

The body of PAD-F is the same as the standard device, except for the terminal block which has two more pulse out-put terminals.

Kobold PAD & PAS key features:

Superior performance

• High reference accuracy: ±0.075 % of calibrated span (optional: ±0.04 % of calibrated span)

• Long-term stability (0.125 % URL for 3 years)

• High rangeability (100:1) for range 4-0

Flexibility

• Data configuration with HART® configurator

• Zero-point adjustment

Reliability

• Continuous self-diagnostic function

• Automatic ambient temperature compensation

• EEPROM write protection

• Fail-mode process function

• CE EMC conformity standards (EN 50081-2, EN 50082-2)

Kobold's PAD & PAS transmitters have excellent reference accuracy thanks to the high-performance processors for flexible application in absolute and differential pressure measurements.

In addition, these models achieve excellent long-term stability with capacitive or piezo-resistive sensors.

Instrotech
Tel. +27 10 595 1831
sales@instrotech.co.za
www.instrotech.co.za
Facebook: www.bit.ly/3rj1SWY
LinkedIn: www.bit.ly/3rkfKjL
YouTube: www.bit.ly/3irItiy
Product: www.bit.ly/3rkOR12

Reliable Drug Production Requires Fast And GMP-Compliant Labelling

Hardly any other industry is subject to such high-quality requirements and legal regulations as pharmaceutical companies.

This applies to active ingredients, production, and storage as well as to the labelling process.

The labels must be robust and stick reliably for the usability period of the drug of up to five years.

Labels carry important information such as the name of the drug, active ingredient(s), manufacturer, and variable data such as expiration date, lot number, and serialization information.

Establishing a valid labelling process is key. At the same time, the processes should also be as efficient, fast, and sustainable as possible.

Steierl-Pharma GmbH from Herrsching in Bavaria, Germany, relies on the support of Omron automation experts in this regard.

By using a new labelling system with smart camera technology, Steierl-Pharma can label its pharmaceuticals with high process speed and reliability.

These labels are printed with variable data on batch designation, expiration date and if required, the dispensing notice "Sample not for sale".

Steierl-Pharma is a medium-sized pharmaceutical company in the field of naturopathy and produces medicines in liquid dosage form, in cylindrical glass containers.

The product range of the company includes medicines for the musculoskeletal system, for lowering blood pressure, for relieving migraines or skin diseases, or for treating flu-like infections.

3,600 units pass through production line in one hour

The producer has the legally required manufacturing license for medicinal products as well as the GMP certificate. The Good Manufacturing Practices (GMP) certification guarantees process integrity in drug production and conformity with applicable regulations.

When it comes to filling and packaging the drugs, Steierl-Pharma uses a production line designed for around 3,600 units per hour.

It consists of a filling and capping machine, a labeller, and a packaging machine. The line ensures a continuous and seamless process consisting of filling and closing the bottles with a dropper insert and a screw cap.

The closed bottles then leave the cleanroom and enter the labeller, where they are labelled and then packed in a folding box together with an information leaflet in the packaging machine.

Challenge: Avoiding unintentional machine stops and read errors

In 2019, a project team at Steierl-Pharma began initial considerations to introduce a replacement for an already older labelling machine.

"The labelling machine used until then already had a smart camera-based inspection system to check the identity of the label and the variable data (batch name and expiration date).

This however had two drawbacks: firstly, labels were repeatedly misread as bad labels, and secondly, bad units were not rejected, but the labelling process was stopped.

This meant that when the machine stopped, the bottles backed up into the filling machine and the packaging machine ran empty. "So, we had a 'bottleneck' in our process," reports Steffen Wegner, Managing Director of Steierl-Pharma GmbH.

Requirements: Precision and speed

Wegner explains: "That's why we worked with the manufacturer HERMA to find a suitable inspection system. The focus here was on high reliability and pricing."

The aim was to develop a labelling machine that on the one hand met the high requirements in the GMP area, but on the other hand, also ran without interruption during regular operation.

One of the central criteria was that the new inspection system should work particularly precisely- bad units such as an incorrect or illegible barcode as well as batch or expiry date errors should be detected reliably, the keyword being sensitivity.

Steierl-Pharma wanted a high level of specificity, the system should only detect actual bad units as such and eject them from the process.

That's not all, with an output of around 60 labels per minute, the inspection system only has a time window in the range of milliseconds for the complex inspection tasks.

FHV7 smart camera supports testing and quality control

The central component here is the inspection system. Wegner explains: "We decided on the Omron FHV7 smart camera after a test on our label material on site, supported by

an Omron application engineer. We were effectively supported by Omron throughout the entire development process up to commissioning and qualification of the machine and beyond."

With the help of the FHV7, the HERMA labelling machine at Steierl-Pharma checks the identity of the label based on the pharmaceutical code and verifies batch and expiration via OCV (Optical Character Validation) for compliance with the specifications.

