

INDUSTRY LEADING FLOW CONTROL NEWS FROM THE WORLD OF ROTORK

# rotalk 41



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**rotork**<sup>®</sup>

Keeping the World Flowing

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## EDITOR'S NOTE

With this edition of Rotalk we welcome Bifold to the Rotork Group. Bifold, an acknowledged leader for pneumatic and hydraulic instrumentation technology, significantly enhances the range of products and services provided by the Rotork Instruments division.

Also featured in this issue, the acquisition of M&M solenoid valves and Roto Hammer chainwheels is further evidence of the diversity of flow control expertise that Rotork can offer, ranging from fully automated to manually operated solutions. Please also take a look at

our innovative Client Support Programme (CSP), featured on page 13. No matter what the size or complexity of your operation, protecting your equipment makes sense and our CSP will tailor an asset management programme to suit your specific requirements. Proven benefits include increased plant availability, maximised productivity and reduced cost of ownership.

Finally, I am pleased to announce our new, mobile-optimised website at [www.rotork.com](http://www.rotork.com). For customers using mobile phones and tablets, the new site offers an easier reading layout,

enhanced navigation and a more user-friendly experience. In particular, the new Sales & Service Locator ([www.rotork.com/locator](http://www.rotork.com/locator)) makes it simpler for you to find your local Rotork contact. We look forward to hearing your views on these new developments. ■

**Carlos Elvira**  
Rotork Group Sales and Marketing Director

## BIFOLD PURCHASE STRENGTHENS THE ROTORK FLOW CONTROL GROUP

*Bifold is a leading manufacturer of instrument valves and accessories, piping valves and pumps for the oil, gas and wider industrial markets.*

ROTORK RECENTLY ANNOUNCED the acquisition of the Bifold Group, a leading manufacturer of pneumatic and hydraulic instrument valves and components.

From its origins in the mining industry, Bifold has evolved into a leading manufacturer of instrument valves and accessories, piping valves and pumps for the oil, gas and wider industrial markets, with expertise in a number of niche sectors including subsea and wellhead control systems. Bifold also has market leading technology in areas that include the development of solenoid valves with ultra-low power requirements.

Bifold has a strong market presence and excellent brand recognition. Bifold now sits within the Rotork Instruments division and is able to offer a broader product portfolio to its customers.

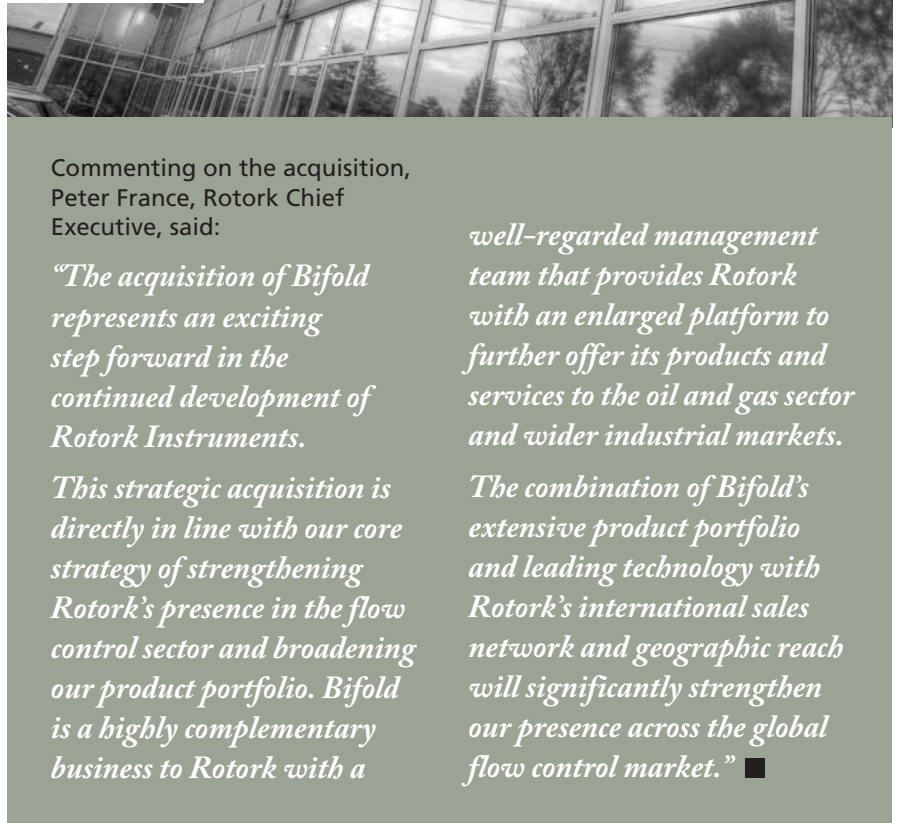
Commenting on the acquisition, Peter France, Rotork Chief Executive, said:

*“The acquisition of Bifold represents an exciting step forward in the continued development of Rotork Instruments.*

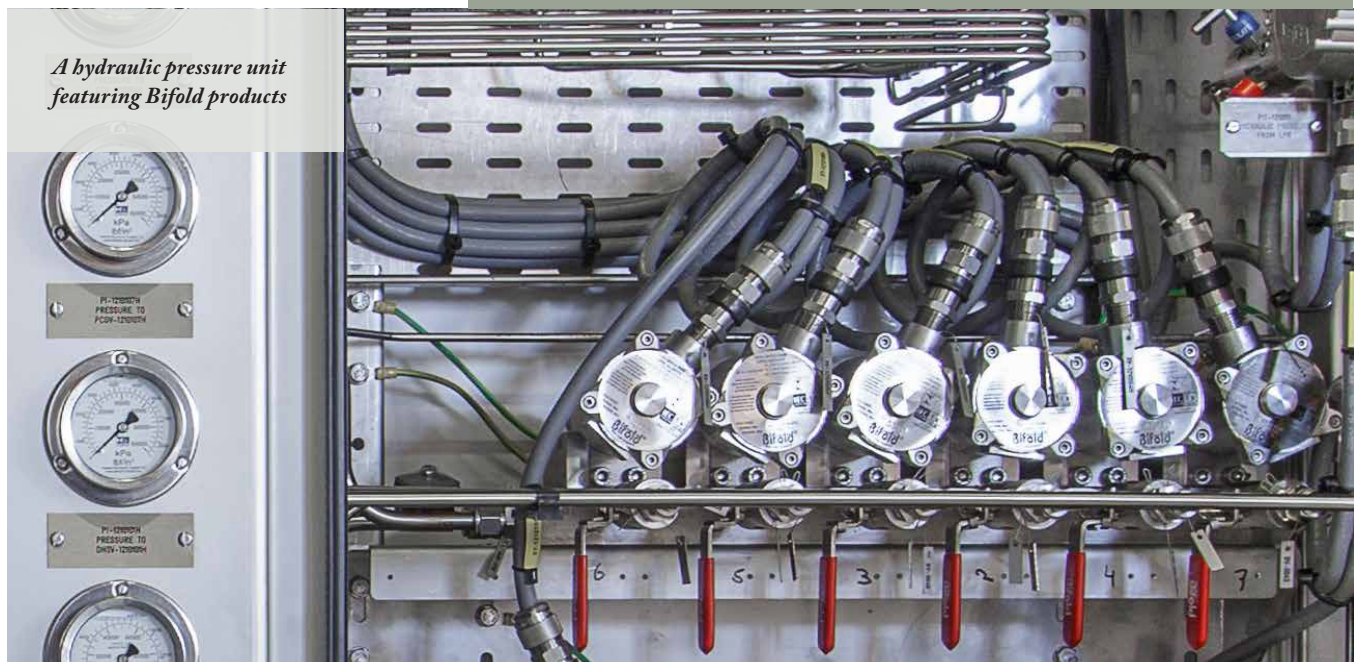
*This strategic acquisition is directly in line with our core strategy of strengthening Rotork’s presence in the flow control sector and broadening our product portfolio. Bifold is a highly complementary business to Rotork with a*

