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WHAT'S NEW IN PROCESS TECHNOLOGY

AUTOMATION + CONTROL + INSTRUMENTATION

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Simple, reliable trace oxygen measurements to ensure process purity

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PROCESS TECHNOLOGY
JUNE 2016

CONTENTS

4 Comparing IS barrier solutions

8 New products

20 Metal detection or X-ray inspection

36 Thin client HMIs in process automation

42 Smart glasses for Industry 4.0 tested on the shop floor

49 And you thought your electricity bill was out of control?

50 Intelligent sensors the key to Industry 4.0

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ON THE COVER

Using Michell's Metallic Sealed Reference Sensor (MSRS) technology, the XZR400 Series detects trace oxygen in clean gases. The metallic sealed reference makes the sensor unaffected by ambient air quality and virtually drift-free, reducing the need for calibration and maintenance.

The XZR400 Series measures trace oxygen in gases to concentrations as low as 0.01 parts per million, and is ideal for detecting leaks and controlling the purity of gases in applications such as heat treating, environmental control or bottled gas manufacture. The intuitive touch-screen interface enables fast and easy operation without the need to invest in extensive training for operators.

All instruments in the range give fast readings — 11 seconds for the T90 — and are highly stable giving reliable results over a long time. A key benefit of the instrument is its low cost of ownership: unlike electrochemical sensors, which require regular replacement, the MSRS sensor of the XZR400 should last in excess of seven years.

With four configurations to choose from, the XZR400 Series is highly flexible. The 19″ rack- and wall-mounted chassis versions are suited to fixed applications as part of a process, while the bench mount unit is ideal in a laboratory setting, and the transportable unit allows spot checks in the field.

AMS Instrumentation & Calibration Pty Ltd
www.ams-ic.com.au

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COMPARING IS BARRIER SOLUTIONS

*TS Todd**

Significant savings, both initial installation and ongoing maintenance costs, for an intrinsically safe (IS) facility or project can be achieved by selecting the appropriate apparatus as the IS barrier for the system.

Preventing explosions and fires in hazardous areas caused by process measurement and control instrumentation has historically followed either the path of containing the explosion within the device enclosure or of preventing the device from having enough energy to cause a spark or thermal ignition. In many places, such as the United States, the predominant choice has been to use explosion-proof equipment, while many other parts of the world typically employ energy-limiting intrinsic safety devices.

Although there has been some resistance to change from those using the familiar explosion-proof approach, engineers have recognised the cost savings and advantages of an IS design, leading to wider acceptance of IS. Additionally, globalisation of many corporate structures often leads to standardisation of plant designs that are the best economic fit on a global basis and these designs frequently require use of IS technology.

This article provides a brief introduction to intrinsic safety, the different components in an IS system and the two different types of barriers. Additionally, this article outlines why selecting an associated apparatus as the IS barrier provides the most economic and effective use of IS technology. The techniques outlined in this article are most applicable to the industrial process control sector including such industries as oil and gas production, oil refining, petrochemical, chemical, pharmaceuticals, food and beverage, and pulp and paper.

The concept of intrinsic safety

Instead of using explosion-proof techniques to contain a possible explosion, the IS approach limits the electrical and thermal energy that could reach any device in the hazardous area. This ensures that the energy level remains below threshold levels that would ignite an explosive atmosphere. The vast majority of field instrumentation devices, such as transmitters and solenoid valves, typically operate on 24 VDC or less with low current signal levels that are well within typical IS system limits.

There are a number of approval agencies that certify IS devices including FM, CSA International, SIRA, LCIE, Testsafe and many others who offer North American, ATEX and IEC Ex based certifications for gas, dust and fibre hazardous environments. An IS system includes the field devices, the barriers and/or the associated IS devices, and the interconnecting cable (see Figure 1).

Field device IS classifications

Simple apparatus include devices such as RTDs, thermocouples, switches, LEDs, potentiometers and switches. They are electrical components that do not generate or store more than 1.5 V, 100 mA and 25 mW, or a passive component that does not dissipate more than 1.3 W. Simple devices can be freely used without any agency certifications but do require an assessment for their maximum surface temperature and to be assigned a temperature classification (referred to as a T code).

Intrinsically safe apparatus are devices that can store electrical energy such as transmitters, I/P converters and solenoid valves. They may also be connected to simple apparatus in the hazardous field location. These devices must be certified as intrinsically safe apparatus and classified based on allowable hazardous locations, gas group and T code. Entity parameters for the device must also be provided and include the maximum voltage, current and power limits as well as the internal capacitance and inductance parameters of the device. These parameters are used in conjunction with the connecting cable parameters to calculate the maximum allowable cable lengths, loop voltage and current values for the system.

Barrier or associated apparatus

An IS system installation requires a barrier or associated apparatus interface between the field device and the control room equipment. Its function is to limit the energy to

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Intrinsically-Safe apparatus (maximum)	Barrier or associated apparatus (maximum)	Design constraints
Input Voltage (U_i or V_{max})[1]	Output Voltage (U_o or V_{oc})	Maximum Output Voltage must be less than or equal to Maximum Input Voltage ($U_o \leq U_i$)
Input Current (I_i or I_{max})	Output Current (I_o or I_{sc})	Maximum Output Current must be less than or equal to Maximum Input Current ($I_o \leq I_i$)
Input Power (P_i)	Output Power (P_o or P_t)	Maximum Output Power must be less than or equal to Maximum Input Power ($P_o \leq P_i$)
Internal capacitance (C_i)	Allowed capacitance (C_o or C_a)	The Total Capacitance of the connecting cable plus the device must be less than or equal to the Allowed Capacitance ($C_o \geq C_i + C_{cable}$)
Internal inductance (L_i)	Allowed inductance (L_o or L_a)	The total inductance of the connecting cable plus the device must be less than or equal to the allowed Inductance ($L_o \geq L_i + L_{cable}$)
OR		
Internal inductance to resistance ratio (L_i/R_i)	External inductance to resistance ratio (L_o/R_o or L_a/R_a)	Inductance to Resistance Ratio can be used as an alternative to the allowed inductance. The cable length restrictions due to cable inductance can be ignored if the following conditions are met: $L_o/R_o \geq L_i/R_i$ AND $L_o/R_o \geq L_{cable}/R_{cable}$

Table 1: Design constraints associated with entity parameters (IEC and ISA symbols).

the hazardous area such that, even under a fault condition, there cannot be enough electrical or thermal energy released by the device to ignite an explosive atmosphere. They are designed for connection to simple or IS apparatus and must be certified. There are two types of barriers that are most commonly used and a hybrid method where the barrier is integrated into the receiving device.

Zener diode barriers are simple passive devices comprised of Zener diodes, resistors and fuses that serve to limit the voltage, current and power available to the hazardous area device. The design requires the use of a dedicated IS earth ground connection maintained at less than 1Ω and allows no grounding connections at the field devices. A common downside of using this approach is that the required earth ground has low noise rejection capability. This electrical interference can introduce stray and unwanted electrical noise components into the measurement circuit, creating potentially significant measurement errors.

Isolated barriers are active devices that incorporate galvanic isolation, thus eliminating the requirement for an earth ground and the restriction for grounding of field devices. They also provide a higher voltage to the field and devices. These barriers require operating power and are application specific, with different models required for different applications (RTD, thermocouple, 4-20 mA etc).

Associated apparatus incorporate a barrier into the safe area mounted receiving device or the control room equipment. The Moore Industries SPA2IS is an example of such a device that provides an isolating barrier within the alarm trip. This dramatically reduces the cost of purchase, installation and maintenance versus more traditional approaches that require a separate Zener or isolating barrier (see Figure 3).

Design considerations

As discussed, the premise of an intrinsically safe system is that there is no component or combination of components that can release enough electrical or thermal energy to ignite an explosion in the hazardous area either under normal or fault conditions. In order to accomplish this goal, the energy storage and release characteristics of all components must be defined and incorporated into the system design.

While this may sound like a daunting task, it is relatively simple in practice. The manufacturer of each component must provide a certification document (or data sheet) that lists the definitive voltage, current, power, inductive and capacitive values appropriate to the application. These are called 'entity parameters'. As an example, the capacitance of the field-mounted transmitter and its output cable must not exceed the allowable value specified by the associated device (barrier) in the safe area. This is a simple A + B ≤ C calculation for the capacitance (C) and the inductance (L) of the transmitter and the cable. And further, the output voltage of the barrier must be less than the maximum allowed by the transmitter and similarly the output current of the barrier must be less than that allowed by the transmitter.

The combined values of capacitance and inductance for a typical transmitter and 400 m of cable are far less than the maximum allowable by a typical barrier or associated IS device. The voltage, current and power specification of a typical associated IS device (barrier) is limited by vendor design to acceptable numbers for the intended application. For a transmitter barrier for example, the maximum voltage is typically less than 30 VDC, and the maximum current is less than 100 mA.

To certify the installation, a system assessment document is created based on the entity parameters of each component and a verification performed to ensure that all values of the system are within the allowable limits.

Installation and maintenance considerations

One advantage of IS installations is that due to the low power, ordinary instrument

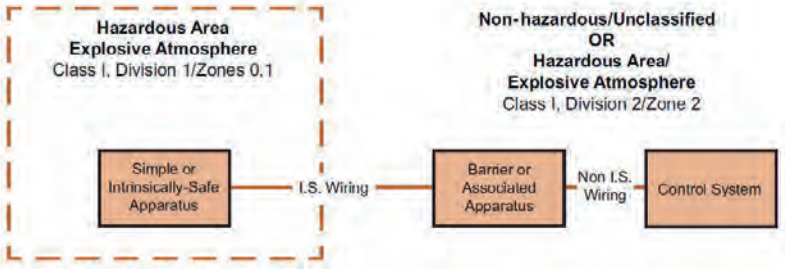

Figure 1: Components of a typical intrinsically safe system.

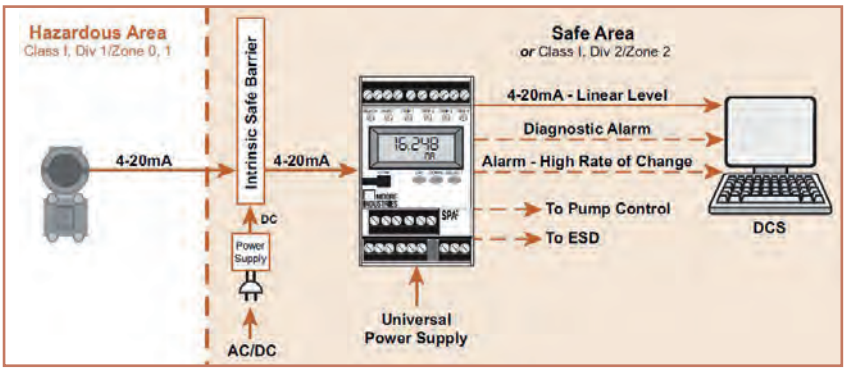

Figure 2: A system using a safe area device with an external barrier and power supply.

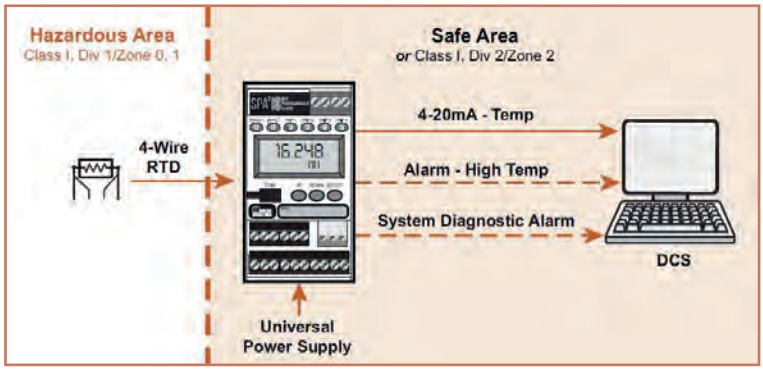

Figure 3: An associated apparatus incorporating the isolating barrier, temperature transmitter, temperature alarm and diagnostic alarming functions in a single device.

cables can be used for IS circuits. Maintenance and calibration of field equipment can also be carried out while the plant is in operation and the circuit is 'live' in the hazardous area.

A key design decision, which can have a significant effect on the IS system installation and maintenance costs, is the choice of barriers. While Zener barriers are less expensive than active isolated barriers, they require a separate, clean, high integrity ground, which has high maintenance costs and potential for electrical noise issues. An isolated barrier is often the better choice but cost, maintenance and cabinet space of barrier power supplies need to be included. This may also involve redundant systems, since power supplies usually have the highest failure rate and can significantly reduce system reliability. This further adds to required cabinet space and heat dissipation or cooling considerations in your barrier marshalling cabinets. Often the additional cost of the isolated barriers and power supplies are more than the field-mount instruments themselves.

An often-overlooked consideration is the use of associated apparatus. These offer the dual role of transmitter and isolated barrier in one package, which can provide significant cost savings by reducing the number of components, power supply requirements, cabinet space, wiring terminations, installation labour and stocking requirements. Cost savings are ongoing with reduced spares inventory, maintenance-related downtime and consequent process restart issues.

Conclusion

Intrinsically safe systems are becoming more prevalent in the process control industry and offer some advantages over explosion-proof systems when used for field instrumentation. Since the energy is limited, general-purpose wiring methods can be used (no rigid conduit, pouring of seals or special housings are needed). Also, equipment can be replaced and maintained without having to un-power loops or shut down the process.

However, a disadvantage is the installation and maintenance costs of the required IS barriers. Many, but of course not all, of these costs can be drastically reduced if an associated apparatus is used. Since the associated apparatus includes the barrier in the receiving device there is no need for the additional cost of the barrier, cabinet space, a high-integrity clean ground connection, separate power supply or custom vendor backplane.

The associated apparatus provides an integral solution that is the most affordable and safe IS solution available.

References

1. Instrumentation, Systems, and Automation Society 2003, *ANSI/ISA-RP12.06.01-2003 Recommended Practice for Wiring Methods for Hazardous (Classified) Locations Instrumentation Part 1: Intrinsic Safety*.
2. Instrumentation, Systems, and Automation Society 2009, *ANSI/ISA 60079-11 (12.02.01)-2009 Explosive Atmospheres — Part 11: Equipment protection by intrinsic safety "i"*.
3. International Electrotechnical Commission 2015, *IEC 60079-10-1:2015 Explosive atmospheres — Part 10-1: Classification of areas - Explosive gas atmospheres*.
4. International Electrotechnical Commission 2011, *IEC 60079-11:2011 Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i"*.
5. Factory Mutual Research Corporation 2015, *FM 3610:2015 Intrinsically Safe Apparatus and Associated Apparatus For Use In Class 1, 2 And 3, Division 1, Hazardous (Classified) Locations*.

