New Products

Figure 1: Signal Beacon, type 6162

Figure 2: Frequency transmitter ISpac, type 9146

New explosion protected optical beacons from R. STAHL

R. STAHL has expanded its product line of explosion protected optical signalling devices. The new type 6162 comprises 4 different versions: rotating beacons, rotating mirror beacons, 15 Joule flashing beacons and beacons with double flash. These signalling beacons are certified for the use in hazardous areas of Zone 1, 2, 21 and 22.

The rotating beacons are driven via a wear-resistant friction gear, so that approximately 180 signals per minute are generated. The R. STAHL signalling beacons can be delivered in the standard voltages and frequencies. The aluminium enclosures are specially designed for offshore use with an ingress protection of IP66. The glasses have an integrated prismatic structure for a better light distribution. The glasses with their highly resistant coating are available in many different signal colours according to customer specification.

Various mounting brackets and an integrated ›Ex e‹ connection chamber complete the program and guarantee easy installation and flexible use of the signalling beacons.

Compact Ex i-frequency transmitter – three apparatus in one

The tried-and-proven ISpac Ex i-isolator series from R. STAHL Schaltgeräte GmbH has been expanded to include the new ISpac Ex i-frequency transmitter ISpac, type 9146. This enables detection, monitoring and evaluation of rotational speed data. Its principal application areas consist of rotational speed monitoring of machines and plant systems that are deployed in hazardous areas. The device unites three basic functions.

First of all, it converts the frequency acquired at the input to a proportional analogue 0/4…20 mA signal. The user can then use the transmitter to define two limit values. The measured frequency is compared with these limit values and a signal is triggered if the threshold is exceeded or not attained. The third function offered by the frequency transmitter is the option for electrically isolating at the output the pulse train received from the input. The user has this entire comprehensive functionality in only one device that requires just a single 17.6 mm-wide footprint on a DIN rail. Consequently, the compact construction makes for an extremely space-saving installation, which is frequently demanded. The mechanically stable construction of the frequency transmitter allows use in environments with high vibration stress loads and extreme temperature ranges. The extensive range of options for detection and signalling of line faults via individual and collective line fault contacts enhances system availability as line faults occurring can be localised and eliminated quickly.

Detection and monitoring of rotational speed data is of growing importance in pro-

cess automation. On the one hand this data is needed to optimally control processes in the chemical and pharmaceutical industry, consequently guaranteeing high product quality. At the same time, rotational speed monitoring also serves safety purposes, and in many aspects as well. The aspect of work safety comes to mind immediately when one thinks of standstill monitoring of centrifuges or mixers, to name just two examples. One further important point is explosion protection of non-electrical apparatus in accordance with EN 13463. This Standard stipulates measures to be taken that allow non-electrical apparatus to be operated safely in hazardous areas.

›The new frequency transmitter is characterised by its extreme versatility and vary minimal space requirement‹

The type of protection, ›Protection by control of ignition sources‹, enables monitoring of potential ignition sources caused by hot surfaces or mechanical sparks that issues a warning or shuts down potential ignition sources in the event of imminent danger. This includes, for example, rotational speed monitoring of drive shafts that may overheat as a result of friction under certain circumstances or slip monitoring of belt drives.

The new frequency transmitter 9146 is suitable for such applications since sensors, such as proximity switches or optical pulse counters, can be operated in an intrinsically safe manner. The frequency transmitter with markings ⟨Ex⟩ II (1) GD [Ex ia] IIC/IIB and ⟨Ex⟩ II 3 G Ex nAC II T4 is approved for installation in Zone 2 and for connection of intrinsically safe circuits in Zones 0 and 1, and is approved for dust-Ex applications of Zones 20 and 21. The devices can be individually configured easily and intuitively with the ISpac Wizard programming software. Aside from limit value adjustments, the software allows other functions such as ›Starting override‹ and ›Reclosing lockout‹.