*well-regarded management team that provides Rotork with an enlarged platform to further offer its products and services to the oil and gas sector and wider industrial markets.*

*The combination of Bifold’s extensive product portfolio and leading technology with Rotork’s international sales network and geographic reach will significantly strengthen our presence across the global flow control market.”* ■



*A hydraulic pressure unit featuring Bifold products*





## NEW HAND OPERATED SPUR GEARBOX FOR MULTI-TURN VALVES

*The new HOS/MPR multi-turn spur gearboxes from Rotork Gears are designed for the manual operation of gate, globe, sluice and penstock valves with torque demands from 508 Nm to 15,917 Nm.*

THESE RUGGED GEARBOXES CAN BE INSTALLED ABOVE or underground with upward or downward input orientation. The totally enclosed, maintenance-free spur gearing is grease lubricated for life and designed with carefully chosen ratios to meet manual rim effort requirements. A range of handwheels is available with rim diameters between 200 mm and 1,000 mm.

Standard materials of construction, including a cast iron gearcase, ductile iron baseplate, protected steel input shaft and protected steel fasteners, provide excellent resistance to aggressive operating environments. The standard IP67 dust and watertight enclosure can be increased to IP68 (continuous submerged duty at depth of 15 metres) and an ISO 10497 firesafe option is also available.

Other options include position indicators, two-speed input reducers and flexible extensions, padlockable input, an interlock safety system, gloss paint and special coatings. Low and high temperature options increase the standard operating range of -40 °C to +120 °C to -60 °C and +200 °C respectively. ■

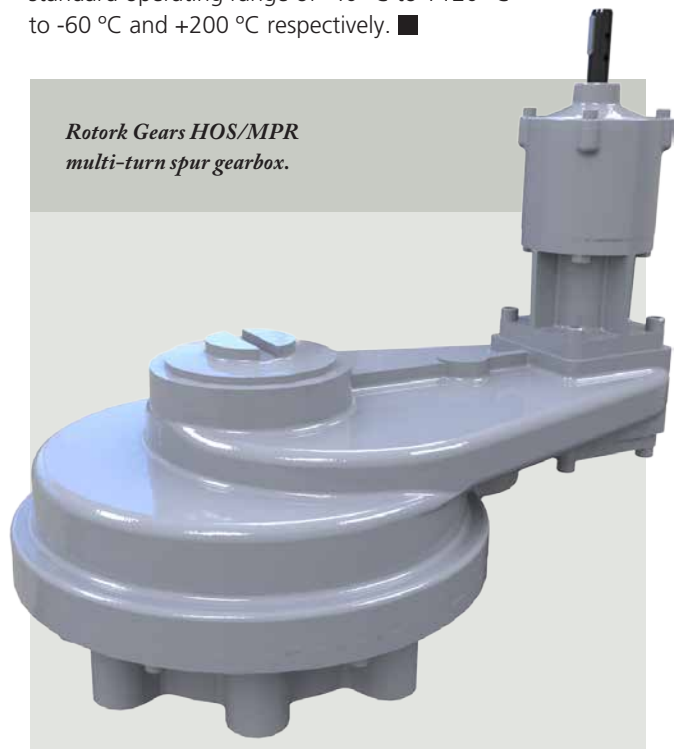
## NEW IQ VALVE ACTUATOR HAS OPTIMISED STEM ACCEPTANCE AND TORQUE OUTPUT

*Rotork has introduced a new model in its IQ range of non-intrusive intelligent electric actuators with an optimised combination of valve stem diameter acceptance and torque output to facilitate economical automation of valves and penstocks typically found in the water and effluent treatment industries.*

THE NEW IQ19 ACTUATOR combines a stem acceptance of up to 51 mm (2 inches) diameter with torque output up to 135 Nm (100 lbf.ft) and output speeds up to 72 rpm @ 50 Hz (86 rpm @ 60 Hz).

The combination meets the operating requirements of large numbers of penstocks, sluice gates and gate valves. ■

*Rotork Gears HOS/MPR multi-turn spur gearbox.*



## M&M SOLENOID VALVES BOOST ROTORK INSTRUMENTS PRODUCT PORTFOLIO

*The acquisition of M&M International Srl adds a complete range of solenoid valve products to the Rotork Instruments division.*

ESTABLISHED FOR OVER 30 YEARS, M&M is a leading manufacturer of general purpose solenoid valves, air actuated piston valves, automatic drain valves, connectors, coils and customised instrumentation solutions used throughout the commercial and industrial flow control industries.

From its base at Bergamo, Italy, M&M complements the instrumentation



*M&M is a leading manufacturer of solenoid valves and air actuated piston valves.*

products and services provided by the Rotork Group and provides a focal point for solenoid valve and piston actuated valve manufacturing. ■

## SERVO MOTEURS SERVICES (SMS) STRENGTHENS ROTORK'S PRESENCE IN THE SOUTH OF FRANCE

*The acquisition of Servo Moteurs Services (SMS), strategically located in the South of France, is another important step forward in the global development of Rotork Site Services.*

SMS brings a wealth of experience to Rotork Site Services and a local service centre, ideally placed near Marseille, to support existing and potential actuator users locally. ■



## ROTO HAMMER CHAINWHEELS ON ROTORK GEARS MENU

*The acquisition of Roto Hammer adds a market leading and comprehensive range of valve chainwheels to the Rotork Gears division portfolio of valve gearboxes and valve accessories.*

THE ROTO HAMMER RANGE OF chainwheels enables hard to reach and stubborn manually operated valves to be safely operated without risk of injury. During the company's 50 year history its range of products has grown to now include valve extensions, floor stands, gear operators and customised solutions.

These products complement Rotork Gears' existing range of products and services, increasing Rotork's presence in the important USA market and further strengthening its capabilities as a supplier to the global valve manufacturing industry. ■

*Roto Hammer CL Series chainwheels can be installed in minutes.*



## GARY JACOBSON APPOINTED GROUP INNOVATION DIRECTOR

*Following the acquisition of Bifold, Gary Jacobson has been appointed to the position of Rotork Group Innovation Director. In this role Gary brings a wealth of experience and technical knowledge of products and markets relevant to Rotork.*



GARY BEGAN WORKING AS AN APPRENTICE WITH Brown and Root, becoming a structural and design engineer and then commissioning manager on projects including Piper Bravo. Following this he managed the operations at four sites for BICC and Pirelli. Gary has been the Managing Director of Bifold since 2002. During his time at Bifold, the company has grown 50% each year to become a leading designer and manufacturer of instrumentation for hazardous, corrosive and subsea environments. At Rotork he will guide and oversee the development of new flow control products in all areas of the Group. Alongside the Group Innovation Director position he will retain his current role and responsibilities as General Manager of the Bifold Group.