The FHV7 series smart camera provides illumination and image processing functionality for enhanced visual inspections.

Due to its world-first multi-colour light and a powerful high-resolution 12-megapixel camera, only a single FHV7 camera is needed to perform high-precision visual inspections of the production line.

During the performance qualification the project managers involved were surprised by the extremely high specificity of the FHV7.

"We could not believe how extremely reliable the Omron FHV7 inspection system is. As part of the challenge testing, we deliberately introduced mislabels, all of which were reliably detected – but with a throughput of several 10,000 labels, not a single good label was incorrectly read as a bad label," reports Wegner.

Even single faulty unit could cause a lot of trouble in the GMP environment. By using the new camera, such situations do not occur, and the machine outages caused by the incorrect reading of actual good units can also be prevented.

Another advantage of the OMRON camera is the software, which is intuitive to use and does not require lengthy training.

"I also really like the option of a customizable user interface, and so do the users. There is only one window in which, for example, the target code, batch designation and expiration date can be entered. Code verification and Optical Character Validation (OCV) can also be performed. It's all very clear and simple," explains Wegner.

The software runs on any current Windows system and communicates directly with the FHV7 via the local network. Wegner also praises the high inspection speed of the Omron system. The complex individual inspection of a label takes just 80 milliseconds: "That's impressively fast."

Inspection system and support

"We are very satisfied with both the new labeller and especially Omron's inspection technology. In a highly regulated environment such as the pharmaceutical industry, manufacturers must be able to fully rely on the technology that is used – also to be able to successfully complete the qualification. This is the case with us," Managing Director Wegner sums up.

There are plans to convert an existing packaging machine to Omron inspection technology within the near future.

Laetitia de Jager
Omron Electronics (Pty) Ltd
Tel. +27 11 579 2600
info_sa@omron.com
www.industrial.omron.co.za

Extended Life Pressure Gauge (90mm)

Anderson-Negele's hygienic EL "Extended Life" pressure gauge was designed to offer the best durability in the industry and be the toughest, most reliable gauge for any sanitary application up to 1,000 psig.

Sanitary pressure gauges are subjected to repeated process and environmental abuse in the form of vibration, pulsation, harsh cleaning chemicals, wide temperature, and humidity swings. The "EL" will fit in your tightest application, and last in your toughest.

Applications

• Pasteurization
• Process Lines
• Filtration
• All Sanitary Pressure
• Dependent Processes

Features

• Long-life Technology with wear-free mechanical system
• Extended Life "EL" Pressure gauge designed for longest durability
• Stainless steel, all-welded design, resistant to vibration, shock, harsh cleaning chemicals as well as humidity
• Re-zero option for calibration
• Wide process temperature range (-29 °C to 149 °C)
• Large display with 90 mm housing
• Pressure range -1...+40 bar, measuring range selectable in PSI, BAR or Dual
• The complete device is certified by 3-A-SSI
• Process connections Varivent®, Tri-Clamp, DIN 11851, SMS

Ian Morton
Morton Controls
Tel. 0861 000 393
sales@mortoncontrols.co.za
www.mortoncontrols.co.za

Cost-Effective Legacy Alarm Replacements For Uganda's Power Generator

If the alarm in your house becomes obsolete, you simply update it in line with the latest technology to keep you and your family safe.

Unfortunately, this common-sense approach doesn't always extend to industrial plants.

Here Ian Loudon, international sales and marketing manager at Omniflex, discusses how Uganda's largest generator of electricity easily upgraded its safety-critical alarm systems without having to overhaul the entire site infrastructure.

To alert operators of an event threatening the safety of assets, people or the environment, industrial sites rely on alarm annunciators directly hard-wired into various processes.

When an event is detected, the relevant window on the annunciator panel lights up and sounds throughout a site, notifying operators to act quickly.

For ESKOM Uganda's hydroelectric plants in Jinja, this event could be a generator component failure which, if not caught immediately, could cause costly damage to plant assets.

But in a digital age, where we rely so heavily on computer-based programming, do we still need bulky, hard-wired annunciator panels?

Why alarm annunciators?

The honest answer is yes. It's true that PC-based systems provide efficient monitoring and reporting across a range of communication points in an industrial setting.

However, we often see companies overloading their systems with complex visualisations, making it difficult to identify and act on critical alarms when they arise.

Alarm annunciators are therefore critical for operators being able to identify and act on an event before any serious damage is caused.

But what happens when the original annunciator manufacturer can no longer supply spare parts or support you when you need to upgrade your system?

Fit, form, function

The problem we now find is that many alarm annunciators used today were installed decades ago and do not meet the current IEC 61508 safety integrity levels (SIL-1).

What's more, former alarm system providers, like Rochester, Highland and Bristol Babcock, no longer exist to offer system support.