**TS Todd is Director of Engineering at Moore Industries. She has a BSEE from Brunel University and more than 25 years of systems engineering experience in industrial, communications and aerospace applications.*

Moore Industries Pacific Inc
www.miinet.com

WIRELESS MOTOR CONDITION SENSOR

Until now, the monitoring and preventive maintenance of low-voltage motors has been time-consuming and expensive. ABB has announced sensor technology that attaches directly to the motor and supplies information regarding operating and condition parameters via wireless transmission.

The smart sensor provides information on operating and condition parameters such as vibration, temperature or overload and calculates power consumption. The data is analysed by a specially developed software program and provided to the plant operator in the form of graphics for maintenance planning, thereby enabling claimed downtime reductions of up to 70%. At the same time, it is claimed that the lifetime of the motor can be extended by up to 30% and energy consumption reduced by as much as 10%.

This solution is not restricted to new motors made by ABB. The sensors can be installed at the factory or retrofitted on already operating low-voltage motors.

Cybersecurity is guaranteed because the sensor is not electrically connected to the motor, so unauthorised parties cannot access the motor. The smart sensors wirelessly transmit the data via encryption protocols to a secure server where they are analysed using special algorithms. The cloud-based server implementation fulfils all of ABB's specifications for cybersecurity, and the data is stored in the cloud in encrypted form. The internet-based customer portal also uses a role-based access protocol to make the data securely accessible.

ABB Australia Pty Ltd
www.abbaustralia.com.au

RUGGED DETACHABLE LAPTOP

Panasonic Australia has launched the Toughbook 20 — a rugged detachable notebook design that can be used in different modes.

The Toughbook 20 has six usage modes that make it suitable for a range of uses. As well as being used as a traditional laptop, the tablet can be detached and used by itself or flipped 180° to show content in presentation mode. The convertible mode allows users to see the display with the keyboard attached and ready when it is needed. Using the built-in handle, the device can operate in carry mode or hanging on a wall, while vehicle mode provides full functionality and operation of the device when on the move. The product has a glove-enabled touch screen, a purpose-built vehicle mount and a desktop port replicator.

The device is suitable for field workers that need a highly mobile computing solution and the ability to capture large amounts of data. It is purpose-built for challenging environments, including emergency services, government, transport and logistics, mining and gas, defence and field service.

The unit has a magnesium alloy case with an IP65 and MIL-STD 810G rated design, making it suitable for all outdoor usage from below-zero temperatures to the height of Australia's summer. Weighing just 1.76 kg in notebook mode — with the detachable tablet weighing 950 g — it is well below the 2 kg industry standard for a device of this kind.

Panasonic Australia Pty Limited
www.panasonic.com.au

SAFETY INTERLOCK SWITCHES

The NG series RFID-enabled safety interlock switches offer protection ratings of IP67 and IP69K with a locking force of 7500 N. The system can hold unlocked doors in position with a force of approximately 30 N and can prevent the door from being opened by vibrations or gusts of wind. They are best suited to washdown environments where particular attention is required for cleanliness and hygiene.

The series safety interlock switches have the choice of two different activation modes for the safety outputs: Mode 1 (active with guard closed and locked for machines with inertia) and Mode 2 (active with guard closed and unlocked for machines without inertia).

The digitally coded actuators are suitable for use in safety applications up to SIL3/PLe, with a single device for each protection. Versions are available with a lock device, an emergency release pushbutton or both.

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Michell Instruments has upgraded its Universal Communications Kit diagnostic to support its Easidew and Pura dewpoint transmitters.

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MODULAR SAFETY CONTROLLER

The Preventa XPS MCM is a modular safety controller capable of monitoring multiple safety functions and is the latest addition to the Schneider Electric Preventa range of safety products.

The Preventa XPS MCM is a configurable, embedded safety controller designed to protect industrial machines and operators from incidents involving moving machine parts. It is capable of monitoring multiple safety functions, including emergency stop, guard monitoring, perimeter guarding, position monitoring and speed monitoring.

Preventa XPS MCM is designed for safety applications requiring conformity with Category 4 standards EN ISO 13849-1 and SIL3 EN/IEC 61508.

The controller has eight digital inputs and two digital outputs, and it can be expanded up to 128 digital inputs and 16 digital outputs (relay or solid state). It is easy to expand a configuration from small into large, due to the availability of a wide range of communication modules. It is possible to build up to six island architectures via safe communication, with a distance of up to 50 m between each island. Expansion is possible directly on the controller backplane bus as well as via the safe expansion bus.

The modularity of the XPS MCM system enables users to match it to the application while reducing the number of components, footprint and wiring. The scalable unit makes it possible to standardise safety monitoring devices from simple to complex standalone and machine lines. To simplify the machine maintenance, the system has a removable memory card that can be used to transfer the configuration to a new controller.

Schneider Electric Industry Business
www.schneider-electric.com

ETHERNET SWITCHES

Hirschmann SPIDER III switches utilise Hirschmann's latest technology and, depending on the specific needs of industrial networks, customers can select from the Standard or Premium lines. Both lines are designed to deliver reliable communication in harsh environments.

The SPIDER III range of switches enables network administrators to reliably transmit data across long distances, while remaining cost-effective. The plug-and-play capabilities also make them easy to install and maintain. Specific benefits of the two lines include:

The SPIDER III Standard Line is designed for machine builders in the automation market and provide an entry-level, cost-effective option. These compact devices offer up to eight Fast Ethernet or Gigabit Ethernet ports to accommodate future data and speed requirements.

The SPIDER III Premium Line is for networks with unique or evolving needs, offering robust, completely customisable features. Users can configure some switching parameters via a USB port by utilising an easy-to-use, free software tool. To enable their use in more markets, the premium switches are housed in a highly ruggedised metal casing with an optional protective coating and meet additional industry standards and certifications.

The SPIDER III switches are suitable for use in manufacturing, machine building, solar power and traffic control industries. The Premium Line also offers specific features to meet the approvals needed for use in the process automation, transportation and marine industries.

Belden Australia Pty Ltd
www.belden.com

ALL-IN-ONE RFID READER

The BIS M-4008 from Balluff is an all-in-one RFID reader with integrated processor. The 13.56 MHz reader with IP67 protection and a rugged die-cast zinc housing features a Profinet interface and needs no additional processor.

Typical applications include material flow control in production facilities, conveying systems and assembly lines.

The all-in-one reader has an integrated 2-port Ethernet switch for constructing simple line and ring topologies. An integrated web server provides status monitoring, and highly visible LEDs directly on the device also indicate status.

The BIS M-4008 supports data carriers conforming with RFID standard ISO 15693. For faster data transmission, Balluff high-speed data carriers can be chosen with a transmission rate of up to eight times faster than the standard carrier, and extra-large memory capacities of up to 128 KB.

The die-case zinc housing can be installed directly on metal in a variety of ways. Direct connection to Profinet also represents reduced wiring expense and effort, using a 4-pin, M12 standard cable for the power and Profinet connection.

Device master data is available as a GSDML file for type-specific parameterisation, and ready-made function blocks are provided for simple S7 programming.

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ETHERNET SWITCHES

Control Logic has added 18 compact models to its Red Lion NT24k managed Gigabit Ethernet industrial switch range. The NT24k 10- to 14-port DIN rail-mountable switches feature Fast Ethernet, Gigabit or dual-mode fibre ports alongside eight Gigabit copper ports with optional IEEE 802.3af/at PoE+ support.

Each switch accepts redundant 22–49 VDC power input and offers a step-up power boost circuit to eliminate the need for a standalone 48 VDC power supply. In addition, Red Lion's new PoE+ switches provide up to 240 W PoE output power to support applications such as security cameras, panel displays and wireless access points.

With a hardened metal housing, each NT24k switch provides 200g shock and 50g vibration tolerance coupled with up to a -40 to 85°C operating temperature range. They also offer a full set of management features and advanced security to ease network deployment with key functionality that includes Jumbo Frame support, SD card and XML configuration backup and restore, auto-IGMP configuration, Ethernet/IP with CIP messaging, ring technology with 30 ms recovery, event logging, SNTP and IEEE 802.1x with RADIUS remote server authentication.

Control Logic Pty Ltd
www.control-logic.com.au

DISTRIBUTED CONTROL SYSTEM WITH PROFINET

Emerson Process Management, working with MYNAH Technologies, has expanded customers' network possibilities and application options by adding Profinet capabilities to the DeltaV distributed control system (DCS).

The addition of Profinet saves DeltaV users time and effort by enabling direct connection between the DeltaV DCS and plant floor devices such as motor control centres, variable speed drives and PLCs in process automation businesses. Users no longer need to use a protocol converter to connect to the system.

Profinet joins a wide range of DeltaV ethernet-based protocols, such as Modbus/TCP and Ethernet/IP. The capability is easily added to the system via both M-series and S-series Virtual I/O Module 2 (VIM2) interfaces.

The Profinet driver supports simplex VIM2 modules deployed with commercial off-the-shelf (COTS) network equipment. For enhanced reliability and availability, simplex VIM2 modules can be deployed with an external switch that handles media redundancy network topology via Media Redundancy Protocol (MRP) and also behaves as the ring master.

Saving time and increasing safety, the VIM2 interface and firewall function allow a high level of access without sacrificing control system security and integrity. The VIM2-based Profinet architecture enables users to optimise expansion activities or perform maintenance operations on applications in remote locations using a laptop with vendor-specific diagnostic tools — all while constantly monitoring applications from a centralised network.

Emerson Process Management Aust P/L
www.emersonprocess.com.au

CONNECTORS

Turck has released an overmoulded connectivity solution for J1939 Deutsch applications. The fully assembled solution increases longevity and durability while reducing installation time in mobile equipment and oil and gas applications, where environmental factors such as shock, vibration, cold temperatures, moisture and oils can affect performance.

Due to its overmoulded design, jacketing, IP67 rating and good cold weather performance, Turck's J1939 Deutsch connectors provide additional reinforcement, abrasion and oil resistance and high performance in a ready-to-use solution. The connectors come equipped with Turck's extremelife-60 cabling, which allows for a flexible cable jacket that will not break or crack when pulled in extreme cold.

J1939 Deutsch cables are constructed following SAE specifications. Turck also offers overmoulded J1939-11 solutions for shielded applications, as well as J1939-15 solutions for unshielded applications, terminating resistors and tees.

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Sensor intelligence replaces mechanical singulation

Fruit juice manufacturers offer a wide range of products — from the purest fruit juices and nectars to native and exotic fruits and berries, right through to vegetable juices. In the production plant of a well-known fruit juice manufacturer, the fruit juices are pressed, decanted into a huge range of Tetra Pak cartons and then packaged again in trays without any interruptions.

A vast product range requires a varied selection of packaging shapes and sizes, and after filling, the different Tetra Pak cartons filled with juice are packaged again in trays. Each tray is an open box made of corrugated cardboard and holds either six or 12 fruit juice cartons. The juice cartons must be counted and must reach the downstream secondary packaging lines intact so that the right number of cartons ends up in the corresponding tray.

Previously, a mechanical singulation process was used to determine the right quantity of juice cartons — by leaving gaps on the belt to enable the juice cartons to be counted. As a result, the photoelectric sensors used at the time could detect the edges of the packaging and count the cartons. To create the gaps, a belt brake was used to accelerate the juice packages, which were moving comparably slowly. This often resulted in faults on the packaging line and damage such as squashed juice cartons. It was also possible that if a gap was not created properly, it would not be detected by the photoelectric sensor and some cartons would not be counted at all. This solution was not just highly prone to errors, it also meant that the machine required constant maintenance — the belt needed to be lubricated as effectively as possible so that the juice packages were able to slide. Added to this, the belts had to be constantly readjusted due to the different packaging formats. In the event of machine downtime, searching for the cause of the problem was time-consuming.

The old packaging system fitted with conventional optical sensors also could not cope with the fruit juice manufacturer's wide range of packaging. It was not just the different formats of the juice packages, but also their colourful design that proved to be too much for the photoelectric retroreflective sensors. When detecting very dark, extremely bright, shiny or highly colourful surfaces, the light was only reflected partially, too much or not at all, causing false signals. This resulted in the juice cartons being counted incorrectly, which could cause crashes and incorrect quantities in the trays. On top of all this, the manufacturer still had to carry out a weight check at the end of the line using scales.

meurer Verpackungssysteme, a German manufacturer of packaging machines, has developed a solution utilising sensors from Sick that makes it possible to dispense with the complex mechanical singulation process when counting juice cartons. In the fully automatic CM/TP-B tray packer from meurer, the Sick DeltaPac MultiTask photoelectric sensor detects and counts the juice cartons without any gaps, even before the cartons are separated onto the downstream secondary packaging lines, where they are placed in trays.

Creating a gap is no longer necessary, as the MultiTask photoelectric sensor combines two intelligent technologies. The Delta-S technology developed by Sick consists of four PinPoint 2.0 LEDs and two high-resolution energy scales, each with two receiving elements. The four receivers on the two energy scales receive the same amount of light, while the light beams from the four PinPoint 2.0 LEDs detect the leading side of the juice cartons. Initially the light energy is balanced, but as soon as the leading edge of a juice package is brought into the beam of light, the amount of light energy is distributed to the receivers in varying degrees, disrupting the balance.

Depending on the packaging contour, a distinct energy signal is created and the sensor detects where the reflected light is coming from and sends a corresponding switch signal. The DeltaPac sensor also utilises distance measurement for background suppression. The detection process, which is based on this fusion of these technologies, works completely independently of the colour, format or surface structure of the juice carton.

The meurer tray packer makes processing the widest range of packaging colours and formats simple. With the software and PLC supplied by meurer, the packaging speed and formats can be specified, and the DeltaPac sensor will adjust itself accordingly. Time-consuming maintenance and adjustment work is no longer required, due to the high level of detection reliability and the fact that the juice packages are constantly on the move during the counting and separation process. Furthermore, machine downtime is significantly reduced and it is no longer necessary to weigh the trays at the end of the line.

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www.sick.com.au

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CAPACITIVE SENSOR

SmartLevel capacitive sensors detect the levels of aqueous to highly conductive media. Annoying deposits, contamination, liquid films and foam formant are reliably masked out. The SmartLevel 500+ sensor is designed for highly conductive media such as sulfuric and hydrochloric acid or concentrated cleaning agents.

Designed for a conductivity of approximately 50–500 mS/cm and greater, the SmartLevel 500+ detects the level either in direct contact or through plastic or glass containers with wall thicknesses of up to 10 mm. The non-flush mountable sensor is available in an M30 x 1.5 housing with PNP or NPN normally open or normally closed output. The user can choose between stainless steel or a fully PTFE encased housing with IP67 protection.

The sensor is designed for an ambient temperature of -10 to +60°C. The stainless steel version is connected via a 4-pin M12 plug, with power and switching state indicated by a green and yellow LED respectively.

The PTFE version features a housing fully encased in PTFE, with a red LED for function indication and a 2 m-long PTFE cable.