Commenting on his appointment, Gary says:

*“Rotork already has leading edge technology and is extremely well positioned in the market. With the energy markets changing so quickly, this is an exciting time to be working for the Company.”*

## ROTORK INSTRUMENTS APPOINTS NEW TECHNICAL DIRECTOR

*Rotork Instruments has appointed Mike Hallett as Divisional Technical Director.*



MIKE JOINS ROTORK FROM Danfoss Power Solutions, where he has held engineering and product management positions throughout Europe covering various engineering technologies over a period of 15 years. At Rotork he will play a pivotal role in bringing together Rotork Instruments division companies and companies from other divisions to establish new industry leading products for existing and new markets.

Commenting on his appointment, Mike says:

*“I am proud to join Rotork and welcome the opportunity to work with our global teams to deliver innovative products that will delight our customers.”* ■



## ROTORK IMPROVES AIR QUALITY AND VENTILATION ON GIANT FPSO

*Operating in Angola’s Block 17 offshore oilfield, the giant Total CLOV FPSO (Floating Production, Storage and Offloading) vessel relies on its HVAC system not only for the comfort and safety of crew members but also to provide a stable operating environment for PLCs and associated critical control equipment.*

THE APPLICATION DEMANDS PRECISE ACCURACY TO maintain air quality and ventilation in the many enclosed cabins, offices, sub-stations and PLC rooms contained inside the massive vessel. The temperature has to be accurately controlled and the air supply has to be constant, so when actuators were needed on the HVAC air handling units and cooling water supply, Rotork CMA and CVA electric process control valve actuators were selected for their proven field performance.

Working with the CLOV HVAC maintenance team, engineers from Rotork South Africa installed and commissioned the new actuators, which were supplied in accordance with the Total CLOV marine specification.

Operating from the existing 4-20 mA control signal, the actuators provide precise and responsive valve positional control and feedback, with repeatability and resolution at less than 0.1%. Following the installation, CLOV has reported that the HVAC is operating at 100% efficiency and there have been no failures.

Rotork has a long association with Total’s offshore and onshore projects providing technical support through its South African office and its agent in Angola. More than 400 heavy duty Rotork CP and GP pneumatic actuators were supplied for installation in many areas of the CLOV vessel’s processing plant, including those parts designed to limit environmental impact by eliminating flaring under normal operating conditions, recovering heat from turbine exhaust and recovering vent gases. Rotork’s professional performance throughout the duration of that contract and contribution to the timely CLOV start-up was recognised with the letter of appreciation from the vessel’s constructors. ■

## APPLICATION NEWS

## REMOTE HAND STATION IMPROVES OPERATIONAL CONVENIENCE ON FLOOD PROTECTION SCHEME

*A new Rotork IQ3 intelligent electric actuation solution improves flood protection in a vulnerable area of a coastal town in West Wales.*

THE RIVER RITEC FLOWS TOWARDS Tenby, where it discharges via a 780 metre culvert/outfall system that passes beneath a railway embankment and sand dunes to discharge into the sea below typical low tide level. There is a history of flooding upstream of the culvert which imposes a restriction on the discharge of flows from the river catchment area during high river flow events. This is particularly true when high river flows coincide with high Spring tide levels.

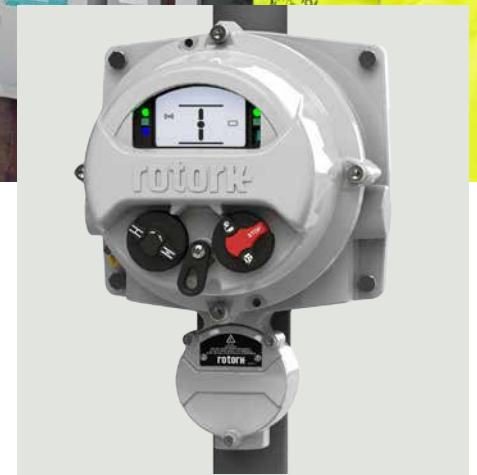
The valve installed below ground in a chamber at the beach end of the culvert is designed to close off the rising tide which can otherwise fill the length of the culvert and prevent “washing” of the Victorian brick culvert.

Due to its inaccessibility in the chamber, the actuator previously installed on the valve was locally operated by pushbuttons in a nearby top-side enclosure. However, local operation was imprecise, requiring call-outs at any time, day or night, and relying on human judgement on factors including the state of the tide, the rate of rainfall, the weather forecast and the risk of flooding.



*The Rotork Remote Hand Station provides an exact duplicate of the actuator's monitoring and control interface, enabling convenient access for local operation, interrogation and data download for asset management.*

In a contract awarded to Rotork Site Services by Natural Resources Wales (NRW – formally Environment Agency Wales), the old actuator has now been replaced with an IQ3 actuator and two ultrasonic level sensors installed in the valve chamber. The new installation is programmed to automatically close-off the rising tide to ensure that the length of the culvert is then available to act as a storm tank and receive as much river flood water as possible. By automatically opening the valve when the tide begins to recede, drainage capacity is also maximised, enabling any flooding that may have occurred to drain away as quickly as possible. As on other NRW sites, operation is now remotely monitored via a telemetry system and, if necessary, can be overridden from central control rooms and mobile devices.



Operation of the actuator is supported by a Remote Hand Station (RHS) installed in the top-side enclosure, which provides an exact duplicate of the actuator's monitoring and control interface. From here the user can not only locally operate the actuator in the lower valve chamber, but also interrogate, configure and download data from it using the Rotork hand-held setting tool with its secure wireless Bluetooth® link. Retaining all of the actuator's functionality, the Remote Hand Station presents an identical window into the plant, showing diagnostic data including the valve torque and usage profiles and facilitating real time analysis directly at the cabinet to assist with preventative maintenance and asset management. ■



*The new Rotork IQ actuator installed in the underground chamber. Note the adjacent ultrasonic level sensor.*

# ELECTRO-HYDRAULIC ACTUATION DELIVERS THE SOLUTION FOR TANK FARM EMERGENCY SHUTDOWN VALVES

*Electro-hydraulic solutions for critical ROSOV applications are being provided by the Rotork Skilmatic actuators worldwide.*



COMBINING ALL-ELECTRIC SIMPLICITY with the precision of hydraulic actuation and the reliability of spring-return failsafe operation, standard Skilmatic features include non-intrusive setting, performance monitoring and configurable data logging of valve and process data for analysis, preventative maintenance and asset management. The actuators operate on a pump and bleed principle utilising a motorised vane pump to provide hydraulic pressure in one direction and spring-return in the opposite (bleed) direction.

When the actuator is commanded to open from the closed limit, the bleed solenoid valves are energised. The motorised vane pump is started under no-load condition as a result of the delay in energising the by-pass solenoid valve. With the by-pass solenoid energised, the system pressure acts against a spring opposed piston to drive the actuator in the open direction. When the actuator is commanded to stop or reaches the open limit, the by-pass solenoid valve is de-energised, followed by the motorised vane pump after a preset time unless a new command is given. The bleed solenoid valves remain energised and the system pressure is maintained to hold the actuator position.

When the actuator is commanded to close or receives the ESD signal, the by-pass solenoid valve, bleed solenoid valves and motorised vane pump are de-energised. Pressure is released; the hydraulic fluid returns to the reservoir and the spring returns the drive shaft to the failsafe position.