Like all ISpac isolators from R. STAHL, the devices can be used either as stand-alone devices on a DIN rail with common power supply and collective signalling via the low-cost pac-Bus or in the innovative pac-Carriers. The pac-Carriers allow pre-wiring of equipment at the factory. This allows the frequency transmitters or other devices of the ISpac isolator series to be wired easily and faultlessly either during definitive installation or in the case of subsequent retrofitting.

Expansion of the application range for miniCLIX with the new Y-adapter

With its miniCLIX plug connector system, R. STAHL Schaltgeräte GmbH working together with Cooper Crouse-Hinds has now introduced an innovative solution to the market for connecting and disconnecting non-intrinsically safe signals in hazard areas. For the first time, miniCLIX enables the user to install, service or exchange all equipments and systems during operation in Zone 1 without isolating and without a special permit-to work. Even field devices of type of protection flameproof enclosures ›d‹ can be converted with Ex connectors from R. STAHL to a ›plug and play‹ version. Thanks to its suitability for high data transfer rates of up to 100 MBit/s, mini CLIX is also used in the fieldbus technology field and with Fast Industrial Ethernet.

The newest component in the miniCLIX family is the Y-adapter. The Y-adapters of the 8592 type series compliment the miniCLIX product range with a connector version featuring two cable entries. These are optionally available for cables up to 7.5 mm or 11 mm in diameter.

The new Y-adapters are suitable for looping of data and power supply cables with currents up to 9 A. The cables are easily connected using cage clamp terminals. At the other end, the spring clamp proven miniCLIX connectors in plug or socket versions with 12 different coding options are used. The Y-adapter is also very well-suited to fieldbus applications based on the possible data transmission rate of up to 1.5 Mbit/sec.

As an alternative, the type 8593 with three plug-in connections is available instead of a plug-in connection and 2 terminal connections for the same fields of application.

Assigned with marking ⟨Ex⟩ II 2 G Ex de IIC T6/T5 and ⟨Ex⟩ II 2 D IP66 T80°C/T95°C, the Y-adapters are suitable for use in hazardous areas with flammable gas and combustible dust atmospheres of Zones 1 and 21.

miniCLIX : plug – twist – plug ... it's as simple as that!

Ex-protected open HMI version with a 19-inch display

The Exicom ET-456 completes R. STAHL HMI Systems' Open HMI series of powerful, PC-based operating systems by adding a new version with a 19-inch display. In hazardous areas of Zones 1/21 and 2/22 this installable device ensures easily legible and clear visualization even for highly complex processes. The large display can also be used to keep an eye on maintenance parameters or order management details at the same time as on process control. In one LAN, an ET-456 that is connected with the relevant application servers can easily take over all required tasks and can comfortably alternate between them. Thanks to the Pentium M processor that runs without a ventilator, its robust flash disk instead of a hard disk and a very sturdy housing, our new state-of-the-art model of the Open HMI series is well equipped for installation in rough environments. It can withstand ambient temperatures of between –10 °C to +50 °C; with a suitable heater, even down to –30 °C. The operating system on the basis of Windows XP is fully multilingual. Users may choose any of 25 available languages to operate an ET-456 multilingually – at the touch of a button they may then switch live between the languages they have selected. The Windows XP Embedded installed on R. STAHL's Open HMI operator interfaces does not require any complicated activation for changes or new set-ups. With pre-configured system ➔

Figure 3: Y-adapter type 8592 with one pluggable and two terminal connection feasibilities

Figure 4: Y-adapter type 8593 with three pluggable connection feasibilities

editions, the 60 MByte/sec fast USB interface of the ET-456 means that it can be ready to run within just five minutes.

ISbus: Foundation Fieldbus and Profibus PA components enhance the remote I/O system IS1

R. STAHL's proven remote I/O system IS1 for hazardous areas provides a cost-efficient solution for conventional and HART field bus devices. A new enhancement to the IS1 product range is the ISbus system, which contains devices and accessories for Foundation Fieldbus H1 and Profibus PA.