The sensor can detect levels through plastic or glass walls, without the need for holes or openings. Typical applications include sensing liquid, strongly adhering foods such as ketchup and mustard etc or detecting highly conductive effluents, saline solutions and acids.

Balluff Pty Ltd
www.balluff.com.au

HIGH-PERFORMANCE RUGGED WORKSTATION

NextComputing recently released the Vigor ED rugged portable workstation.

Graphics- or processing-intensive applications like geospatial imagery analysis, UAV ground control or HD digital video processing require powerful computer hardware. However, for mobile deployments where size, weight, power and cooling are a concern, typical rackmount servers are just too large, heavy and power-consuming.

The Vigor series is compact and rugged — designed to handle the same demanding tasks normally assigned to full-sized systems. Now users can replace larger rackmount hardware with an all-in-one workstation that is easier to transport and set up.

The modular, scalable system can be outfitted with the latest Intel multi-core processors, high capacity and performance memory, full-size PCI Express 3.0 cards and up to 16 removable enterprise-class SSD, SAS or SATA drives. It also includes an integrated 17.3″ 1920x1080 display.

Metromatics Pty Ltd
www.metromatics.com.au

CONTROLLERS

Siemens has added a range of modules and functions to the Simatic S7-1200 Basic Controllers. One of the modules, the Energy Meter module SM1238, records energy flows. In addition, the controllers have also been enhanced with an updated CPU 1212FC for failsafe applications in the lower power range. The firmware for the Simatic S7-1200 Basic Controllers has also been updated with the latest version of the TIA Portal V14 engineering framework, and expanded to include additional functions. The version 4.2 release now includes the Media Redundancy Protocol (MRP) and a backup/restore function for backing up project data for the 2-port CPUs 1215 and 1217.

The SM1238 Energy Meter expansion module can be used to record energy flows directly on the machine. The module records electrical values, such as voltages up to 480 VAC, in a 1- or 3-phase network with a direct connection but without a transformer. The user can freely adjust the diagnostic parameters for over- and undervoltage, overload, tolerance value and tolerance time. An external 1 or 5 A current transformer with a conversion factor of up to 10,000 is used to measure the current.

The firmware update increases network availability and offers greater flexibility when it comes to network configurations. The backup/restore function allows for backing up of project data with up-to-date values to prevent data losses.

The Safety CPU 1212FC is able to handle standard and safety-related automation tasks, such as protective door monitoring, in a single device, and now supports Profisafe.

Siemens Ltd
www.siemens.com.au

SERIAL ETHERNET/IP LINKING DEVICE

HMS Industrial Networks has released the first product in a family of EtherNet/IP linking devices. The Serial EtherNet/IP Linking Device allows users to connect any serial device to a Rockwell ControlLogix or CompactLogix PLC. The main advantage of the device is integration with Rockwell's Studio5000 Logix Designer.

The serial EtherNet/IP linking device makes it possible to include any automation device with a serial RS-232/422/485 application interface in an EtherNet/IP-based network architecture. It supports all kinds of serial protocols, including Modbus, DF1, produce/consume, ASCII and custom protocols.

Contrary to an in-chassis module which is physically connected to the PLC, the linking device can be mounted close to the connected machine. This means that it is possible to establish a connection via a single ethernet cable instead of multiple network-specific cables. The linking device supports the ODVA device level ring (DLR) for ring topology.

Users access serial protocol configuration through their existing Studio 5000 software. All configuration is made inside Studio 5000, where there is support for process variable data tags and manual and automatic generation of named and structured Studio 5000 controller tags without any required user logic.

Since the linking devices are stand-alone (distributed), they do not affect PLC backplane performance (PLC execution time), even when a large amount of data is transferred. The PLC simply scans the linking device as if it were any other I/O device on the network.

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METAL DETECTION OR X-RAY INSPECTION

WHAT FOOD PROCESSORS SHOULD KNOW

Bob Ries, Lead Product Manager, Metal Detection and X-Ray Inspection, Thermo Fisher Scientific

Consumer safety has always been a primary concern for food processors. With significant costs and penalties for non-compliance, processors will be relying, more than ever before, on the latest quality control methodologies and equipment to keep the food supply safe.

Although recalls due to *Listeria*, *E. coli* and *Salmonella* may be grabbing headlines, foreign object contamination is an equally important food safety issue — and an all-too-common occurrence.

Most raw foods and ingredients originate in a natural environment — a field, an orchard, a farm, etc. As the food is harvested, foreign objects such as stones or glass can end up commingled and transported into the processing plant. Additionally, objects found in manufacturing facilities — such as metal and plastic — can also find their way into the processing stream as the result of machinery or process failures. Lastly, fragments of bones, pits or shells that are removed during processing can end up hidden in the final products. These risks, and the costs associated with them, have led to more demanding detection policies worldwide.

Foreign object contamination detection continues to be top of mind for the vast majority of food processors, regardless of geographic location or product type. It is a critical part of an overall food safety program because threats can never be totally eliminated.

In addition to more stringent food safety policies, some retailers have also started to make product inspection demands on food processors — even refusing to do business with those not employing the latest technologies. The primary way to address this issue is to install sophisticated detection systems — such as X-ray — close to the end of the line augmenting a metal detection program upstream.

With these drivers currently in place, the objective of this article is to review the attributes of both metal detectors and X-ray systems and for which each is best suited — the technologies are frequently deployed at different points in the production process, which means it is not uncommon to find both on the same production line.

The challenge

Metal detection and X-ray inspection traditionally have been the first line of defence to identify the presence of foreign contaminants in food products before they have the chance to leave the processing plant.

For food quality professionals, process engineers and corporate food safety executives who decide which technology will best protect them from contaminants, choosing a detection system is typically based on three things: the optimum detection point, overall application capability and total cost/benefit.

However, even though detection technologies have been employed by food processors for decades, engineering and software improvements continue to set new standards. This has led to some confusion regarding which technology to employ and why.

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The basics

In security applications, such as airport screening, metal detectors use radiofrequency signals to react to moving metal (such as coins in your pocket).

X-ray systems in medical or airport baggage screening applications produce density images (generated by ionising radiation) that are analysed by people for irregularities. The scanning and display techniques are different from food X-ray but the goal is the same — find things that are not as expected.

Deploying these technologies for food applications is more complex. The size and type of anomaly being detected is more challenging and the rapid speed in which the detection needs to take place makes the process more complex, utilising a computer system for analysis rather than a person. In fact, in many cases the real challenge isn't finding the contaminant, it is ignoring the product, packaging or environment. False detections add up to big costs and high frustrations.

Metal detectors and X-ray systems for food applications must be very sensitive, easy to use, fully automatic, fast, extremely robust, reliable and cost-effective. This is a tall order for any automated system that must run for many years in a hot, wet factory and make reliable pass/fail decisions on literally millions of products. Foreign object detection performance is determined in three ways: detectable contaminant types, minimum contaminant size and probability of detection.

Table 1 shows a basic summary of detectable contaminant types by technology. Please note these are general guidelines. Situations can occur when contaminants can be missed, or conversely, find foreign objects you thought weren't possible. The best practice prior to deployment is always to test many samples with different contaminants. This helps you understand how the product and contaminant react when in the detection system.

Minimum contaminant size depends on the system design/technology and the product effect (how much the food itself 'looks like' a contaminant to the system). Probability of detection means "what is the chance of missing a contaminant in real production with real products running at real speeds?" Typically, the larger the contaminant, the higher the probability of detection.

This fundamental trade-off is addressed by building in margin for error, setting periodic mandatory audits and performing preventive maintenance. Policies, procedures, training and discipline are the order of the day.

Selecting the detection point

Companies typically use hazard analysis critical control point (HACCP) methodology to manage their food safety. The first part of the process (HA) identifies which contaminants are most likely to occur. Next is the determination of the (CCP) — or in the case of contaminants, the best detection point. CCPs can occur in multiple places: at the beginning of the process; after cutting, sifting or mixing; immediately after a bag or box is filled; or at the end of the line.

Ideally, the goal is to find problems early in the process to reduce the cost of rework or scrap while still ensuring the final product is safe. Inspecting large cases immediately prior to shipment is not always the right decision.

The optimum detection point can influence which technology should be employed. Metal detectors can be installed almost anywhere, but their performance depends on the size of the aperture (hole) the product passes through. In general, they work best for bulk conveyed or piped product or products in small packages.

X-ray systems are dependent on product size too, but have greater sensitivity with large products than metal detectors. Due to the basic detector sensor scanning rate, X-ray systems are limited by speed. They are typically found closer to the end of the line. Because X-ray systems need a constant, known speed to construct images, they cannot be used in gravity flow applications, where metal detectors can.

Decision-making checklist

Before making a decision, answer these fundamental questions: What contaminants do you want to find and where do they come from? (See Table 2)

Given all the factors that affect application performance, the best way to select a technology and specific system is to run a test. Try everything to make the system fail. Strive for near 100% probability of detection with no false readings. Make sure you

FOREIGN OBJECT CONTAMINATION DETECTION CONTINUES TO BE TOP OF MIND FOR THE VAST MAJORITY OF FOOD PROCESSORS, REGARDLESS OF GEOGRAPHIC LOCATION OR PRODUCT TYPE.

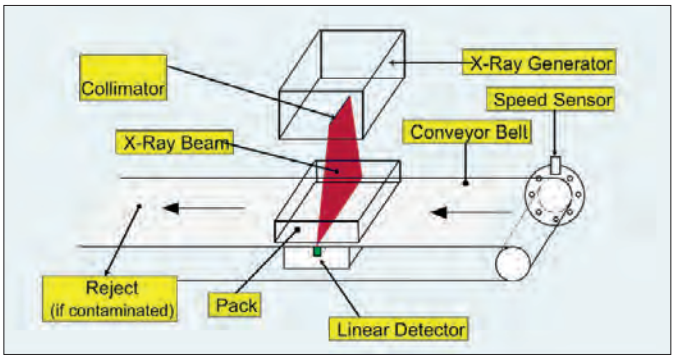

Figure 1: Simplified block diagram of a typical food X-ray inspection system.

Detectable contaminant type	Metal detectors (MD)	X-Ray systems (XR)	Comments
Ferrous metal	•••	•••	Ferrous, non-ferrous and stainless steel different for MD, the same for XR
Non-ferrous metal (e.g., brass or bronze)	••	•••	
Stainless steel	•	•••	
Aluminium	•		Not dense enough for XR
Wires	••	•	Depends on orientation for MD and diameter/length for XR
Glass		••	Depends on composition
Rock		••	Depends on type and density
Bone		•	Calcified bone only
Plastic		•	Depends on type and size
Wood, pits, shells, insects, etc.			Not conductive for MD or typically not dense enough for XR

Table 1: Detectable contaminant types by technology.

have enough detection margin so the system can run trouble-free for hours without false rejects or the need for calibration.

X-ray inspection guidelines

X-ray systems create greyscale images corresponding to density. To detect a contaminant in those images, the contaminant must have significant contrast compared to the product the contaminant is inside.

Table 3 shows some typical contaminant material densities compared to water (water density = 1.0) and their general detectability. The only way to definitively determine what can and cannot be detected (material and contaminant size) is to have an application specialist run a test.

Package material trends

The need to market products in packaging materials which cost-effectively enhance shelf life has led many brand owners to convert to metallised film or foil-based structures. These materials not only provide better oxygen, moisture and UV-light barriers, but also improve shelf presence.

However, metal-based structures are not compatible with metal detectors. On the other hand, X-ray systems have no problem seeing right through these packages and are able to detect very small contaminants inside. Packaging material trends will continue to be a critical factor in contamination detection choices.

Basic principles of X-ray operation

Figure 1 shows a simplified block diagram of a typical food X-ray inspection system. An X-ray beam is generated and passed through the product being inspected as it is conveyed through the system. A detector creates a line-by-line image of the product, which is sent to a computer for vision analysis. Before the product leaves the system, the computer makes a good/bad decision which automatically rejects contaminated product. Although there are many other possible configurations for X-ray systems, the fundamental operation is always the same. Products are scanned, analysed and passed or rejected.

By understanding the most important elements of an X-ray inspection system, users can easily and quickly deploy them in their factories. As with most technologies, there are a few key facts that need to be understood about X-ray inspection systems.

X-ray systems are safe

X-ray units meet or exceed safety standards such as the FDA Code of Federal Regulation 21 Part 1020.40 and the more stringent United Kingdom IRR 1999 limits, and they have a number of safety features engineered into their design — including door safety interlocks, radiation shielding curtains, emergency stops, lockable power and X-ray key switches and on-screen X-ray warnings.

Source and detector selection is critical

The X-ray beam should be wide enough to pass through all portions of the largest product. In general, thicker products need a

Metal Detection	X-Ray Inspection
Detects metal including aluminium and wires.	Detects most metals and many other solid contaminants. Can also inspect a product by measuring shape, counting objects or estimating weight from the density image.
Can be used almost anywhere in a process; conveyors, drop-through and pipelines.	Conveyor, bulk and pipeline; not for gravity applications.
Operates over a wide range of speeds.	Speed must be constant and range may be limited.
Conductive (wet/salty) products are the most difficult to ignore.	Dense products with a lot of texture are the most difficult to achieve good performance.
Performance dependent on aperture size, coil configuration and software.	Performance dependent on X-ray source, receiver, power and software.
Long life in even the most harsh environments.	Moderate life in harsh environments. Controlled environments are best.
Metal only usually > 1 mm in size.	Typically can find smaller contaminants than metal detectors and also non-metallic contaminants.
Dry products, small products, piped or bulk products have best sensitivity.	Large packaged products and cases can be inspected; cans and bottles too.
Sensitive to metallic packaging so detection performance is poor.	Ideal for metallised structures.

Table 2: Capability comparison between metal detection and X-ray inspection.

Detectable		Possibly Detectable		Not Detectable	
Iron	7.15	Nylon	1.15	Hair	0.32
Steel	7.86	PVC	1.38	Fruit	0.56
Stainless steel	7.93	Teflon	2.19	Insects	0.59
		Calcified bone	2.20	Fish bones	0.60
		Stone	2.5 (avg.)	Wood	0.65
		Glass	2.50	HDPE	0.92
		Aluminium	2.71	UMHW	0.94
		Dense rubber	1.52	Ice	0.92

Table 3: Typical contaminant material densities compared to water.

higher voltage (kV) for 'punch through' whereas more current (mA) just brightens the image. Usually this aspect of the X-ray system must be determined by the system vendor during a product test. Without sufficient X-ray power, performance will suffer and false rejects will occur.

Detectors vary in pixel size (0.4 to 0.8 mm) and sensitivity to X-ray exposure. Smaller pixels are not always better though — they need more X-ray power and slower line speeds to assure a proper image is acquired.