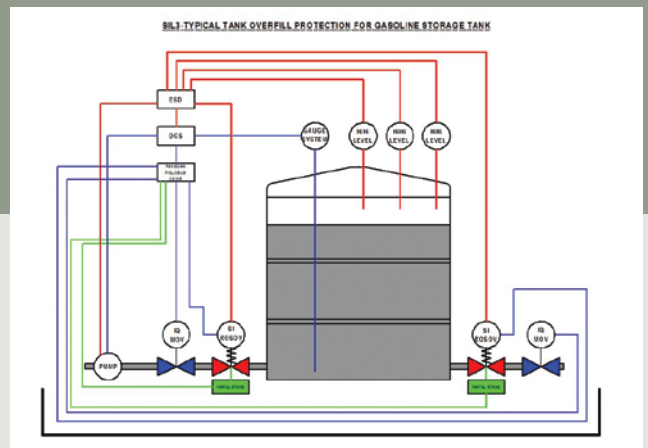
ESD can be configured to operate on loss of mains power supply or control signal (ESD signal). The ESD action can be configured to failsafe closed, open or stay put. There is also an option to add a second ESD circuit with the following functionality. Two independent ESD signals operating the same solenoid valves; if either ESD signal is removed the actuator will perform the safety function by using the same final elements. Two independent ESD signals

operating independent solenoid valves; if either ESD signal is removed the actuator will perform the safety function by using different final elements.

As an added safeguard, an optional ESD manual reset can be enabled to restrict the actuator from operating until locally reset at the actuator or with an externally mounted switch. Closing speeds can be adjusted to meet the specific requirements of the application.

## THE SAFETY INSTRUMENTED SYSTEM (SIS)

*Schematic of Safety Instrumented System (SIS) to prevent tank over-filling.*



The ROSOV function is often an integral part of a Safety Instrumented System, as illustrated above. In this case, Rotork IQ actuators operate the valves that fill or empty the tank, the Skilmatic actuators perform the ROSOV function and the system is connected to a Rotork Pakscan digital network. The tank, pump and actuators are controlled by the DCS (Distributed Control System) and the installation is physically contained within a bund. The signal from the gauge system is feeding back to the PLC in the DCS which controls

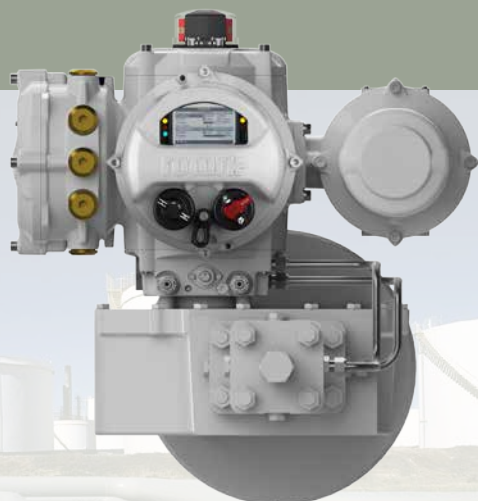
the pump and the IQ and Skilmatic actuators via the Pakscan network. A fault with the gauge system leaves the tank vulnerable to overfilling. To account for this, the SIS is added, consisting of separate level sensors and an ESD logic solver to control the Skilmatic actuators, which are the final elements under the control of the SIS. The ESD signal is independent of other control signals and ensures that the ROSOV valves will be in the safe position, providing a Safety Instrumented Function (SIF) for the ESD duty.



## Skilmatic actuators – new developments

*Specifiable for three-phase, single-phase or DC electrical power supplies, the Skilmatic range delivers a range of rotary torque or linear thrust outputs that are suitable for valves of virtually any size and design.*

*“Skilmatic 3rd Generation actuators combine established features with an extended torque output range, increased functionality and enhanced availability of valve and process data for asset management and data analysis, displayed in a new, large and information-rich format. Safe valve positioning is selectable for failsafe to open, failsafe to close or lock in position on either loss of power or a range of programmable ESD signal options.”*



*Rotork 3rd Generation Skilmatic self-contained electro-hydraulic valve actuator.*

The advanced control and monitoring functionality of the range has been further developed with the introduction of the 3rd Generation, incorporating proven Rotork IQ3 intelligent electric actuator technology. Communication and data logging capabilities have been increased in response to end users' desire to access more valve related data, both in the field and in the control room.

The control module facilitates simple, safe and swift non-intrusive commissioning by means of an intrinsically safe hand held setting tool with infra-red and Bluetooth® interfaces. Settings including internal hydraulic pressure, position, limits, control, alarm and indication functions can be accessed and adjusted using user-friendly Rotork 'point and shoot' menus. Actuator status, control and alarm icons are provided on an advanced new dual-stack toughened glass illuminated display which also gives access to real-time information such as pressure, diagnostics and help screens.

Data from the actuator can be transferred to a PC for storage and analysis by means of Rotork Insight2 software. Offering flexibility of customisation to suit the application, the actuators can be integrated into the majority of digital bus control systems, including Pakscan, Foundation Fieldbus®, DeviceNet®, Profibus®, Modbus® and HART®. Designed for functional safety applications to SIL2 (1001) and SIL3 (1002) for use on safety critical applications, the actuators are also offered with enhanced partial stroke testing (PST), enabling valves to be function tested without affecting the process. Performed either locally with the setting tool or remotely from the control room via hardware or fieldbus communications, PST tests all the final elements (actuator and valve) by measuring the time to move to a set position whilst monitoring the pressure. PST results are recorded by the integral datalogger, shown on the display screen and optionally remotely indicated.

All actuators are available with hazardous area certification encompassing ATEX, INMETRO, IEC, FM, CSA and GOST. The double-sealed electric enclosure is watertight and dustproof in ratings up to IP68 (submersed to a depth of 7 metres for 72 hours). ■



EDF Energy Hartlepool nuclear power station.

## POWER GENERATION: EDF ENERGY APPROVES ROTORK IQ3 VALVE ACTUATORS FOR NUCLEAR BALANCE OF PLANT DUTIES

*Following an in-depth Modest Integrity Assessment (MIG), EDF Energy has approved Rotork IQ3 non-intrusive intelligent valve actuators for balance of plant applications within its nuclear power stations.*

Mike Dale, Rotork UK Sales Engineer comments:

*“We introduced the IQ3 to EDF Energy and were very pleased to be asked to take part in the MIG assessment. The report itself captures and reflects our approach to design, quality and product testing excellence.”*

EDF ENERGY OPERATES NUCLEAR power stations around the world, including eight in the UK, where it hopes to build four more reactors at two sites.

Balance of plant areas typically include the turbine hall, water treatment and cooling systems. Approval for Rotork IQ3 technology brings the benefits of increased functionality to the operation of valves and dampers in these areas. Secure, non-intrusive infrared set-up and data transfer eliminates the need to remove electrical covers for commissioning once the actuator is site wired. This feature permanently protects internal components from

the time the new actuator leaves the factory, enhancing the traditional double-sealed enclosure design that has been a standard feature of Rotork actuators for nearly 50 years.

Powerful operational data logging is another standard feature of IQ3 actuators, providing comprehensive diagnostic information that can be used for preventative maintenance and asset management. This ability, which is widely adopted in many industries including conventional power generation, can assist EDF Energy with its plans for life extensions in its existing nuclear fleet as well as new stations. ■



*“A recent scheme to automate penstocks on the river Mŵldan in Cardigan was put into action and proved invaluable in the early hours of Wednesday 7th October during an unpredicted heavy down pour of rain. It meant that the residents of Bathhouse in Cardigan could sleep easy at night knowing that the threat of flooding was managed effectively, at the same time as saving NRW money and manpower.” – Natural Resources Wales*

*New Rotork IQ actuators installed on the flushing penstocks.*

## ROTORK VALVE ACTUATORS AT HUB OF AUTOMATED FLOOD ALLEVIATION SCHEME

*An extended scope contract performed by Rotork Site Services has successfully delivered full automation of a flood alleviation scheme protecting the historic town of Cardigan in West Wales.*

THE PROJECT INVOLVED REPLACING unreliable actuators from another manufacturer, installing a PLC control cabinet and interfacing with the existing river level sensor and telemetry system.