This is why ESKOM enlisted Omniflex to replace its obsolete legacy Highland Rochester MPAS90 49-point system.

Retrofitting a new alarm system needn't be costly or inconvenient for operators. Alarm annunciator specialists can consult on and manufacture a system that will be made to replace obsolete alarm systems from any manufacturer.

This can be done by utilising the existing cabling to minimise disruption and installation costs.

In the case of Uganda's hydroelectricity stations, the new Omni16R annunciator system was retrofitted into the existing panel space.

The IEC standard 3U rack was factory engineered to match that of the legacy annunciator, so that it was bench-ready tested before installation on site.

This allowed staff at the facility to make the retrofit without the need for specialist tools or engineers and the existing wiring were matched with the terminals of the new unit.

The old 50Vdc powered energy-intensive incandescent lamp alarm displays were replaced with modern energy efficient high brightness LED technology.

The biggest challenge for any company looking to upgrade its alarm system is doing it without disrupting existing cabling. For ESKOM, it requested that all annunciators be wired to the existing 50V dc wetted field contacts.

This was achieved using 16 channel isolated terminal boards, connected via ribbon cables to the rack. The team was able to engineer this off-site to help reduce installation time and disruption to plant productivity.

Future proofing your system

The process of retrofitting an alarm system to fit, form and function properly is relatively straight forward. But the importance of digitalising alarms mustn't be understated.

As well as giving local visual and audible indications to notify operators of an abnormal occurrence, each annunciator can be connected as a Modbus slave device on an RS485 network.

This means all alarms can be remotely monitored either on a DCS or a local SCADA system and can provide historical pre and post alarm data needed for auditing and fault diagnostic purposes.

As Uganda's largest electricity generator, there's a lot at stake for Jinja's power plants.

Simply retrofitting a modern system, with capacity for remote monitoring, leverages operator efficiency and improved alarm management, which all contributes to an efficient running plant with KPI monitoring.

New Level Switch For Storage Of Granules, Dust, Powders And Solid Products

Val.Co has introduced a new LPM level switch specifically designed to control the storage of dusts, granules and solid products.

Particularly suited for the pharma, food, plastics and agri markets, the reliable level switch is of robust construction and consists of a stainless steel rotating shaft with sealed self-lubricating bearings. The shaft is driven by a synchronous gear motor at low speed. When the material stops the rotation of the blades, the power supply to the geared motor will be cut off, activating an electric changeover contact.

MD of GHM Messtechnik South Africa, Jan Grobler: "This new LPM level switch from Val.Co is the most cost-efficient level switch on the market whilst still maintaining its renowned instrumentation quality, accuracy and reliability. Not only is the shaft manufactured from stainless steel its performance is enhanced by the self-lubricating bearing system. We believe this newly developed LPM level switch will add value to the control of the storage of granules, dust and other solid products".

The Val.Co LPM level switch offers the following technical specifications:

• Power supply range: 24 – 230-volt units
• A temperature range of -10^0 C to $+120^0$ C
• Housing consists of cast aluminium or stainless steel AISI 304
• Connection to FWX lengths A/B from 55mm to 1 meter and connection to 40G-65G A/B 80mm to 1meter
• Electrical connection is N.2 cable-gland 3/8"
• Paddle can be supplied with flanged or threaded connections
• Conforms to IP65 protection standards

The alarm system can be activated when conveyor belts unexpectedly come to a standstill.

Jan Grobler
Messtechnik South Africa
Tel. +27 11 902 0158
info@ghm-sa.co.za

Just in case you missed a magazine in 2021... here is a recap!
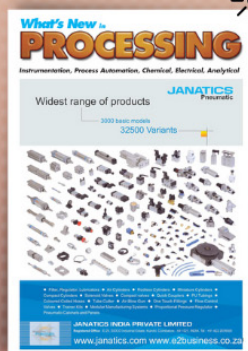
Jan/Feb 2021

Beckhoff Automation
www.beckhoff.com

March/April 2021
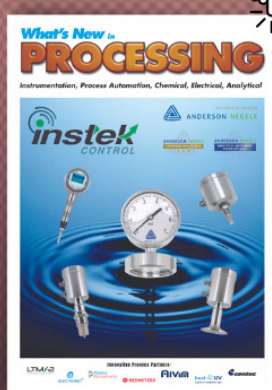
Vision Automation
www.unitronics.co.za

May/June 2021

E2 Business Solutions
www.janatics.com

July/Aug 2021

Richter Scale
www.richterscale.co.za

Sept/Oct 2021

Instek Control
www.instek.co.za

Nov/Dec 2021

Pepperl+Fuchs
www.pepperl-fuchs.co.za

Subscribe to our online magazine via the button on our website and we'll send you an email alert once a new magazine has been published online!

www.whatsnewinprocessing.co.za