A thorough product test is mandatory

X-ray performance is affected by product density and texture changes, line speed, contaminant type, position and density, as well as packaging variations and more. To get accurate results, five or more packages of each type should be tested, varying the contaminant type and its position. If possible, the product position inside the package and its position on the conveyor belt should also be varied. Real-world performance should be expressed as probability of detection (POD). No detection system is perfect, so it is necessary to try to understand what is always detectable and what may or may not be.

Maintenance maximises system uptime

X-ray systems need to be properly maintained. Heat, friction and water are enemies, and preventive maintenance visits every six to 12 months by the manufacturer's X-ray system technician are recommended.

Some X-ray components have limited lifetime

X-ray tubes have a filament and vacuum similar to that found in a light bulb. Typical internal temperature is 50°C, so overheating can limit their life, which is typically 10,000 hours, depending on power settings and on/off cycling. Additionally, detectors degrade from constant X-ray exposure, which is also dependent on power setting and use. Most vendors offer lower-cost refurbished replacement sources and detectors which can be easily changed out in less than 30 minutes.

Conclusion

Whether you choose metal detection or X-ray inspection, or both, make sure you fully educate yourself on use, operation and total projected costs. Also, make sure that you partner with a company that can support you through the life of your system.

Thermo Fisher Scientific
www.thermofisher.com.au

CORIOLIS METER WITH ETHERNET

Emerson Process Management has upgraded the Micro Motion Model 5700 Coriolis transmitter with a native Ethernet connection to improve connectivity and functionality, allowing for easier access to measurement information.

The native Ethernet upgrade includes dual redundant Ethernet ports, directly integrated in the device with no need for extra converters or adapters. The dual port architecture means multiple devices can be installed in a variety of configurations, minimising wiring and switch needs for space and cost savings.

Additionally, the transmitter incorporates a configurable I/O channel that can be used as a discrete input or set to an mA, frequency or discrete output. This enables powerful application options with minimal equipment. For example, the discrete input can be used as a totaliser reset, the discrete output can control a valve in conjunction with the integrated batch control software, the frequency output enables a quick connection for proving applications or the mA output can be used to tie into existing or legacy control systems.

The Ethernet upgrade is available with multiple protocol choices including EtherNet/IP, Modbus TCP and Profinet.

To speed integration and connection with Ethernet/IP systems, the transmitter contains an EDS (Electronic Data Sheet) file for fast access to instrument information with little to no manual set-up. This also enables automatic AOP (Add-on Profile) generation for quick and powerful system integration. Preconfigured input assemblies allow users to select exactly what is needed from a wealth of information in a Coriolis meter, without burdening the network with unwanted traffic.

Emerson Process Management Aust P/L
www.emersonprocess.com.au

PRESSURE REGULATOR

The Witt 737 LE-HD/S dome-loaded pressure regulator for high-pressure applications allows constant gas pressure to be achieved irrespective of varying flow rates and upstream pressures.

One improvement is the integration of the previously separate pilot pressure regulator. In contrast to spring-loaded pressure regulators, dome-loaded pressure regulators are operated by gas pressure. This so-called pilot gas is controlled by a pilot pressure regulator. This design modification ensures the stability of the dome outlet pressure so that the user can rely on stable conditions in the gas supply, even when the flow rates are particularly high or particularly low.

Depending on the gas, the dome is rated for up to 300 bar inlet pressure and at its 1″ outlet delivers stable pressures as required between 2 and 50 bar. Multiple gas supplies can also be centrally controlled by means of a common pilot gas pressure. Improved materials for seals, diaphragms and screw connections ensure better weather resistance for outdoor installations. The operating temperature range now spans -30°C to +50°C.

The integrated pilot pressure regulator can be used to increase or reduce gas pressure as soon as another operating pressure is required. The pilot pressure regulator operates with either the process gas or a secondary gas source.

The 737LE-HD/S can be used as a pressure controller for nearly all gases and is available in either brass or stainless steel. It is delivered as a fully assembled and tested unit, including inlet and outlet pressure gauges. Various connection options are available.

Niche Gas Products
www.nichegas.com.au

PRESSURE TRANSMITTER

The HDA 7400 pressure transmitter has a flush membrane and a stainless steel measurement cell with a thin film strain gauge for relative pressure measurement in the high pressure range.

The pressure connection is achieved with a fully sealed stainless steel front membrane filled internally with a pressure transfer fluid. The process pressure is transmitted hydrostatically to the measurement cell via the pressure transfer fluid. The output signals 4–20 mA or 0–10 V permit connection to all Hydac measuring and control devices, as well as connection to standard evaluation systems such as PLCs.

It was designed specifically for applications in which a standard pressure connection could become blocked, clogged or frozen by the particular medium used. Further applications include processes where the medium changes regularly and any residues could cause mixing or contamination of the media.

The HDA 7400 features an accuracy of ≤0.5% FS, a highly robust sensor cell and small temperature error.

HYDAC International
www.hydac.com.au

WIRELESS LIMIT SWITCH

The OsiSense XCKW range of wireless, battery-less limit switches from Telemecanique Sensors is designed to serve a large number of industries, from hoisting, elevators and escalators to mills, foundries and process machinery, as well as handling and packaging.

The limit switch range is offered in out-of-the-box compatible packs comprising an OsiSense XCKW limit switch and a receiver.

Planning a wireless machine solution doesn't involve cables, which significantly reduces the cost of the system. A wireless solution also doesn't use contacts, so maintenance costs are also reduced.

OsiSense XCKW switches come in a plug-and-play kit, so only electromechanical skills are needed to install it. It is equally easy to replace an earlier-generation limit switch because the OsiSense XCKW is 100% compatible with XCKS and XCKM switches.

OsiSense XCKW has a wireless range of up to 100 m, and the range can be doubled using an active antenna.

Schneider Electric Industry Business
www.schneider-electric.com

SAFETY CONTROLLERS

Each module in the Schmersal PROTECT SRB-E safety controller series can be adjusted to any one of up to 11 preset configurations to suit multiple applications. Configuration settings include reset selection, activating or deactivating crosswire monitoring, two-hand control and monitored contact configuration, all via a rotary dial on the front. Once configured, the dials are secured under a plastic cover to prevent the possibility of tampering.

A reduced number of versions and a clear overview of the relevant functions make it easier for a machine manufacturer to select a module to suit a particular application. All safety sensors, light curtains and electromechanical safety equipment can be utilised with the controllers. The safety relay modules of the series can be used in applications up to Category 4 with AS4024.1 PLe in accordance with ISO 13849 and SIL 3 in accordance to IEC 61508.

Control Logic Pty Ltd
www.control-logic.com.au

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PAT TESTER

The Trio SafeTCheck Pro II Logger PAT tester is a lightweight instrument that fully complies with the requirements of AS3760 in-service safety inspection and testing of electrical equipment. The unit has an RCD option, printer, barcode and a three-phase option that has the two most common connector types. It is available to rent from TechRentals.

The interactive safety tool is designed to simultaneously monitor and log applied soaking hi-pot voltages and currents. This is done while probing an appliance for a testing period approximating real-life conditions. Appliance electrical faults that would normally be overlooked with static testing can be identified through the use of a competent operator and a SafeTCheck tester. The fully integrated data logger with PC Interface software is provided.

The data logger can store up to 2000 records, and the unit weighs less than 4 kg.

TechRentals
www.techrentals.com.au

IOT GATEWAY STARTER KIT

Advantech has announced its IoT Gateway Starter Kit, designed to jumpstart IoT innovation with a reliable platform and open gateway technologies. The package includes a ready-to-run system, an IoT software platform service, a software development kit and technical support services.

The Advantech IoT Gateway Starter Kit gives the flexibility to create and deploy innovative, cost-effective and secure IoT solutions for a wide array of industrial applications. It provides powerful turnkey building blocks to connect various existing things including machines, devices and sensors and unifies different protocols, empowering IoT application development for data streaming, analytics and prediction solutions. A Smart Factory developer can bring all heterogeneous systems to an intelligent network, transform their data into a unified format standard for IoT communication and central management, and coordinate all systems so they work synergistically.

The Advantech IoT Gateway Starter Kit provides a preconfigured system featuring an Intel Celeron J1900 SoC and WES7E with 4 GB memory and a 500 GB HDD. There are tow gateways selected for the Starter Kit which have been verified through the Microsoft Azure Certified for IoT program: the compact ARK-1123H and the multiple I/O ARK-2121L. They are both designed to withstand harsh environments, with good scalability for networking and versatile I/O communication.

A software solution is also included in the package, including WISE-PaaS/RMM Pro, IoT device remote monitoring and management software for data management, device monitoring/control and security (McAfee). WISE-PaaS/RMM is ready on the Microsoft Azure Marketplace to enable big data analytic services.

Advantech Australia Pty Ltd
www.advantech.net.au

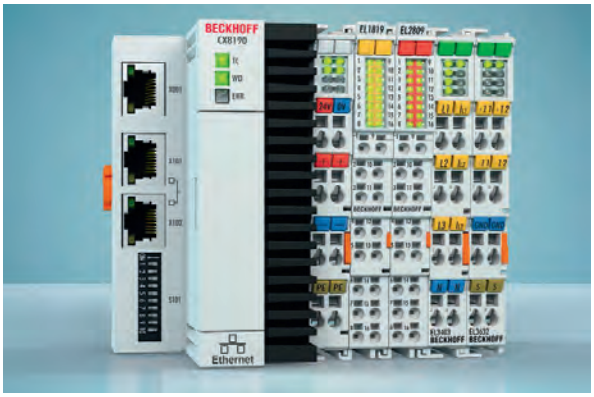
DATA LINE SURGE PROTECTORS

Times Microwave Systems has recently introduced a range of data line surge protectors that are claimed to surpass the performance of similar protectors.

The LP-DOE-1G, LP-POE-1G and LP-PAE-100 data line surge protection devices are the latest additions to the Times-Protect range. Proprietary circuitry results in surge let-through voltage on data lines of less than 20 V peak at 3 kA 8x20 μs surge test current and less than 10 V peak at 100 A 10x1000 μs surge test current, while complying with extended RFC2544 test methods for data integrity. These difficult tests are conducted on two protection devices separated by 100 m of Cat 5e cable over a broad temperature range measuring the parameters of throughput, latency, jitter and frame loss.

The LP-DOE-1G is designed for 1000baseT Ethernet (data only) indoor applications with all data pins protected to chassis ground, while the LP-POE-1G is designed for 1000baseT PoE applications with up to 60 VDC injected, and all pin pairs protected to chassis ground. The LP-PAE-100 is designed for 100baseT power and Ethernet applications, with all pins protected to ground, and where data pin pairs are (1-2) (3-6) and DC pin pairs are (4-5) (7-8).

Rojone Pty Ltd
www.rojone.com.au



EMBEDDED PC CONTROLLER

The Beckhoff CX81xx Embedded PC series are small controllers with significantly increased computing power. The CX8190 for Ethernet is the first device in the series and is also the first PC-based controller in an ultracompact 'Bus Coupler format' for TwinCAT 3 automation software. The 32-bit, 600 MHz ARM Cortex-A9 processor offers three times the CPU performance compared to the existing CX8000 series, as well as an eight-fold memory increase with 512 MB of RAM.

The CX8190 Embedded PC comes equipped with an Ethernet port and a 2-port switch for real-time Ethernet or EAP (EtherCAT Automation Protocol). Windows Embedded Compact 7 is the operating system used, and the small controller is programmed with TwinCAT 3 via the fieldbus interface or the additional Ethernet interface. TwinCAT 3 I/O software provides the basic runtime functionality, but further TwinCAT 3 supplements can be added as options.

The CX8190 also offers a 1 s UPS for storing persistent data, a 512 MB microSD card which can be extended up to 8 GB, and an operating temperature range from -25 to +60°C. EtherCAT Terminal (E-bus) and Bus Terminal (K-bus) I/O systems can be directly connected to the CX8190 Embedded PC, providing access to a range of I/O devices with more than 1000 available terminals.

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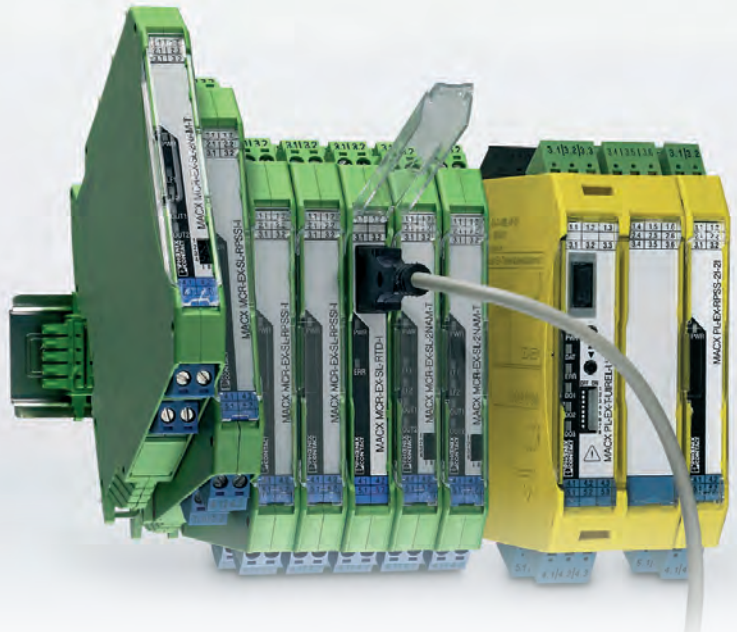

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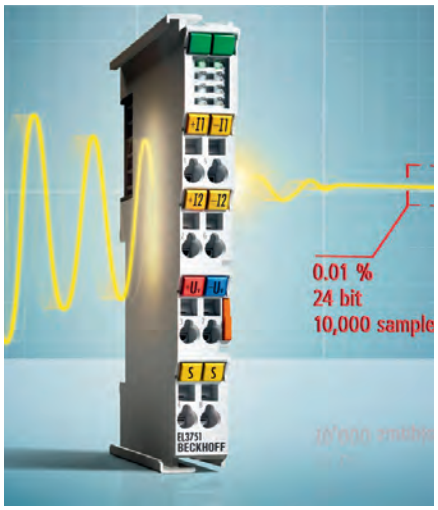

ETHERCAT I/O TERMINAL

The Beckhoff EL3751 EtherCAT Terminal permits 10,000 samples/s, a measurement accuracy of ±0.01% and 24-bit resolution. It also offers flexible filter configurations (eg, band stop) and extensive parameterisation options for the analog input, which supports the measurement functions U, I, R, DMS (strain gauge) and RTD.

Optionally, the measured data can be transmitted to higher-level automation devices with oversampling. The integrated distributed clocks ensure precisely synchronised sampling across the EtherCAT system.