The flood alleviation scheme on the River Mŵldan was constructed 20 years ago by the local authority. It consists of a V notch weir, an over-spill grid into a culvert that travels approximately half a mile through the hillside into the estuary and three flushing penstocks. In 2006 the scheme was adopted by Natural Resources Wales (NRW – formally Environmental Agency Wales). Since then, NRW has installed CCTV and telemetry to enable remote visual monitoring of the site from central control rooms and mobile devices.

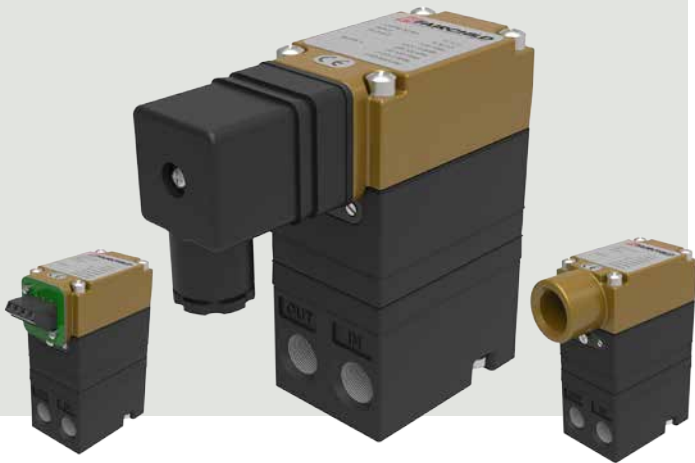
During recent periods of intense rainfall the weir has been at the point of over-

topping and, to reduce the flood risk, two of the penstocks were opened. As well as proving the vital importance of the penstocks, these events also highlighted the unreliability of the electric actuators originally installed. Poor environmental sealing had enabled moisture to enter electrical enclosures, causing operational failures. As a result, NRW decided to replace the actuators and at the same time introduce full automation of the flood alleviation scheme. The extended scope contract awarded to Rotork Site Services encompassed all aspects of the task, enabling Rotork to organise the total supply of the work together with project management services. Rotork’s responsibilities included an initial survey, removal of the old actuators and replacement with new, installation of a PLC control cabinet with HMI for local control and indication, interfacing with the level sensor and telemetry system and commissioning of the completed installation. The new Rotork IQ12 intelligent electric actuators installed are

controlled by the PLC, using the signal from the river level sensor and operating in 5% travel increments. Operation of the site is now fully automated and remotely monitored. If necessary, the automatic system can be overridden and the actuators can be operated remotely via the telemetry system or locally via the HMI panel on the PLC control cabinet.

Mike Haley is the NRW MEICA electrical engineer who has been responsible for automation upgrade project. He comments:

*“The scheme using Rotork actuators has successfully introduced the level of automation and remote monitoring that we required and restored reliability to the operation of the three penstocks. Rotork actuators have a proven record of reliability at other NRW sites, including an installation which has been operating in an exposed coastal environment for 30 years.” ■*



*Rotork Fairchild T7500 I/P transducers with (l to r) terminal block, DIN plug and NPT electrical connections (not to scale).*

## FAIRCHILD I/P TRANSDUCERS: HIGH ACCURACY AT VERY LOW PRESSURES

*The rugged cast aluminium construction and vibration resistant internal componentry is designed to withstand the rigors of both portable and stationary mounted equipment often found in medical and test situations.*

PRECISE PRESSURE CONTROL, WHERE OUTPUT PRESSURES must be accurately held at low pressures down to 70 mbar (1 psi), has traditionally been a difficult task for industrial instrumentation. The new Rotork Fairchild T7500 range of transducers is specifically designed for these low pressure control systems with set point accuracy of 0.1%, even at pressures of less than 100 mbar.

T7500 transducers accept supply pressures between 1.3 and 2 bar (20 and 30 psi) with mA or VDC control signals to deliver critical high accuracy output ranges of 0-350 mbar (0-5 psi) and 0-1 bar (0-15 psi). Flow configurations of 85 l/m or 200 l/m suit a wide range of application requirements. In addition, the T7500 can be ordered with DIN plug, NPT conduit or terminal block electrical connections styles to suit assembly requirements.

Applications in test and medical equipment, leak detection equipment and other precise scientific areas are ideal for the T7500 transducers. The rugged cast aluminium construction and vibration resistant internal componentry is designed to withstand the rigors of both portable and stationary mounted equipment often found in medical and test situations. ■

## LOW EMISSION NATURAL GAS I/P TRANSDUCERS MEET NEW ENVIRONMENTAL REGULATIONS

*Rotork Fairchild TXI7850 explosion proof I/P transducers have long been approved for and utilised in natural gas operated instrumentation systems.*

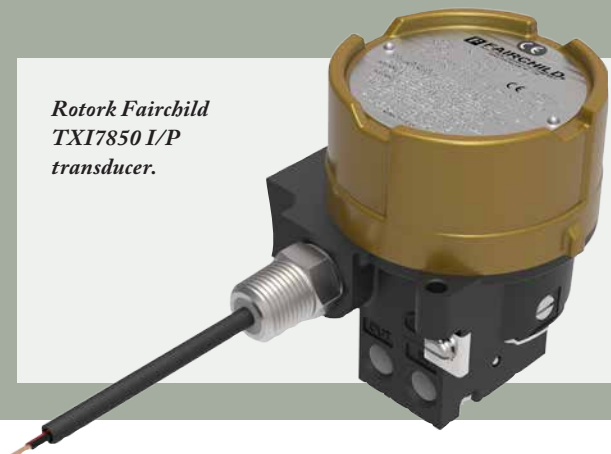
THE EXPLOSIONPROOF EVALUATION OF THESE UNITS BY underwriting agencies such as FM, ATEX and CSA™, using standards covering a constant fuel gas presence, ensures safe and reliable operation in the field with compressed natural gas as the supply medium.

In the USA new government regulations require all pneumatic controllers at the wellhead to have a maximum consumption of 6 SCFH (Standard Cubic Feet per Hour). In Canada and other countries, carbon credits can provide economic incentives to utilise low emission products, so the challenge is to provide controllers which reduce or eliminate these fugitive emissions.

The new Rotork Fairchild TXI7850 series maximum consumption levels are 3.6 SCFH for the 3-15 psi output range unit and 5.5 SCFH for the 6-30 psi range unit. These rates are for natural gas as a media and applicable all the way to the highest pressure in each range (i.e. 15 psi and 30 psi respectively).

As part of Rotork Instruments, Fairchild provides a complete range of regulators, boosters, I/P transducers and other products. Rotork Instruments can also provide fully approved switchboxes, positioners, solenoid valves and other actuation and severe service components to complete the automated flow control package. ■

*Rotork Fairchild TXI7850 I/P transducer.*



COMPANY NEWS

# ROTORK JOINS THE INSTITUTE OF ASSET MANAGEMENT

*Rotork is now a corporate member of the Institute of Asset Management (IAM), the professional body for whole life management of physical assets.*

THE POPULARITY OF ASSET MANAGEMENT IS increasing across all areas of business as it becomes ever more important, especially in the current economic climate. Being an IAM member demonstrates Rotork's commitment to offering an Asset Management service to its customers through its Client Support Programme, which operates to ISO 55000:2014 standards. Fundamental to the Client Support Programme is tailoring the contract to individual client's needs, budgets, and maintenance plans.