To allow for the operation of a maximum number of field bus apparatus, the ISbus system was deliberately designed as a non-intrinsically safe solution. The new Ex e/Ex i field device coupler (Ex e/Ex i FDC) allows for the operation of intrinsically safe field apparatus according to FISCO on a non-intrinsically safe field bus. The intrinsically safe circuits feature a short circuit protection and are galvanically isolated from the non-intrinsically safe bus. The Ex e/Ex e field device coupler (Ex e/Ex e FDC) also allows for the connection of non-intrinsically safe field apparatus. All couplers are approved for operation in Zones 1 and 2, and for Division 2.

R. STAHL provides special ISbus fieldbus power supply units for the non-intrinsically safe field bus. The supply is galvanically isolated from the field bus and is monitored for undervoltage. The field bus power supply units are installed in Zone 2 and Division 2 or in safe areas. Apart from the new ISbus components, R. STAHL also provides complete system solutions. The product portfolio also includes a wide range of plastic, stainless steel, sheet steel and aluminum field housings, innovative explosion protected plug connector solutions for non-intrinsically safe field busses, and complete system solutions for all types of field signals. Depending on the specific application, R. STAHL combines ISbus and Remote I/O IS1 components and systems, thereby providing the most effective and cost-optimized solution for the customer.

New IS1 I/O modules optimized for signals from Zone 2 and safe area

R. STAHL provides new I/O modules for its remote I/O system IS1, thereby ensuring cost-efficient signal connection in Zone 2/22 and in safe areas. Thanks to these new modules, continuous IS1 installations, which span different areas of a plant become considerably less expensive. Their pricing even allows for the assembly of cost-optimized field stations in Zone 2 or in safe areas. The new module program is designed for all current signal types: it contains models with an analog HART input, analog HART output, digital NAMUR input, digital voltage input and digital relay output. The I/O modules are certified according to signals from Zone 2/22 and comply with the types of protection Ex nA and Ex nL. Signals in safe areas can be connected as well. In such cases, the module inputs/outputs allow for operation with both Ex nA and non-Ex signals.

Moreover, the new modules offer a key advantage for operation with signals from

Figure 5: The new Exicom ET-456 supports operating systems such as Windows XP embedded (Win XPe)

Figure 6: Field device coupler (FDC) ISbus

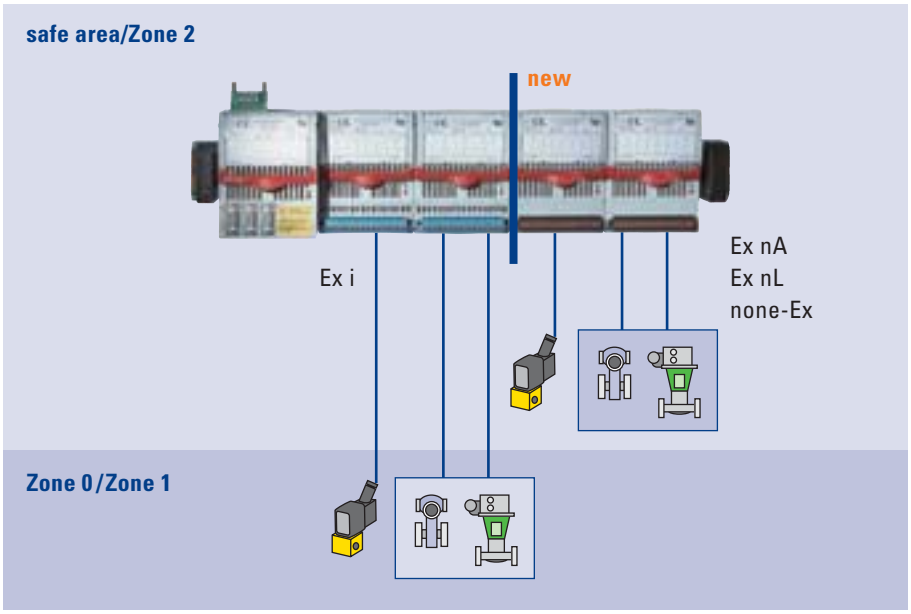

Figure 7: New I/O modules for the IS1 remote I/O system allow cost-efficient signal connection from Zone 2/22 and from safe areas