The Extended Range feature enables effective measurement beyond the nominal measuring range, with possible extension up to 107%. To suppress aliasing effects, the input channel features two configurable numeric software filters up to 39th order FIR or 6th order IIR. The filters can be preselected or freely defined, so that a band stop or a band pass filter can be implemented.

Each EL3751 has a unique serial number and is available with a factory calibration certificate on request. Since the input channel can be parameterised comprehensively, both electrically and on the software side, the measurement terminal can be used for many parameters: voltage measurement (±5 mV to ±30 V, 0–10 V, 0–5 V); current measurement (±20 mA, 4–20 mA, 0–20 mA, Namur NE43); resistance measurement (0–5 kΩ); electrical resistance R in 2-, 3- or 4-wire connection; RTD measurement in 2-, 3- or 4-wire connection; strain gauge/load cell ¼ bridge, ½ bridge or full bridge; and potentiometer (from 1 kΩ).

Beckhoff Automation Pty Ltd
www.beckhoff.com

ARC FLASH PROTECTION COMMUNICATION MODULE

ABB has launched a plug-in communication module for its TVOC-2 Arc Guard System. The communication module provides operators with real-time status updates and instant information on the location of any arcs. It can also be connected with the ABB Emax 2 smart circuit breaker and its cloud-based services.

Arc flashes represent a serious risk to people and equipment. Temperatures can reach up to 20,000°C and arc blasts can produce dangerous shrapnel. Conventional short circuit measures are too slow to protect fully against such events and the systems built into older switchgear are not able to protect the installation.

The TVOC-2 Arc Guard System is suitable for equipment with 24–48 VDC ranges as well as 100–240 V AC/DC. The plug-in communication module replaces the standard TVOC-2 HMI, sending data via Modbus RTU to any remote station or other intelligent switchgear technologies, such as ABB's Emax 2 smart circuit breaker.

The TVOC-2 system can be equipped with up to 30 optical sensors, enabling a single unit to cover multiple switchboard cabinets. Once installed, the system is able to detect arc initiation and, in less than 1 ms, send a signal to an Emax 2 circuit breaker to open.

ABB Australia Pty Ltd
www.abbaustralia.com.au

PLANETARY GEARBOXES

The low-backlash TQF series of precision planetary flanged gearboxes from Bonfiglioli is engineered with high torsional stiffness for applications such as industrial automation. It is designed for applications demanding high dynamic characteristics and the ability to handle a high number of start-stops and reversals with outstanding reliability.

The TQF flanged design is suited to machine tools, packaging machines, precision rotary axis drives, travelling gantries, columns and material handling axis drives, as well as tasks requiring high positioning accuracy, dynamic cycling operations, tilting movement and compact solutions for motion control.

The TQF series comes in five sizes delivering rated output torque ranging from 30 to 800 Nm and acceleration output torque from 45 to 1200 Nm.

The monobloc planetary carrier ensures higher radial load capability as well as markedly higher torsional stiffness, offering a high safety factor for transmissible torque and increased dynamic response. Bearings have been carefully selected and sized to suit the torque rating of the gearbox and provide quieter operation. The series features a high level of mechanical protection (IP65), a flanged output (similar to EN ISO 9409) and a low level of acoustic pressure.

Bonfiglioli Transmission Pty Ltd
www.bonfiglioli.com.au

STAINLESS STEEL SAFETY SWITCHES

Pizzato Elettrica has recently introduced its HX series stainless steel safety hinged switches. With IP67 and IP69K protection, they are suitable for any environment where chemical and corrosive agents are found or for aseptic environments where particular attention is required for cleanliness and hygiene.

The intervention point is 1.5° adjustable to within ±1°, and versions are available with a rear cable or a rear cable with M12 connector. They are available both with mechanical and electronic contact blocks and have laser-etched markings.

Two versions of the stainless steel safety switches with mechanical contacts are available: a 2NO+2NC slow action closer with positive opening, and a 2NO+2NC slow action overlapped with positive opening.

One version of the HX series switches with an electronic contact block is available with two safety PNP outputs PNP, an auxiliary PNP output PNP, and two PNP safety inputs. It is possible to connect a series of several hinged-shaped safety switches, and they have four status-indicator LEDs.

Leuze electronic Pty Ltd
www.leuze.com.au

HYPERSPECTRAL IMAGING CAMERA

The XIMEA xiSpec Multi-Linescan is a hyperspectral imaging (HIS) camera.

Conventional colour cameras use a mosaic pattern of red, green and blue (RGB) colour filters on top of the pixel matrix. Hyperspectral cameras replace the RGB pattern by many different wavelength filters. HSI cameras deliver spectra for individual narrow colour bands revealing a different set of information that can also indicate chemical or composition differences for objects of the same or similar visible colour.

Instead of using a mosaic pattern of hyperspectral filters, the XIMEA camera features a line-wise arrangement of 150 HSI bands. Due to the high frame rate of the image sensor, this camera enables detailed and crisp captures of moving objects at multiple wavelengths. Objects can be moved orthogonally to the horizontal colour filters of a mounted camera — on a conveyor belt, for example — or the camera can be attached a UAV that flies over a large area. The visual and near-infrared (NIR) spectrum of this camera is especially relevant in agriculture.

The camera is capable of detailed hyperspectral analysis, with 150 HSI bands between 470 and 900 nm covering the visual and NIR spectrum, as well as high-speed multi-linescan with up to 1020 lines/s.

It is easily integrated with USB3 Vision-compliant drivers for Windows, Linux and MacOS, as well as an SDK. Its compact size (26.4 x 26.4 x 31 mm), light weight (32 g) and low power consumption (1.6 W) make it suitable for narrow spaces and mobile or airborne applications.

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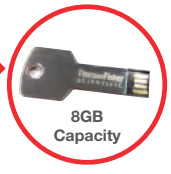

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ThermoFisher SCIENTIFIC

SHORT-RANGE READ/WRITE HEAD

The BIS VU-320 is a compact UHF read/write head with IP67 protection features, an auto-setup function, and function and status LED displays that are easily visible from any direction.

With a typical read range of 1 m, the rugged UHF system is suitable for monitoring production processes, for material flow control and assembly systems. Due to its multitag capability, up to 50 data carriers can be read simultaneously, making it suitable for traceability solutions.

An integrated Power Scan function enables automatic matching to the UHF data carrier used and ensures optimal configuration without cumbersome manual setting of parameters, regardless of the application. This can be done directly on the device with the press of a button using its auto-setup function. The read/write head automatically adjusts itself to the local conditions. By using the standard connection cable for BIS V, cable lengths of up to 50 m to the read/write head can be realised.

Balluff Pty Ltd
www.balluff.com.au

BOLT LOCKING SAFETY INTERLOCK

The Schmersal AZM 400 has been designed for applications where large, heavy doors with high manual forces are present or in applications where motor-driven doors are used. The utilisation of a motorised bolt locking mechanism provides a bi-stable operating principle, meaning in the case of a power loss the locking device will remain in its last known position. The AZM 400 is capable of a locking force of up 10,000 N. A lateral force on the door is also acceptable up 300 N while maintaining the ability to unlock the device under lateral load.

High-level coding has been realised by the inclusion of an RFID tag in the actuator. An RFID signal passes from the actuator to the locking device providing unique information about the actuator being used, eliminating any potential for defeat of the safety system. Dual signal inputs for control of the locking pin and dual diagnostic outputs allow for easy integration into existing safety systems and dual safety outputs make the AZM 400 suitable for use in CAT PLe safety systems.

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Continuous systems increase food production volume

As food processors around the world increase production and gain access to international markets, they are shifting from conventional batch processing to more advanced and efficient continuous cooking, chilling and freezing systems.

To remain competitive and also meet consumers' broadening preferences, large and small processors are adopting continuous systems of various capacities that can provide higher productivity and dramatically increased yields as well as improved food safety and quality.

A wide range of continuous cooking equipment is getting attention, like sous-vide cookers, small footprint 'spiral' ovens, continuous grilling systems for searing and barmarking — anything that can further automate this value-added market. Each of these eliminates the inefficiencies of batch cooking, including manual loading, inconsistent results, double handling and extended cooking times.

In South Africa one of the leading domestic processors, Paarman Foods, has incorporated a highly efficient spiral oven into its production facility to facilitate the company's rapid growth.

Paarman, an acclaimed family-owned food processor based in Cape Town, produces a wide selection of spices, sauces, seasonings, mixes and dressings as well as protein products for retailers. The company also manufactures for a select number of private label companies as well as servicing a large domestic food services market.

Paarman Foods was founded in the 1980s by Ina Paarman, who was inspired by her grandmother's homemade recipes when she was a child. She worked in London and travelled extensively, soaking up everything she could about the cuisines of other cultures. She combined elements of many of these cuisines with the uniquely South African style and, after a successful teaching and lecturing career, started Ina's Kitchen, creating various mixes of spices and seasonings in a converted garage at her home in Cape Town.

In the 1990s, Ina's son, Graham, expanded the food processing facility and product line to the point where it has become a significant business servicing both local and international markets with a diverse product offering.

Many Paarman items were already exported to retailers around the world to make them available for South Africans living abroad who were longing for an authentic taste from home — an opportunity that many processors from different regions and cultures can appreciate.

As Paarman Foods continued to grow, it was confronted with the need to ramp up production. Yet management was insistent on incorporating manufacturing processes and equipment that would enable the company to continue with its passion — producing authentic home-style foods, but now in increased volumes.

"We continuously revisit our recipe formulations and production methods in a quest to make 'homemade food' on a factory scale," said Nikki Edwards, manager of product development. "Our philosophy is to base our recipes on classic ingredients and preparation methods to develop a product that is instantly ready to eat yet delivers the same experience as if the customer had made it themselves from scratch."

Recently, Paarman decided to acquire more advanced equipment to cook a number of spiced protein products (lamb, chicken and beef) as well as vegetables that are used in various products. The equipment upgrade would provide greater throughput while preserving the traditional authenticity of these foods.

In 2015 the company acquired a Micro Spiral Oven to cook vegetable and protein products such as seasoned lamb, beef and chicken dishes. Developed and manufactured by Unitherm Food Systems, this spiral oven provides a number of benefits over linear ovens. The 'micro' oven is a small, compact version of a variety of sizes available from Unitherm. The benefit that most appealed to Paarman Foods was the ability to maintain home-style food qualities.

Micro Spiral Ovens are sized as entry-level systems that are remarkably productive and versatile. They have the flexibility of a batch system, but the efficiencies and yield advantages of a continuous system. These Micro Spiral Ovens can roast, steam, bake or combination cook.

"The flexibility of Unitherm's spiral oven enables us to cook a wide variety of meats and vegetables in order to react quickly to changing market trends in the future," said Edwards. The onboard controls enable us to utilise many different recipes and also scale up on product throughput as required to meet increasing demands. At the same time, the automation features of the equipment also allow us to enhance productivity through labour savings."

While Paarman Foods may be a leader in the region, many other local processors are taking note and looking to modernise their cooking processes to better compete, grow and export their traditional South African fare throughout the world.

Unitherm Food Systems Inc
www.unithermfoodsystems.com

WEIGH BATCHING SYSTEM

An automated bulk bag weigh batching system from Flexicon meters ingredients into a FLEXI-DISC tubular cable conveyor that transports batches of a specified weight to downstream processing equipment, dust-free.

The BULK-OUT BFC Series bulk bag discharger features a cantilevered I-beam with electric hoist and trolley for loading and unloading of bulk bags without the use of a forklift. FLOW-FLEXER bag activators raise and lower opposite bottom edges of the bag at timed intervals, promoting continuous and complete discharge of free- and non-free-flowing materials through the bag spout.

The discharger rests on load cells that signal a PLC to stop a vibratory feeder that meters material into the conveyor once a pre-programmed batch weight has been metered out.

Low-friction polymer discs attached to stainless steel or galvanised cable within stainless steel conveyor tubing gently and smoothly transport friable food and non-food products, and fully evacuate the conveyor of material to achieve accurate batch weights.

The discs and cable are driven by a wheel at one end of the circuit and put under tension by a wheel at the other end. The conveyor tubing can be routed horizontally, vertically or at any angle, around corners or through small holes in plant walls. Inspection windows can be added to any straight run of tubing.

The conveyor can accommodate multiple metered inlets for primary ingredients and non-metered inlets for minor ingredients, as well as multiple full-flow outlets and valved outlets for selective distribution of materials.

Flexicon Corporation (Aust) Pty Ltd
www.flexicon.com.au

ROTARY PISTON FLOWMETERS

Trimec Flow Products rotary piston flowmeters are designed to provide long-term performance in all types of applications and environments. They are suitable for high-viscosity products, offer accuracy and repeatability, are not affected by changes in viscosity and require little maintenance.

Applications routinely addressed with the flowmeters include off-truck metering of refined fuels, LPG, aviation fuels and fertilisers; loading terminals for over-the-road tankers and rail wagons; boat and general marine refuelling; agricultural chemical batching and blending; industrial applications; and food and beverage applications.

Liquids routinely metered include fuel oil, gasoline, kerosene, avgas, Jet A, LPG, ethanol, biodiesel, diesel exhaust fluid (DEF), fertilisers, solvents, alcohols, petrochemicals, liquid sugars, fruit juices, alcohols, acetic acid, caustic soda, grease, glucose, ink, insecticides, latex emulsions, liquid sugar, margarine, mayonnaise, molasses, resin, tallow, urethane, water, xylene and liquid yeast.

AMS Instrumentation & Calibration Pty Ltd
www.ams-ic.com.au

IOT BUS COUPLER

The EK9160 IoT Bus Coupler transmits all control data to all common cloud systems in plug-and-play mode. Neither a controller nor programming is required through the implementation as a bus coupler-based solution. Simple configuration is all that is necessary for the I/O terminals, cloud services and security functions used.

The EK9160 establishes a direct connection without any special control program between Beckhoff EtherCAT I/O and the Internet of Things (IoT). As a result, the coupler enables simple and standardised integration of I/O data with cloud-based communication and data services.

Via an integrated web server, the I/O data can be parameterised, such as in data processing and timing, through a simple configuration dialog. No special engineering tools are needed. The EK9160 IoT Bus Coupler then autonomously transmits the data, including timestamp, to the cloud service. Apart from that, extended mechanisms are available, including local buffering of I/O data on a microSD card (2 GB) to protect against data loss when the internet connection is interrupted. The cloud services and security functions (encryption, firewall) can be configured via the web server in the same convenient way.

All major cloud systems are supported via the IoT protocols AMQP, MQTT and OPC UA (over AMQP): Microsoft Azure, Amazon Web Services (AWS), SAP HANA, as well as private cloud systems in company networks. The EK9160 is Microsoft Azure Certified and enables communication with clouds based on advanced multicloud capabilities.