If you would like more information ask your nearest Rotork office for the Client Support Programme brochure or download it from our website at [www.rotork.com/en/documents](http://www.rotork.com/en/documents) (type 'client support' in the 'Keyword Search' box). ■



## ABOUT ASSET MANAGEMENT



*Asset Management requires consideration of three stages:*

**Objectives: Effective and efficient decisions to drive value**

ISO 55000:2014 provides a comprehensive development path for Asset Management which connects top management to the asset base and leads into setting objectives and determining values that can be gained.

**Methodology: Strategy to realise the objectives**

By setting a strategy that outlines the objectives and values, the operations and maintenance procedures can be aligned to minimise effort and risks while improving asset performance.

**Customised Solution: Implementation of methodology to achieve objectives**

Gathering data is the first aspect of the customised solution; the next step is to analyse this data to find the best approach to add value and create a 'line of sight' connecting the company's asset-related policies and objectives to accomplishing the organisational objectives.

Implementing the solution in the correct way with continual improvement to the Asset Management Strategy will achieve the objectives set. ■

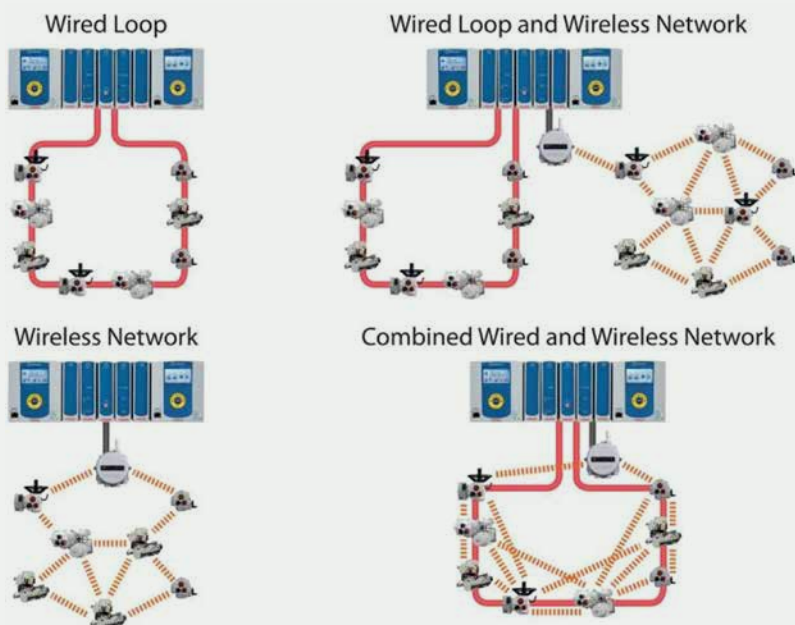


## WIRELESS NETWORKS IN THE WATER AND WASTEWATER INDUSTRIES

*Wireless networking continues to gain acceptance in industrial applications. With the cost of copper continuing to rise, and wireless manufacturers creating newer products that are reliable and easy to implement, the use of wireless devices is continually growing.*

REDUCED INFRASTRUCTURE, SIMPLIFIED NETWORK installation and commissioning, enhanced reliability via flexible, self-healing topologies, increased efficiency and reduced labour costs also contribute to its growing popularity.

Wireless monitoring and control can provide benefits for new installations or retrofit projects. Typically, the most obvious benefits are significant cost and labour savings that result from the elimination of cables, conduits and the work required to install and maintain them. The ease of wireless installation also allows for a reduced start-up phase for a project, meaning that the plant can be operational in less

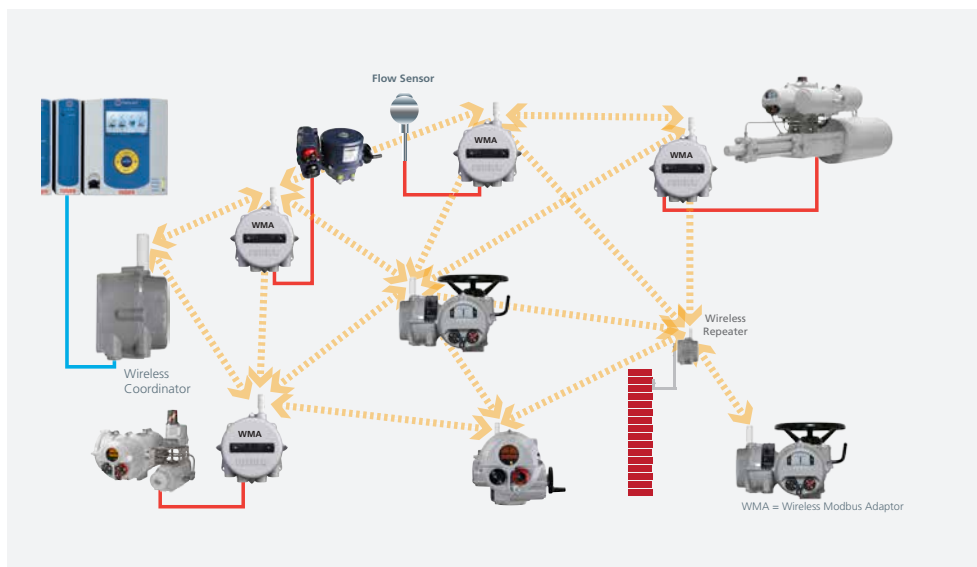


*Wired and wireless Pakscan™ control and monitoring network options.*

time than for a wired network. With the ability to sprinkle battery powered sensors where they are most needed in the plant for the gathering of more information about the process it is possible to improve process monitoring and to enhance diagnostic data that is useful for maintenance regimes.

Wireless is generally suitable for plants of most sizes and its inherent flexibility makes it easy to expand a small network. There can also be benefits in adding a wireless network to existing wired installations. For example, the modular nature of some systems allows the user to have the choice of a fully wired loop for control and monitoring, a fully wireless control and monitoring system or wired control with wireless monitoring.

When considering wireless for monitoring and control or for monitoring only, it is recommended that a site survey be conducted to set the stage for a successful installation. Companies may offer tools and software to assist with a site survey and provide survey technicians that can inspect a potential site for possible problems specific to a wireless installation and make recommendations to overcome them.



*Typical Pakscan™ wireless schematic, showing how actuators and instrumentation can be controlled and monitored on the same network.*

*The water and wastewater industries can take advantage of the simplified site wiring provided by wireless network control.*

One of the most important things to check is the viability of reliable wireless communication between field units and the control room. Some situations may require a site trial in addition to a survey to make sure wireless technology can meet special demands.

The experience of a large wastewater treatment plant which faced a significant problem is a good example of how wireless networking can help. The plant needed to retrofit valve actuators that controlled scum skimmers on several aeration tanks. Originally, the actuators were hardwired to the control room through a conduit that was embedded in concrete. To hardwire the actuators for network control, the plant was presented with two very expensive options. The first was to demolish the existing concrete structure to install new conduit and then rebuild it. The second was to run external conduits on the surface of the structure. However, in order to avoid trip hazards and other health and safety issues, all external conduits needed to be clear from walkways. Therefore, any new

conduit would need to be located along the edge of the aeration basins. If that option was selected, the basins would have to be decommissioned during installation.