Zone 1/21 and Zone 2/22: they can be installed on one bus rail with Zone 1/21 modules. The required 50 mm space between intrinsically safe and non-intrinsically safe signals is ensured by a separating plate. The new modules retain all advantages of R. STAHL's remote I/O system, which has been a market leader for a long time. IS1 allows for a comfortable hot swap of all system components, including CPU and supply unit, in Zone 1. It also provides an intrinsically safe Profibus DP connection via copper conductor or optical fiber and can be designed for full or line redundancy.

New explosion protected position switches made of moulded plastic in accordance with EN 50041 and EN 50047 for dust explosion hazard areas Zones 21 and 22

R. STAHL has revised the tried-and-proven 8070 and 8060 series of position switches and has thus extended their possible applications to cover dust explosion hazard areas.

The position and safety switches of series 7060 and 7070 are designed for use in the areas of Zones 21 and 22.

Consequently, they have been approved in accordance to the most recent European ATEX Directive 94/9/EC with the EC type examination certificates PTB 06 ATEX 1019 for series 7060 and PTB 06 ATEX 1020 for series 7070.

Their explosion protection marking is Ⓔx II 2D Ex tDA21 IP65 T 80 °C.

Dust explosion protection is ensured with this type of protection through selection of the material, the mechanically rugged design, and through the dust tightness of the enclosures. To meet these high testing requirements, R. STAHL uses the same enclosures, actuating heads and cable glands as in the 8070 and 8060 series, which are suitable for use in Zones 1 and 2. The difference between the new 7070 and 7060 series and the previous 8070 and 8060 series relates to the design of the contact element. This type of protection, Protection by Enclosure ›tD‹ allows the use of non-explosion protected industrial components inside the housing. In turn, R. STAHL's tried-and-proven Ex contact elements 8080 have been cost-optimised. This was made possible on the new industrial contact G080 by abandoning the flameproof gap and the related pressure test.

Series 7070 and 7060 are available with a slow-action contact designed as NC/NO, NC/NC, NO/NO or as a snap-action contact of NC/NO.

The NC contacts are designed as positively driven contacts.

Aside from the plunger variant, a wide variety of other actuating heads (e.g. pivoted-head actuator, roll-lever actuator and rod actuator) are possible. The design complies with the EN 50041 for series 7070 and the EN 50047 for series 7060 and, for instance, allows applications for positioning and safety purposes in lift and elevator construction, in materials handling, and in general mechanical engineering and machine construction.

For plant users with dust explosion hazard areas of Zones 21 and 22 – e.g. in malt houses, silo installations and the woodworking industry, the new 7070 and 7060 series of position switches are new products tailored specifically to their needs, which provide optimum technology, operating safety and economic value.

›The new series of position switches are designed for dust explosion hazardous areas‹

New metallic cable glands of the 8163 series

Integration of industry at an international level means that both manufacturers and planning companies as well as users of electrical installations are increasingly also confronted with foreign wiring systems. One of the common methods used is that of metal-reinforced cables and lines, which are primarily used in the Anglo-Saxon world (the UK and Commonwealth countries).

The new cable glands of series 8163 from R. STAHL can be used for both non-armoured cables and for metal-armoured cables, and they comply with the requirements of the European ATEX Directives and the relevant IEC Standards resp. British Standards. Their modular design allows precise adaptation to the relevant cable construction.