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PHASE MEASUREMENT SOFTWARE

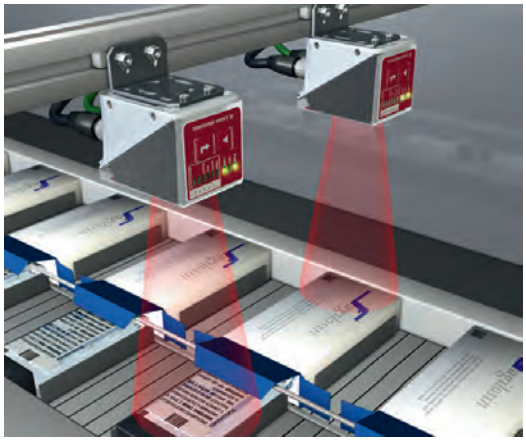
Emerson Process Management has introduced Micro Motion Advanced Phase Measurement (APM), a software option available on the Model 5700 transmitter. The software solution helps improve measurement accuracy across diverse industries in challenging multiphase applications, such as direct wellhead and separator net oil measurement in the oilfield and starch concentration for food and beverage plants.

The multiple phase measurement solution provides insight into the complete flow stream, including oil, water and gas, through an intuitive local display. Advanced Phase Measurement is designed to provide continuous, real-time production data for oil, water and gas void fraction.

Advanced Phase Measurement is also useful for the life sciences and chemical industries, providing critical measurement insight to reduce waste, maintain product quality and identify process upsets even in the presence of multiple phases.

Emerson Process Management Aust P/L
www.emersonprocess.com.au

CAMERA-BASED CODE READER



Leuze electronic's DCR 200i camera-based code reader is used for detecting and identifying barcodes, stacked codes and DataMatrix code. With its modular design, the product is adapted to the requirements of the application with respect to function, range and power, and offers a high reading performance with speeds of up to 6 m/s.

A configuration wizard is integrated in the WebConfig tool via an ethernet interface, guiding users quickly and easily through the set-up process and simplifying commissioning. For simple applications, the unit is operated as a stand-alone device with an IP address in an ethernet star topology, with the serial (RS 232 or RS 422) port or with four configurable I/O ports. Set-up for the reading task can be done without a PC using just two buttons on the device and a smartphone app.

The selectable optic variants High Density (N optics), Medium Density (M optics) and Low Density (F optics) cover reading distances of approximately 40 to 360 mm. The housing hood can be replaced for specific requirements, such as a polarisation filter (plastic housing) for the food industry, instead of the usual glass screen, or diffusor foils for the screen on the housing hood to minimise reflection.

Leuze electronic Pty Ltd
www.leuze.com.au

PORTABLE COMPRESSOR

Kaeser's Mobilair M 350 portable compressor comprises a Mercedes Benz engine and a Kaeser rotary screw compressor block with Sigma Profile rotors to provide compressed air delivery with minimal emissions and fuel consumption.

The viscous fan clutch controlled via Kaeser's Sigma Control Mobile can cut fuel consumption by up to 5%, according to the company. The control system matches power to actual compressed air demand, enhancing both compressed air availability and fuel efficiency.

Options include: availability with various pressures; a stationary version; and specialised equipment for use in refineries. Air treatment components can be added to provide cool, dry, technically oil-free air of various classes.

The portable compressor is available in four pressure stages between 8.6 bar (flow rate 34 m^3/min) and 14 bar (flow rate 24 m^3/min).

Kaeser Compressors Australia
www.kaeser.com

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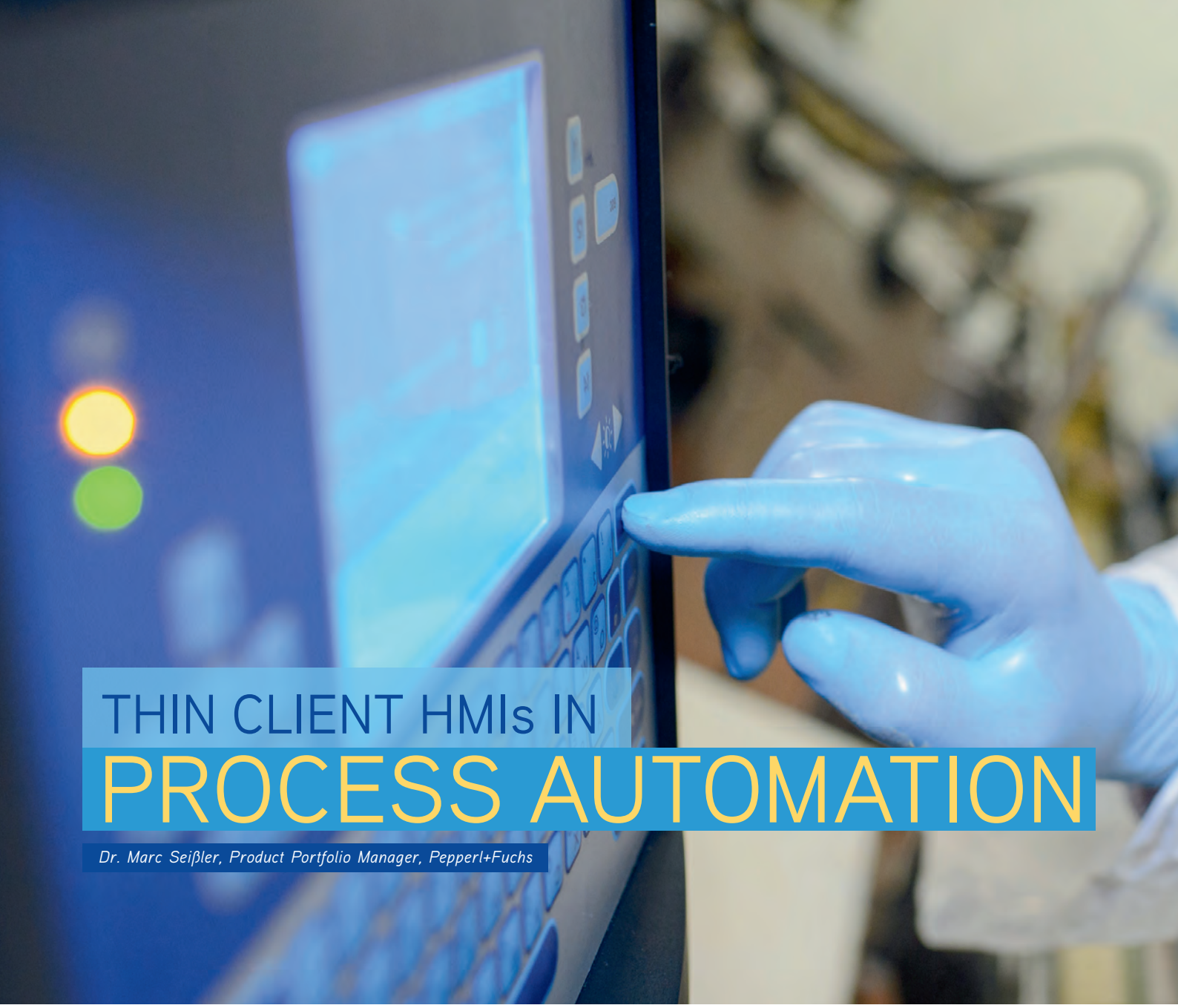

THIN CLIENT HMIs IN PROCESS AUTOMATION

Dr. Marc Seißler, Product Portfolio Manager, Pepperl+Fuchs

Virtualisation has become more and more popular in process automation and has opened up more possibilities for how HMI systems can be deployed.

Virtualisation is a technology that stems from the information technology (IT) industry and has become more and more popular in process automation. Virtualisation promises to ease software management while reducing costs. This trend also has an impact on the human machine interaction (HMI) in such systems. Especially in combination with thin client technology, virtualisation provides an easier and cost-efficient way to control process automation systems even in the harshest industrial environments.

What is a thin client?

Over the last decade, thin clients have become more and more popular in process automation systems and industrial applications. Especially with the trend to virtualised, centralised automation systems, thin clients represent a powerful and cost-efficient technology enabling the users to access the applications and information that run on centralised hosts (host servers).

In contrast to conventional, decentralised automation systems, where usually all data and applications run on powerful PC-based workstations, in centralised automation systems, the data and applications reside on the hosts which are usually servers. A thin client only runs the user interface that is required to access the applications on the host (see Figure 1).

To do this, a thin client has a minimalistic, usually embedded, operating system (OS) and only provides drivers for the input and output devices (such as mouse, keyboard, touchscreen and monitor) that are connected to the thin client. Additionally, installed communication protocols enable the exchange of the system inputs and outputs between the thin client and host (see Figure 2).

All of these remote protocols rely on the same principle. The host generates the user interface (such as GUI and sounds), which is then compressed and sent via an Ethernet-based remote protocol to the thin client. The thin client receives the compressed data, decompresses them and displays them on the screen to the user.

User inputs (via keyboard, mouse, touchscreen, etc) are sent in the opposite direction. The thin client captures the physical user inputs and redirects them via the remote protocol to the host. The host decodes the user inputs and delegates them to the hosted operation system and applications. For the applications that run on the host this is transparent, which means that for the applications it looks like the user is interacting locally on the host. Due to today's high-performance Ethernet infrastructures, the user

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experiences the interaction with a thin client like sitting directly on the host system.

Since thin clients work over Ethernet, they are also the first-choice technology for virtualised automation systems. Conventional technologies like keyboard-video-mouse (KVM) extenders are not suitable for virtualised systems. This is because one or many virtual machines (VMs) usually run on host server hardware, which has no dedicated physical interfaces to connect the KVMs to. VMs can be accessed only via Ethernet and the remote protocols.

Today, multiple communication protocols do exist, but there is only a very small set of protocols that are relevant to cover the majority of virtualised – and even conventional, non-virtualised – applications:

- **Microsoft Remote Desktop Protocol (RDP):** RDP is the most popular remote protocol for workstation-based and virtualised automation systems. While today's most recent Microsoft OS can be accessed via an integrated RDP interface (such as for remote administration), professional set-ups with multiple users require a Windows Server OS. The server-based solution for multiuser access was formerly known as Microsoft Terminal Services and was introduced with Windows NT 4.0 Terminal Server Edition many years ago. With Microsoft's strategy to virtualised infrastructures and the launch of Windows Server 2008 R2 in 2009, Terminal Services has been extended and renamed Remote Desktop Services (RDS).
- **Virtual Network Computing (VNC):** VNC is one of the older remote protocols, which is still quite popular. Especially in smaller, non-virtualised automation systems, this protocol is still used since several open source implementations do exist that allow the set-up of cost-efficient solutions.
- **Citrix Independent Computing Architecture (ICA):** ICA is a Citrix proprietary, platform-independent remote protocol that is used in large, professional and virtualised infrastructures with Citrix XenApp and XenDesktop.
- **VMWare PC-over-IP (PCoIP):** Originally introduced by Terradici, VMWare integrated this protocol in its virtualised server infrastructure. Besides PCoIP, VMWare also supports access to the hosted VMs via RDP.

Benefits

Using thin clients in a centralised automation system offers a large set of benefits. Many of the features, like centralised management, the need for less local computing resources and keeping the data on the host server, contribute to a reduced total cost of ownership compared to PC-based, decentralised infrastructures.

Reduced total cost of ownership

Since the applications reside on the host systems, thin clients have fewer hardware demands compared to workstation PCs. Low-power processors are sufficient to run the different remote protocols and to encode/decode the compressed data exchanged between the thin client and the host. This has an impact on the overall hardware costs, since the thin client components are significantly cheaper than the high-performance components needed for workstation PCs. To have the same performance in a thin client infrastructure does demand more powerful host servers, however. But since centralised infrastructures allow a more efficient use of the hardware resources (due to load management under virtualisation), the total hardware costs are lower, especially in mid-size to large applications.

Hardware and software longevity

Another benefit of thin clients is that they can have a longer lifetime than PCs. There are two reasons for this.

First, application software updates do not affect thin clients, since they only communicate with the host via a remote protocol. This allows thin clients to be used, even if the OS or applications on the host are updated.

The second reason is that the embedded OS that runs on thin clients is supported much longer than desktop operating systems (like Windows XP Professional or Windows 7 Professional) that usually run on PCs.

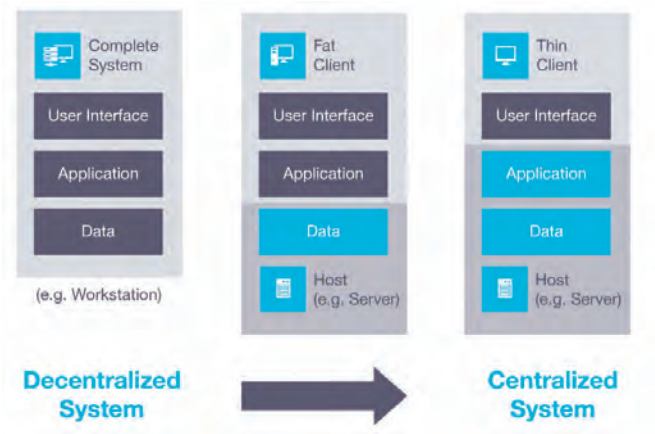

Figure 1: Thin clients are the first choice of technology for centralised systems.

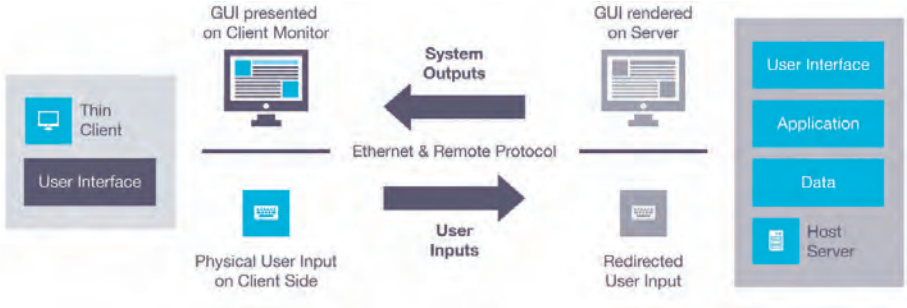

Figure 2: A thin client only provides the user interface to the user.

Reduced configuration effort

Thin clients are much simpler to configure. Instead of installing applications on several workstation PCs, thin clients only need to be configured. This is mostly limited to two steps: assign the thin client an IP address and specify the host server or VM name the thin client should connect to.

In large installations where multiple thin clients need to be configured, tools for centralised configuration and management help to maintain whole groups of thin clients with one mouse click. Due to the limited amount of settings that need to be made, this can be done even by personnel with limited IT knowledge.

Increased system availability

Especially in industrial environments, systems must run reliably not only for cost reasons, but to protect process equipment and personnel. With thin clients, the process reliability can be increased.

As pointed out before, thin clients have no locally stored data or applications and can be exchanged in a few minutes in case of a hardware defect. This does not affect the applications since they are running on the host. And since thin clients only need very limited computing power, industrial-grade components can be used for a lower price than a powerful workstation would cost. This has a positive effect on the robustness of the thin client and allows it to be used in harsh, industrial environments where hardware has to withstand heat, shock and vibration, dust, washdowns and explosive atmospheres.