In both cases the plant faced considerable costs. With an average distance of over 100 metres from actuator to control room plus the associated cost of decommissioning the tanks during construction, the estimated cost to run the new wiring was in excess of £1M. The plant therefore decided to install a wireless solution, which was achieved at a fraction of the estimated cost of the hardwiring options. In addition to eliminating the need for control wiring, another major benefit has been the wireless-equipped actuators' ability to communicate vital actuator data logger information to the host control system for planned maintenance and troubleshooting. Data transmitted wirelessly includes valve torque profiles, operational start profiles, vibration and temperature trend logs and an event log. Specific asset management information includes running time, average torque, number of starts and service or maintenance alarms.

Although this example involves valves, wireless technology is equally suitable for many diverse water industry applications including pump station control, water quality monitoring, leakage detection in distribution networks, flow metering, rainfall monitoring, tank level monitoring, treatment plants, storm tanks and large network SCADA and distributed control systems, camera surveillance and intruder alarms.

In conclusion it can be said that advances in wireless technology have proved themselves to be reliable, secure, and cost effective. Whilst it is true that some applications may not be suitable for wireless control, virtually every plant manager should become familiar with the technology and carefully consider its use when the time comes for a major upgrade, a new installation, or simply extending an existing system. It works well and can result in substantial cost savings and productivity benefits. In fact, the installed cost benefit of wireless technology is too appealing to be ignored whenever a new or retrofit installation is under consideration. ■

## ROTORK ACTUATORS SURVIVE THREE MONTHS SUBMERSION DURING DISASTROUS FLOOD



*At the beginning of 2014 the Madeira River, the largest tributary of the Amazon, reached record heights and caused the worst flooding for a century across large areas of north-west Brazil.*

*The Rotork IQ actuators emerge as the flood subsides at the TEVEL Porto Velho Terminal. The depth of the three month flooding is evidenced by the brown staining on the tanks.*

THE WATER LEVEL EXCEEDED THE 1997 record level of 17.52 metres by more than seven metres, flooding the homes of 3,500 families as well as the TEVEL Porto Velho Terminal tank farm for more than three months. During this time, all the installed equipment, including 24 Rotork IQ electric valve actuators, was completely submerged.

When the flood subsided, all the equipment had to be inspected for water damage before it could be returned to service. In spite of the severity of the

flooding, all 24 of the Rotork actuators were found to be fully functional with no mechanical or electrical damage and no evidence of ingress.

The site service technicians only had to replace internal batteries that maintain the local position indication display during periods of power loss. In some cases water had entered the actuator terminal compartment through the cable entries, but had been prevented from reaching any electrical components inside the actuator by the O-ring sealed

terminal bung. This feature, known as double-sealing, has been the standard design on Rotork electric actuators since the 1960s.

In the 1990s its impact on reliability was further enhanced with the introduction of the first IQ intelligent 'non-intrusive' actuator, enabling settings and commissioning to be performed externally with a hand-held wireless setting tool. ■



## APPLICATION NEWS

# SCHISCHEK ACTUATORS HELP DAMPERS PROTECT SHIPBOARD EMERGENCY GENERATORS

*Rotork Schischek HVAC electric actuators have been specified for critical fire damper operating duties on a fleet of cruise liners based in the USA.*

THE SPECIALISED FIRE AND GAS Dampers manufactured by Wozair (USA) Ltd. protect redundant power generation plants installed on the liners to ensure that vital facilities including catering, air conditioning and sanitation can be maintained in the event of a failure to the main power generators.

The Schischek InMax 50-BF-CTM actuators selected for this application are equipped with temperature activated safety triggers which automatically move the dampers to their safe position when a preset temperature is reached. This innovative and reliable solution is widely specified for fire damper applications. The actuators are one of a range of electrical



products designed by Schischek for explosionproof and non-explosionproof HVAC applications in the worldwide industrial, offshore and marine industries.

Rotork Schischek HVAC electric actuators have also been selected for the motorisation of air control dampers manufactured by Nailor Industries Inc. at their Houston facility for an offshore drilling platform owned by the Mexican state-owned petroleum company PEMEX.

The stainless steel dampers are fitted to sea containers housing power generation equipment. Explosionproof Schischek ExMax quarter-turn failsafe actuators are being supplied by Saturn Enterprise Inc. of Dallas as part of a landmark order which represents the first application in the offshore hazardous area air damper OEM market for Nailor.

*Rotork Schischek actuators installed on some of the Wozair (USA) Ltd. Certified Fire and Gas Dampers at their Houston facility bound for the US cruise liner fleet.*

The major benefit of the Schischek actuator is its compact size and footprint, which is unique for an explosionproof actuator. It enables direct mounting on the damper and facilitates installation within the airstream, removing the concerns about space restraints around the damper casings which are often encountered in offshore environments. Further Schischek benefits include a universal 24 to 240 VAC or VDC power supply, an integral failsafe option with 1 second travel time and compliance with all major international explosionproof certificates. ■

*The compact size of the explosionproof Schischek actuator facilitates direct mounting within the damper airstream.*



## ROTORK APPLIES INTELLIGENCE TO CHOKE VALVE ACTUATION

*The latest addition to the Rotork IQ range of non-intrusive intelligent electric actuators is designed specifically for choke and control valve applications. The IQTF is engineered to provide the high accuracy, resolution and reliability demanded by arduous applications associated with oil & gas fields and general process control management.*

THE STANDARD SPECIFICATION DELIVERS UP TO 1,800 STARTS per hour with adjustable speed control, micro-step motion, 0.1% resolution and 0.27% accuracy. The compact and lightweight design is adaptable for direct mounting on rotary, rising stem and linear valves and operates with low power consumption on single and three phase AC or 24 VDC power supplies. Output torque ranges from of 50 to 2,000 Nm (37 to 1,476 lbf.ft).

The IQTF incorporates all of the advanced functionality and asset management features for which the Rotork IQ marque is well known, including an unrivalled range of data logging capabilities. An information-rich backlit display is the focus of attention for non-intrusive wireless commissioning, communication and multi-functional indication, including user-friendly multi-lingual menus for setup and configuration. Local position indication, valve and actuator status, asset management and diagnostic operating information can be viewed directly at the actuator and downloaded. Diagnostic graphics showing the valve torque, usage profiles and service logs facilitate real-time analysis directly at the actuator or in the control room.



These features enable preventative valve maintenance to be scheduled, eliminating unplanned outages and downtime at your plant.

Reliability is optimised by the IQ double-sealed IP66/IP68 (7m 72hrs) enclosure, which permanently protects internal electrics from the ambient environment, even during site wiring with the terminal housing cover removed. Hazardous area certification is available to international standards. An advanced patented absolute encoder measures the position, so there is no loss of position even without power.