Aside from conventional sealing at the cables heath, of prime importance is a secure clamped connection between armouring and cable gland as the metal armouring of the cable makes a contribution not only to mechanical protection but also to electrical safety. If the armouring becomes electrically live owing to a fault, it acts as a PE wire or earthing conductor and must consequently be integrated in the protective earthing system via the cable gland.

The new cable glands are approved for use in hazardous areas for Zones 1 and 2 and Zones 21 and 22.

They are suitable for ambient temperatures of between –60 °C and +130 °C and consequently comply with all requirements under tough operating conditions.

One special advantage is also afforded by the fact that only one version of the cable glands of series 8163 are needed on both enclosures with type of protection Flameproof Enclosures and on enclosures with type of protection Increased Safety. This simplifies inventory management for applications with differing enclosure designs (see also the featured technical article on page 73). ➔

Figure 8: New position switches series 7060

Figure 9: New position switches series 7070

Figure 10: Cable glands series 8163

Figure 11: WLAN Access Point

WLAN Solutions for Hazardous Areas

The ongoing trend towards wireless data transmission methods such as WLAN (Wireless Local Area Network) has not failed to leave its mark on explosion hazardous areas of the process industry. In particular, areas of application can be found in the mobile operation and monitoring fields. Using explosion-protected PDAs (Personal Digital Assistants) or Notebooks, it is thus possible to access process data in the field, which in turn saves time during commissioning and expansion of a system, or during a service call. Another important application can be found in the field of logistics. Transport orders can be transmitted to forklifts fitted with corresponding terminals. The driver is therefore informed directly and delivery can be confirmed online. As a result, the processes in the manufacturing plant can be optimized for efficiency.

The advantages of WLAN such as a high bandwidth and support for functions like Roaming, are particularly beneficial for all of these applications. At the same time, there is an increased acceptance of wireless data transmission among users of chemical and petrochemical plants based on the improved encryption processes.

R. STAHL provides WLAN solutions for hazardous areas in order to support the introduction of this technology. These solutions incorporate both fixed Access Points and mobile Access Clients as well as their respective service.

Access Points are required for implementing WLAN networks. These devices can be compared to small fixed radio transmitter stations. The data from the cable-based Ethernet is converted into radio signals and transmitted to a WLAN station (so-called Access Clients). This also functions in the opposite direction. A certain number of Access Points in an industrial plant are required in order to provide such a large area with WLAN wireless coverage. The exact number and installation locations are determined by the size of the area to be covered, and by local factors such as, structures that could cause interference and the required transmission bandwidth. In order to fulfil the expectations associated with WLAN installation, it is essential

›R. STAHL offers complete WLAN solutions for hazardous areas‹

to carefully plan the project including a close inspection of the site and subsequent measurements. In addition to the necessary technical equipment, R. STAHL also provides corresponding services in the form of consultation, installation and final acceptance measurements.

R. STAHL's Access Points can be installed in Zone 1 and feature a rugged housing, simple installation and a high level of flexibility. The standard device is based on the industrial-purpose Access Point, which supports the 802.11b standard with a bandwidth of 11 Mbit/s. The connection to the company network is implemented as standard via a 100 BaseTx Ethernet connection. WAP128 is applied to guarantee data transmission security.

Alternatively, the Access Point can be connected with the company network via fibre-optic cables (100 BaseFx). The type of protection ›intrinsically safe light‹ used for this device significantly simplifies installation and maintenance.

The Access Point can be equipped with one or two external omni-directional antennae or an integrated directional antenna. The selection of antenna depends on the application and the installation environment.

If you already use WLAN Access Points in your safe area, a solution for the integration of these existing products can usually be found. This avoids the need to support WLAN Access Points originating from different manufacturers in your plant and systems. Accordingly, the maintenance and service efforts, the stock requirement, and consequently the maintenance costs are reduced.

R. STAHL provides a complete range of products and services to support you with the installation of WLAN networks in the explosion hazardous area. Join us in the age of wireless communication in explosion hazardous areas.