In case of a host failure, backup hosts can be used. Modern thin clients also allow preconfigured connections to backup hosts to which the thin client can connect automatically as soon as a host failure is detected. With this feature, highly reliable process automation systems can be set up.

Increased flexibility

Thin clients use Ethernet technology to connect to their host systems. Therefore, thin clients can connect to any host system which is located in the LAN, WAN or even over the internet. This allows the implementation of sophisticated application scenarios, like connecting to backup hosts in case of a failure, to connect to, and to supervise, different machines in a plant or to access information from different system types like a distributed control system (DCS) and a manufacturing execution system (MES) that might run on two different hosts or networks.

Higher security

Centralised IT infrastructures also offer higher security since data and applications reside on the hosts in the data centre with centralised backups, redundant servers and other associated protections.

Thin clients in particular are further protected against manipulation, for example with tools like enhanced write filters and USB lockdowns that prevent users from installing software locally. This significantly reduces the threat of installing viruses.

Conclusion

Thin clients are a high-performance and low-cost solution for accessing applications and information in process automation applications. One of the key benefits of thin clients is that no data and applications are installed locally and therefore do not need to be maintained. Thin clients use the industry-standard Ethernet and remote protocols to access applications and data that are located on a host system, which can be a VM in a virtualised automation system or a conventional workstation-based set-up. This allows minimising the performance of the computing hardware on the thin client side and eases the system configuration.

Due to the use of standard technologies like Ethernet, end users can take advantage of readily available expertise to implement their automation systems. Software tools for centralised management of thin clients further help to ease the integration of thin clients, even for automation engineers without deeper IT background knowledge.

Pepperl+Fuchs (Aust) Pty Ltd
www.pepperl-fuchs.com

ETHERCAT I/O MOTION SOLUTION

EJ-series EtherCATplug-in modules make it easy to implement a platform concept for large-volume production runs without sacrificing customisation capabilities. The modules, with electronics based on the EtherCAT I/O system, are directly inserted into an application-specific signal distribution board that transmits signals and power to the individual connectors. Connections via preconfigured cable harnesses replace the installation of individual wires, reducing per-unit costs and minimising the risk of faulty wiring because the EJ components are clearly coded.

Compact drive technology is now also available as a plug-in module. In combination with a broad range of Beckhoff motors and planetary gear units, three EJ7xxx EtherCAT plug-in modules now enable compact drive solutions.

The EJ7047 stepper motor module was designed for applications in the medium performance range and features two inputs for limit switches; the second input can alternatively be configured by the user as an output.

The EJ7211-0010 servomotor module features integrated One Cable Technology (OCT), which combines motor cable and an absolute feedback system into a single cable.

The EJ7342 2-channel DC motor output stage is designed for direct operation of two DC motors and offers galvanic isolation from the E-bus.

For highly dynamic applications and when feeding multiple axes via a single power supply, integration of the EJ9576 brake chopper module is recommended. This protects the system against damage from overvoltage by absorbing part of the energy. If the voltage exceeds the terminal's capacity, it discharges excess energy via a separate external resistor.

Beckhoff Automation Pty Ltd
www.beckhoff.com

PRESSURE SWITCH WITH IO-LINK

The EDS 3400 with IO-Link communication interface is a compact electronic pressure switch with an integrated digital display for relative pressure measurement in the high-pressure range.

This device is equipped with a PNP switching output and additional output that can be configured as PNP switching or analog (4–20 mA or 0–10 V).

Compared with the standard version, the IO-Link interface enables bidirectional communication between the device and the control. Parameterisation and cyclical transmission of process and service data is therefore possible.

The pressure switch series EDS 3400 with IO-Link (V1.1) has been specially designed for connecting sensors in automation systems. The typical fields of application are machine tools, handling and assembly automation, intralogistics and the packaging industry.

The product features accuracy of ≤±1% FS and a 4-digit digital display. It can be rotated in two axes.

HYDAC International
www.hydac.com.au

DIGITAL MULTIMETER WITH THERMAL IMAGER

The FLIR DM284 is an all-in-one digital multimeter equipped with a built-in thermal imager powered by FLIR's Lepton thermal micro-camera core. The FLIR DM284 features FLIR's Infrared Guided Measurement (IGM) technology that helps guide professionals to potential problems by clearly visualising temperature differences.

Differentiated from standard multimeters, the DM284 combines an 18-function industrial true RMS digital multimeter with FLIR's IGM technology. With IGM, the DM284 helps guide electrical professionals with thermal imaging to the precise location of temperature anomalies and potential problems. For instance, when facing cluttered wires or scanning complex electrical panels for issues, FLIR's Lepton-based camera helps users pinpoint potential hazards without requiring any direct contact with the test site. Once an issue is observed using IGM, the DM284's current, voltage and other advanced functions can be used to accurately diagnose equipment problems. This combination of capabilities also reduces the number of tools electricians need to carry.

FLIR Systems Australia Pty Ltd
www.flir.com.au

SYNCHRONOUS RELUCTANCE MOTORS

Control Logic has introduced the ABB synchronous reluctance motor (SynRM) to its range. The ABB SynRM motor features a magnet-free rotor design and advanced software to offer a complete optimised solution. End users will benefit from high energy savings with short payback times.

The SynRM solution provides an alternative for variable-speed applications and is able to address a variety of torque requirements. The motor-drive packages provide significant reductions in heat and noise, thereby driving efficiencies that result in substantial energy savings and reductions in maintenance costs.

SynRM is the latest in drive and motor technology, offering IE4 efficiency as well as high-output power versions without increasing frame size.

Control Logic Pty Ltd

www.control-logic.com.au

TEMPERATURE TRANSMITTER

Due to its compact design, the ETS 7200 electronic temperature transmitter is particularly suited to measuring temperature in hydraulic applications in the industrial and mobile sectors. Based on a silicon semiconductor device and corresponding evaluation electronics, the temperature sensor is designed to measure temperatures in the range -25°C to +100°C.

The sensor has 4–20 mA or 0–10 V analog output signals to enable integration into modern control systems through an M12 connector. Pressure resistance up to 600 bar and high EMC characteristics make it suitable for use in harsh conditions.

The product features accuracy of ≤±2% FS, long-term stability and protection class IP67.

HYDAC International

www.hydac.com.au

CONTROLLER

Designed for high-speed applications with up to 20 axes of motion, the Allen-Bradley CompactLogix 5380 controller, when combined with the Allen-Bradley Bulletin 5069 compact I/O system, gives scheduled outputs with an improved I/O response time to as fast as 0.2 ms. Event triggers from the I/O modules are claimed to provide near-instantaneous task execution.

In addition, a dual-configurable, Gigabit Ethernet port supports device level ring (DLR) topologies or the use of multiple IP addresses. The ability to create multiple IP addresses is especially useful for manufacturers seeking to establish network separation between plant floor and enterprise-level traffic.

Diagnostic indicator lights display the status of communications, module health and I/O module activity. This allows operators and technicians to immediately understand problems without connecting the controller to a computer. In addition, built-in system and field power terminals reduce wiring to I/O modules.

The CompactLogix 5380 controller supports enhanced security as part of a defence-in-depth approach to help protect facilities, assets and intellectual property. The controller incorporates advanced security technologies and software features, including digitally signed and encrypted firmware, controller-based change detection and audit logging. It also provides role-based access control to routines and add-on instructions.

Rockwell Automation Australia

www.rockwellautomation.com.au

WELD-IMMUNE IO-LINK MODULES

Balluff is offering a range of network modules designed for the extreme conditions of a welding environment. These weld-immune modules made of fibreglass-reinforced plastic resist weld splatter, welding currents and electromagnetic noise fields and are said to ensure reliable signal transmission in spite of ambient electrical disturbances.

The range includes IO-Link masters and IO-Link sensor/actuator hubs with eight IO-Link ports each for 16 inputs and outputs. These will accommodate IO-Link as well as digital and intelligent complex devices. Each input on the IO-Link master is short-circuit protected and each output protected from overload. The inputs and outputs on the hubs are freely configurable.

Also available are hubs with an expansion port. A complete valve plug or an additional sensor hub can be connected, resulting in a significant gain in flexibility and efficiency. It is now possible to expand the range to a circle of another 20 m.

The modules allow the design of a decentralised system architecture in the welding cell outside the control cabinet. Network nodes equipped with an IO-Link master communicate via Ethernet/IP directly with the main controller or control device on the machine.

In addition to a 2-port switch for daisy-chaining networks, the IO-Link master features an integrated display for checking module information such as hardware and software status or for diagnostics. LEDs indicate the status of each port. A real-time display of the module with all current statuses for extended diagnostics is provided through the integrated web server.

Balluff Pty Ltd

www.balluff.com.au

DIGITAL VALVE CONTROLLERS

Emerson has enhanced the software for its Fisher FIELDVUE DVC6200 series digital valve controllers, which are now available for use by process industries with PLCs and Profibus communications as the dominant protocol. The FIELDVUE DVC6200p digital valve controller with Device Type Manager (DTM) software supports control valve start-up, commissioning and diagnostic activities. It has also been tested and integrated for use with multiple Field Device Tool (FDT) host systems.

Industries including food and beverage, water and wastewater, pharmaceutical, pulp and paper, and metals and mining will find value in the instrument's intuitive interface. Available in a variety of materials, including stainless steel, the device comes with mounting kits to accommodate different actuators. Mounting kits can be re-used in upgrades to existing FIELDVUE instruments. For control valves located in critical or hazardous areas, the product may be remotely mounted to enhance its performance in harsh process conditions such as high heat or vibration.

The DVC6200p DTM has intuitive set-up, auto-calibration and simple tuning features to save time during commissioning. With the failsafe option, users can set the instrument to hold its last value or position to actuator fail, based on control valve process needs.

Emerson Process Management Aust P/L

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SMART GLASSES FOR INDUSTRY 4.0

TESTED ON THE SHOP FLOOR

There is enormous potential for the application of smart glasses in industry

Research into the application of smart glasses in factory production processes — conducted at the Fraunhofer Institute for Production Technology (Fraunhofer IPT) — is now being used for the first time on a factory floor. The software solution 'oculavis' has been developed by the Fraunhofer IPT in Aachen to integrate smart devices within the production process, and is now being used by Robert Bosch Elektronika Kft. in Hungary.

The company has recently started applying the software solution to train new staff in assembly line procedures. The smart glasses are particularly useful where complex work sequences are concerned and can be used in highly innovative applications such as directional video telephony or they can be linked to production machines via OPC-UA.

Smart glasses can help manufacturing companies to slash time in control loops: there is no longer any need for users to abandon one activity in order to look up operating or test instructions, for example. The same applies to documentation-related activities which can now be carried out alongside the value-added processes.

The smart glasses comprise a camera for recording videos and images as well as a display, thereby enabling the user to visualise each step in an operation swiftly and directly at the workplace. This enables new, untrained employees, for instance, to learn and work independently from day one. Experienced staff who may be liable to make mistakes when there is a change of model can benefit from the personal imaging system, too. This not only increases productivity in the company, it also helps companies to cope with the current shortage of skilled workers.

The software developed by the Fraunhofer IPT works with commercially available smart glasses with an Android operating system and makes these suitable for industrial use. A process and context editor is used to model individual steps in manual or hybrid processes. The employees in a company can connect to the software via an app on their network-compatible glasses and execute the steps sequentially in a given process. They do this by using the smart glasses to scan a QR code, for example, at the beginning of each manufacturing order. They navigate to the next process step or repeat the previous one via gesture or voice control.

Smart glasses do not just simplify production processes. They can also make process-related information regarding set-up or throughput time available more quickly throughout the company. Ultrashort quality control loops which may even extend beyond the boundaries of the manufacturing facility can be set up in this way.

Additionally, employees can access other practical apps throughout an ongoing process: soon it will no longer be necessary to document suggestions for product or process improvements painstakingly in writing as they can be recorded clearly on the spot via photo, video and speech recording. Direct contact with developers via video call is also possible, permitting urgent problems to be solved together immediately.

Although smart glasses are currently capable of facilitating manual production in industry to a considerable extent, the researchers at the Fraunhofer IPT are confident that exploitation of the potential of smart glasses has only just begun. On the basis of stochastic analyses, context modelling is now revealing context-related data error patterns in existing work cycles. The next step will be to draw conclusions as to the sources and causes of errors and faults so that they can be eradicated in future as part of preventive risk management. Technological advances will be implemented and trialled, permitting their effectiveness to be monitored more easily and swiftly.

Fraunhofer IPT
www.ipt.fraunhofer.de/en.html

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CELLULAR RTU

The Red Lion Controls RAM cellular RTUs now feature a web-based, user-configurable event engine that can trigger I/O and relays or send SMS text messages based on real-time operational data. With connectivity options such as I/O, serial, Ethernet and optional Wi-Fi, RAM RTUs easily integrate with existing equipment to provide a remote monitoring M2M solution that performs reliable local control and alerts personnel of critical events.

With an intuitive web-based, menu-driven interface that requires no knowledge of programming languages, the RAM event engine can quickly be configured to trigger actions when predefined alarm values are met. The RAM cellular RTU becomes an all-in-one platform for remote monitoring and control. By providing data visibility, control and real-time notifications for field-deployed equipment and processes, the RAM platform enables vertical markets such as oil and gas, utilities, water/wastewater and alternative energy to take advantage of the benefits associated with the Industrial Internet of Things (IIoT). With hardened metal enclosures, a wide operating temperature range and industry certifications to ensure safe operation in hazardous locations, RAM cellular RTUs securely monitor remote devices via 4G LTE cellular communications to enable reliable operation in critical environments.

Control Logic Pty Ltd

www.control-logic.com.au

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PROCESS TECHNOLOGY TOOL

The E-grade Explore turns a Unistat temperature control unit into a process technology and process engineering development tool, utilising the features of Unistats to display important process and performance data — such as temperature, heating/cooling capacity and pump capacity — directly on the device display. Relevant measurements can also be processed via the digital interfaces.

In addition to targeted process optimisation and process development, the technology enables the estimation of termination criteria, the implementation of use tests and the collection of data for extended process scale-up/scale-down experiments.