In addition to analogue and hard wired control options, IQTF actuators offer network connectivity with Foundation Fieldbus®, Profibus®, HART® and DeviceNet® open systems, as well as Rotork's own dedicated Pakscan wired or wireless systems. ■

## NEW SOLDO LIMIT SWITCHBOX FOR HIGH TEMPERATURE APPLICATIONS

*Soldo Controls, the specialist manufacturer of position feedback devices in the Rotork Instruments division, has introduced a high temperature version of the LSB range of compact limit switchboxes for valves and dampers.*

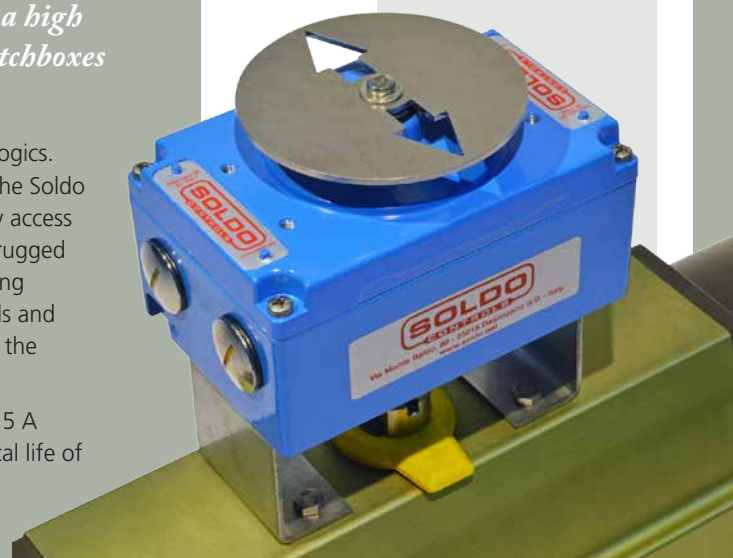
MANUFACTURED WITH AN ALUMINIUM or stainless steel enclosure, the new switchbox has been tested for operation in temperatures up to 250 °C for 2 hours or 300 °C for 70 minutes. High temperature applications include tunnel ventilation dampers, HVAC plant rooms and other building services environments.

Teflon coated stainless steel bushings ensure smooth and low friction shaft rotation, whilst precision end-of-travel switches guarantee normally open

(NO) and normally closed (NC) logics. Standard features also include the Soldo twin shaft design, enabling easy access to switches and terminals, and rugged enclosure coatings for challenging environments. Ceramic terminals and special wiring options complete the compact Soldo design.

The range is tested at 250 VAC 5 A and has a guaranteed mechanical life of one million cycles. ■

*Soldo LSB switchbox for high temperature applications.*



## → YOUR QUESTIONS ANSWERED

### HAZARDOUS AREA ENCLOSURES

*Getting the correct actuator enclosure for the environment and location can be confusing. For example, on the face of it certification to Explosionproof Increased Safety Exde appears to be even safer than Explosionproof Exd, but this is not the case.*

#### Question – What does Explosionproof certification mean?

##### Answer:

To gain certification the Explosionproof actuator enclosure must provide a type of protection in which components capable of igniting an explosive atmosphere are placed in an enclosure designed to withstand the pressure developed during an internal explosion and which prevents the transmission of the explosion to the explosive atmosphere surrounding the enclosure.

#### Question – How does Rotork do it?

##### Answer:

Rotork pioneered the use of the spigot joint for explosionproof actuator covers and joints in the 1960s, allowing the use of an 'O' ring to create a watertight seal. Up to this time, manufacturers producing explosionproof actuators used a flange joint that could not be effectively sealed causing all the associated problems of water ingress and subsequent poor reliability. It is true that some manufacturers still retain the flange interface today!

The Rotork explosionproof enclosure has a flameproof terminal barrier between the main enclosure and the terminal box enclosure. This provides a "double sealed" terminal area for protection from water ingress during the installation cabling /connection processes when the terminal cover is removed. The barrier also divides the enclosure so that both sides are segregated within the explosionproof enclosure, as shown above. An explosion on either side of the terminal barrier will not be transmitted to the other side or to the outside.

*Rotork therefore adopts the Exd enclosure, as illustrated in Fig. 1.*

#### Question – What is the difference between Exd and Exde?

##### Answer:

*The Increased Safety Exde enclosure is illustrated in Fig. 2.*

By definition, increased safety type of protection cannot be used to enclose switches, contactors, heaters etc. that may produce arcs or sparks in normal service and therefore it cannot be applied to the complete actuator enclosure unless the vulnerable components are individually potted or protected. Unprotected components would require an Exd enclosure.

However, it can be applied to the terminal compartment where there are no such components, providing this compartment is segregated from the explosionproof enclosure, which must still meet the full requirements of the construction standards relating to Exd. This combination demands an additional pressure test of terminal block components and extra fasteners to be used for fixing the terminations, although standard watertight cable glands can be used to wire-up the actuator instead of explosionproof ones.

The increased safety Exde type of protection can therefore generally only be used in conjunction with explosionproof type protection. The part of the enclosure containing switches, contactors etc. complies with the explosionproof "d" type protection requirements whilst the segregated terminal part complies with the increased safety "e" type protection requirements - ending up with a combined -"Exde" arrangement. The "d" comes before the "e" because the flameproof part of the enclosure is the major part.

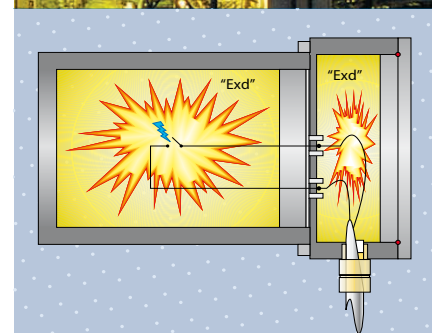


Fig. 1 - Exd

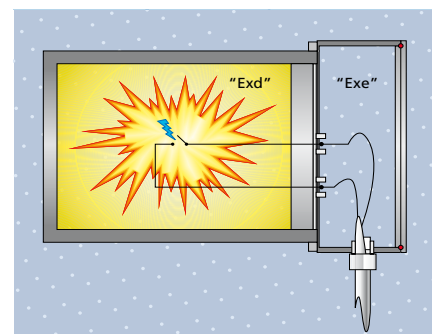


Fig. 2 - Exde

A full explanation of Hazardous and Non-Hazardous enclosures is available in Rotork Publication G007E – Enclosures Explained

Contact your nearest Rotork Office to obtain a copy or download it from our website at:

[www.rotork.com/en/documents](http://www.rotork.com/en/documents)

(Type 'enclosures' in the 'Keyword Search' box)

# NEW MOBILE-OPTIMISED WEBSITE

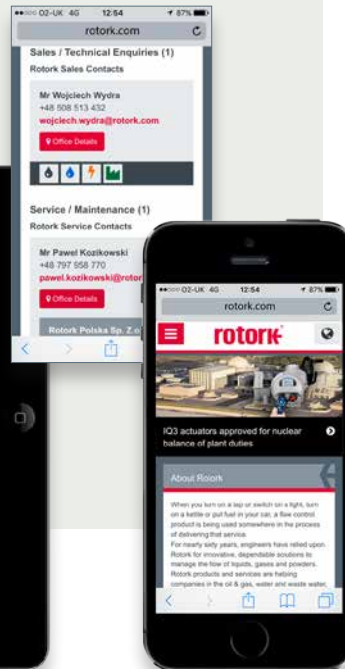


*As part of Rotork's digital strategy, the rotork.com website has now been improved to meet the needs of non desk-based customers.*

**Features of the new website include:**

- Responsive design - optimised for mobile devices, tablets and desktop computers
- Enhanced navigation on mobiles and tablets
- Revitalised Sales & Service Locator (www.rotork.com/locator)
- User-friendly experience on all platforms

*The Sales & Service Locator is a key area of the new site, providing simpler, clearer access to local Rotork contacts. Customers only need to select their country in order to be presented with the relevant contact name, telephone number and email address.*



**KEY FACTS:**

- The Rotork website is available in 10 languages.
- There are over 550 web pages.
- More than 1,000 publication titles are available from rotork.com, and these are downloaded at an average rate of one every 15 seconds.



**Contact details:**

If you have any views and comments on these new developments we would be pleased to hear them.

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Keeping the World Flowing