Palomo Pty Ltd

www.palomo.com.au

ENTRY-LEVEL VISION SYSTEM

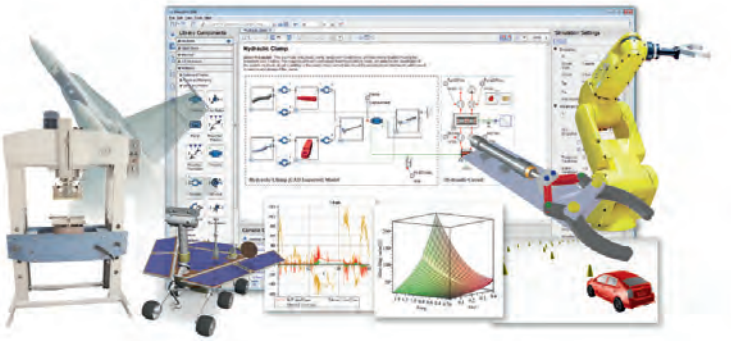
The Mettler Toledo V2622 Flex-Lite is a compact smart camera-based vision solution. With the V2622 Flex-Lite, manufacturers can explore the capabilities of a vision inspection program without the need for a heavy up-front investment. By using smart cameras rather than a central control PC, the V2622 is a compact vision system suited for either wide-scale implementation or as an introduction to vision technology. The V2622 offers manufacturers the ability to only take the software and cameras they need, and allows for in-house set-up of the system — or complete project management and installation assistance, if preferred.

The V2622 utilises Mettler Toledo smart camera software, and some camera models include liquid lens technology — allowing for adjustments in camera focus to be made with no moving parts — making product changeovers more reliable and efficient.

The system comes in multiple configurations ranging from a single smart camera and patch panel all the way to a two-camera system with a dedicated control box and touchscreen PC running Inspection Manager — software allowing control of multiple smart cameras from a centralised interface.

Mettler-Toledo Ltd

www.mt.com



SIMULATION SOFTWARE

The latest release of MapleSim provides a variety of features that streamline the user experience, expand modelling scope and strengthen connectivity with other tools.

Improvements in MapleSim 2016 include task panels that appear automatically as needed and then disappear again to maximise model workspace; a redesigned layout that ensures tools are readily available at the moment they are needed; and a search bar that provides a single point of access for searching help pages, component libraries, examples, attachments, templates and models from the MapleSim Model Gallery.

The product also includes an expanded multibody component library to support contact modelling, which covers a variety of surface shapes and enables engineers to quickly model contact between different objects in their model.

All add-ons and connector products have been updated to take advantage of the computational power of the recently announced Maple 2016. In addition, the MapleSim CAD Toolbox has been extended to work with the latest versions of major CAD tools, and the MapleSim Connector now supports single-precision export of Simulink S-functions.

As part of this release, Maplesoft has also introduced the MapleSim Pneumatics Library from Modelon, which allows engineers to take advantage of the component library from Modelon in their system-level designs. This library can be used in the modelling and simulation of pneumatic systems for system design, component sizing and control design, with applications in construction equipment, machine design or commercial vehicle design.

Australian Scientific & Engineering Solutions
www.ases.co

CRITICAL ASSET PROTECTION SYSTEM

Emerson Process Management has introduced the CSI 6500 ATG protection system, a stand-alone machinery protection solution that also allows users to cost-effectively introduce prediction monitoring of critical assets from the same system. Predictive intelligence is a key component to increasing availability and improving the reliability of plant assets.

The system's multifunctional cards can be easily reconfigured for a wide range of measurements, including the impacting or peak-to-peak data used in Emerson's unique PeakVue technology. In addition to monitoring the start-up and coastdown of critical turbo machinery for safe operation, users will be able to utilise the technology to identify the earliest indications of developing faults in gearboxes and bearings.

With the protection system, it is no longer necessary to return to the control room or open cabinets in the field to view or analyse data. The system can be networked over wired or wireless Ethernet to deliver asset health information through a PC or phone application.

To facilitate easy system integration with third-party systems, a secure embedded OPC UA server is included.

The CSI ATG system complies with the traditional API 670 certification and is certified for installation in demanding environments where Class 1 Div2/ATEX Zone 2 approvals are required.

Emerson Process Management Aust P/L
www.emersonprocess.com.au

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CASE STUDY

UV treatment preserves spring water purity

Nu-Pure Beverages is a 100% Australian-owned business that produces bottled spring water and other beverages. Its spring water is sourced from specially selected pristine Australian springs, pure with a natural balance of minerals.

UV-Guard Australia is partnering with Nu-Pure Beverages to ensure its bottled natural spring water is of the highest quality. It is thrilled to be working with Nu-Pure and to have developed UV disinfection units for Nu-Pure's two manufacturing plants.

UV-Guard Technical Director Luke Chamberlain said Nu-Pure prides itself on producing a natural product and sustainability is an important factor in everything it does.

"The spring water they use must be free from bacteria and other pathogens. It's vital that the taste and odour of the product must not be detrimentally impacted by any water treatment processes used."

"UV disinfection was selected by the Nu-Pure process engineers as a safe, reliable and cost-effective method to disinfect the spring water at a number of stages in their manufacturing processes. As UV disinfection is a chemical- and by-product-free process, it was the ideal solution to safeguard the water being produced without adversely affecting its taste and odour," said Chamberlain.

"The food and beverage industry is an increasingly regulated and safety-conscious market and must meet stringent quality standards. UV water disinfection can prolong shelf life without compromising on flavour, plus it delivers safe, uncontaminated and chemical-free products, making it ideal for goods for human consumption."

Nu-Pure contacted UV-Guard with requirements for UV disinfection units at three stages of its manufacturing processes: two stages in its Victorian manufacturing plant and one stage at its Queensland manufacturing plant.

"The systems we developed for Nu-Pure were both food-grade compliant and WaterMark certified. The UVG X3-440 is a multilamped system with three 450 W UV lamps designed for food-grade applications where a large treatment flow is required. The unit is installed with a UV intensity monitor to alert Nu-Pure whenever the design UV dose is in risk of not being achieved," said Chamberlain.

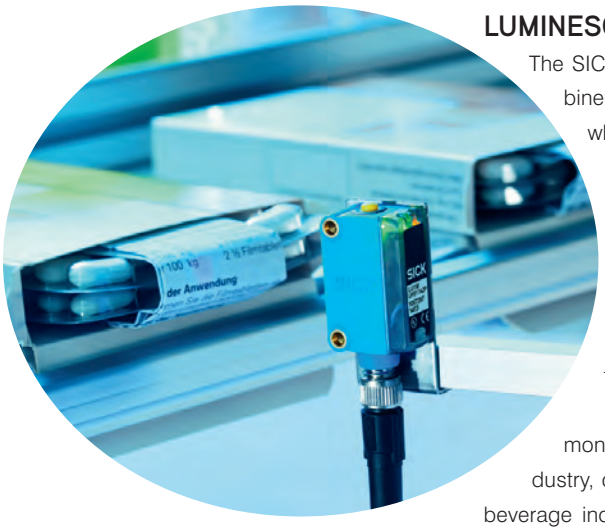
"We also installed two UVG S440 units in parallel at both the Victorian and Queensland manufacturing plants. Installing two units in parallel allows for a level of redundancy. If one unit is out of action for servicing, disinfected water can still be achieved though the other system."

Nu-Pure Beverages National Technical Manager Bruce Taylor said he is very happy with the service and products provided by UV-Guard.

"I would recommend UV-Guard as a supplier of quality, dependable UV equipment with excellent backup service and support.

"The UV-Guard equipment is an integral part of our quality management system and HACCP program to ensure a safe, quality product is continuously produced in our bottling plants," he said.

UV-Guard Australia Pty Ltd
www.uvguard.com



LUMINESCENCE SENSOR

The SICK LUTM luminescence sensor features a miniature housing combined with an IO-Link function. The sensor is suitable for all applications where fluorescent marks need to be detected in confined spaces. Enhanced system sensitivity enables the sensor to detect the relevant marks even when the level of luminescence is low.

This mini sensor can be set using a straightforward teach-in method. The IO-Link function enables enhanced diagnostics and visualisation of sensor parameters as well as rapid format changes. An increased switching frequency of up to 6 kHz makes the sensor suitable for high machine production capacities.

The technology is used in applications such as the presence monitoring of labels and package inserts in the pharmaceutical industry, detection of invisible marks in the luxury segment of the food and beverage industry and the detection of luminescent marks for positioning of labels in packaging.

SICK Pty Ltd
www.sick.com.au

FLOW SWITCH/MONITOR

The SIL 2 rated FS10i flow switch/monitor from Fluid Components International (FCI) is designed for industrial processes, manufacturing operations, pumps, compressed air, gas compressors and HVAC systems requiring flow assurance and alarming.

Wherever detection and user warning of a flow rate that is either too high, too low or a no-flow condition is required, the flow switch/monitor can be used. It features air/gas sensitivity and set-point range from 0.076 to 122 MPS, or from 0.003 to 0.15 MPS for water or liquids. It is suitable for use in fluid temperatures from -40°C to 212°C and at pressures up to 138 bar.

The flow switch/monitor comes with both a 1 A relay output for alarm/trip point setting and a 4–20 mA analog output for trending and monitoring. Trip points can be set as high or low and can be adjusted with hysteresis or time delay settings, while the 4–20 mA output is rangeable by the user in the field installation.

Applications include cooling water and fluids, leak detection, lubricant flow assurance, ventilation verification, chemical injection assurance, nitrogen purge verifications and compressor leak detection.

Developed with FCI's no-moving parts thermal dispersion sensing technology, the FS10i is temperature compensated for dynamic plant and process operating conditions. All wetted parts are manufactured with 316L stainless steel and Hastelloy C22 thermowells for years of service with virtually no maintenance.

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AND YOU THOUGHT YOUR ELECTRICITY BILL WAS OUT OF CONTROL?

How closely are you monitoring your wastewater discharge costs?

The media, with its focus on news for general public consumption, has been full of coverage of the growing cost of electricity.

As a consequence, the public in general, and managers in most industries in particular, are well aware of increases in the cost of electricity. Both have taken steps to reduce their power consumption and, in the case of managers, the impact on their bottom line.

But members of the general public do not pay directly for the cost of the pollutants discharged into their wastewater. Thus, the massive increase in the cost of discharging wastewater pollutants has not received any coverage in the media and has largely gone unnoticed.

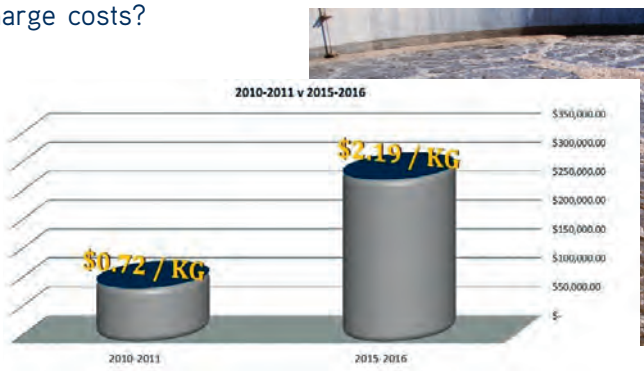
Only the most diligent of managers will be aware of just how massively these costs have gone up and/or taken any action to mitigate the cost.

If we look at Sydney Water's charges, the actual increases are materially very significant. As Sydney Water's models are often used as the benchmark for other water authorities and councils throughout Australia, industry should take note and take action.

As an example, a typical food and beverage manufacturer discharging a couple of hundred thousand litres a day was just five years ago paying $0.72 per kilogram of BOD discharged. Today, that manufacturer is paying a whopping $2.19 for that same kilogram.

That's a massive 300% increase in just five years! In annual terms, the charges for this single pollutant will have gone from $95,000 to $282,000.

Given that many factories discharge five to 10 times this quantity, this makes the 35% increase in the cost of electricity over the same period look minuscule in comparison.



Typical BOD charges and annual costs for a 200 kL/day food processor. (Source: Hydroflux)

To make matters worse, this bill shock for pollutants is often masked in authority agreements by complex formulas setting rates based on milligrams per litre and then converting to kilograms discharged.

What can you do?

Most industries discharging these volumes of water will have, or should have, some form of wastewater treatment plant. These plants often do not run at their optimum and, like other complex process units, need a professional to review the operation on a regular basis.

Optimisation and/or minor upgrades can significantly reduce both the rate of milligrams per litre (thus dollars per kilogram) and the total number of kilograms discharged. Considerable savings can often be achieved with minimal expenditure.

Hydroflux Industrial Pty Ltd
www.hydrofluxindustrial.com.au

AS I SEE IT

INTELLIGENT SENSORS THE KEY TO INDUSTRY 4.0

The Industrial Internet has the potential to become a major competitive advantage within the manufacturing industry. Built on the foundation of the Internet of Things (IoT) — an interconnected web of smart machines and devices that talk to and interact with each other autonomously — Industry 4.0 is altering the manufacturing landscape by creating intelligent networks of machines and systems that will increase horizontal and vertical integration.

From preventive maintenance programs that will help reduce machine downtime, to the ability to track products throughout the supply chain, Industry 4.0, if embraced effectively, will provide the Australian manufacturing industry the opportunity to realise significant operational and functional competitive advantage over industry rivals. Locally we continue to be challenged by a declining manufacturing sector and so to compete we must look to innovate and embrace the transition to the fourth industrial revolution.

The first industrial revolution happened back in the 1700s when the age of steam engine production commenced. It was followed by a second industrial revolution initiated by the adoption of electrical energy in 1870; and then by a third based on the automation of production through the introduction of programmable logic controllers in 1969. Now we are in the midst of a transitioning to the fourth industrial revolution — Industry 4.0 — driven by connected devices and sensors, cloud computing, advanced robotics, intelligent software and a range of other technologies.

Deloitte defines Industry 4.0 as the merging of real and virtual worlds on the factory floor — a world of smart factories where cyber-physical systems monitor physical processes, communicate with each other and human workers, and make automated decisions.

A key driver for the change is the use of sensor-based technology. Sensors provide the senses for machines, and the feedback they provide is what makes intelligent machines possible in the first place. 'Sensor intelligence' focuses on one particular aspect of sensor technology: equipping machines with the ability to see, recognise and communicate intelligently.

Intelligent sensors contribute to the ability to classify and interpret information. This is made possible by intelligent signal processing, which derives the truly relevant information from large quantities of data and makes it available at various levels. This is why — in addition to the primary control system for machines and systems — information can be provided for monitoring the production systems themselves (not just the process) and making it possible to detect faults. Transparency of the processes and material flows produces additional potential for optimisation, so that processes become more efficient and cost-effective, and help to increase a manufacturer's competitiveness.

With the continued decline in the Australian manufacturing sector, the need for Industry 4.0 is heightened. There is no doubt that Australian manufacturing needs to embrace Industry 4.0 and thereby secure the future of the industry through the adoption of innovation and technology to find our place within the global supply chain.

A member of the Extended Management Team for Sick Pty Ltd Australia & New Zealand, Jason Mair is the product market manager responsible for product management, marketing and customer service. Having commenced his working life within the manufacturing sector, Jason has over 25 years of experience across a number of roles in engineering, sales, product management and marketing, and has recently completed his Graduate Diploma in Business Management. He also recognises the challenges facing modern manufacturing facilities in a global market space, having spent 12 years in the manufacturing sector.

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