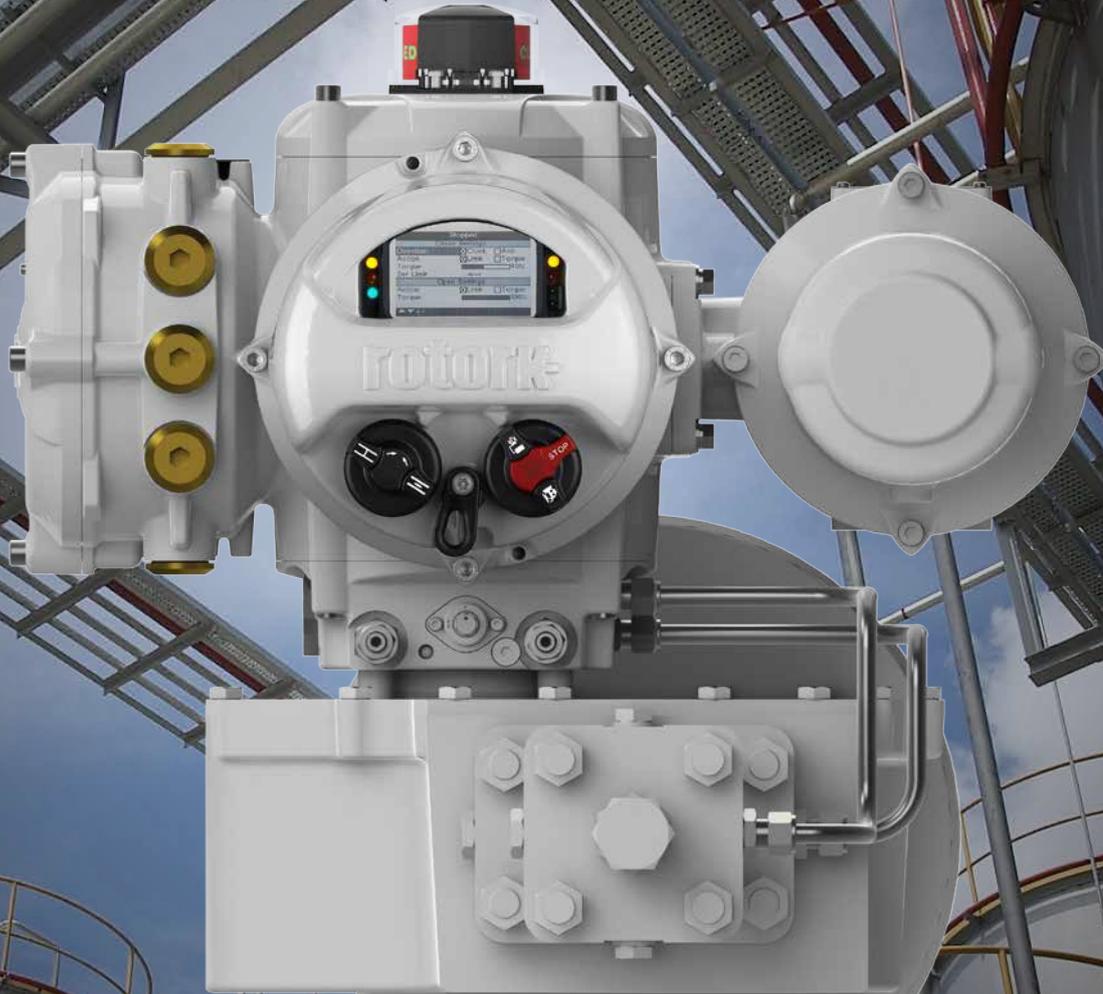


rotalk

ISSUE 39



THIRD GENERATION SKILMATIC DELIVERS SMARTER FAIL-SAFE ACTUATION *Full Story p3*

PROJECT NEWS

Rotork serves up a successful recipe for district heating hot water *p4*

Rotork CVA actuators deliver accurate pressure control for city's water supply network *p11*

PRODUCT FEATURES

New Remote Hand Station enables safe and secure local monitoring and control of Rotork IQ3 actuators *p7*

New CQ compact actuator for installations in tight spaces *p10*

New SMART-LOC™ manifold from Rotork Midland *p13*

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Keeping the World Flowing

CONTENTS

INDUSTRY LEADING **FLOW CONTROL NEWS** FROM THE WORLD OF **ROTORK**

PRODUCT NEWS

page 3

COVER STORY:

Third generation Skilmatic delivers smarter fail-safe actuation

page 6

Enhanced functionality for Rotork CMA boosts electric process valve control

page 7

A helping hand for local monitoring and control of actuators in inaccessible locations

GT rack and pinion actuators increase Rotork's product range

page 10

The Rotork CQ Range of compact actuators - power and performance where space is limited

page 11

New HOB/MPR range of manual gearboxes

page 13

SMART-LOC delivers the modular solution for pneumatic actuator control

K-TORK Range extended

page 14

Higher thrust ratings for spur gearboxes



6



10



13



12



4

PROJECT NEWS

page 4

Rotork serves up a successful recipe for district heating hot water

page 11

Rotork CVA delivers accurate pressure control for city's water supply network

page 12

Gas blending process adopts Rotork CVA for improved accuracy, economy and environmental performance

APPLICATION NEWS

page 8

Electrical control valve actuators on oil and gas production separators

COMPANY NEWS

page 14

Angola's latest FPSO start-up marked with letter of appreciation for Rotork

page 15

Open Day celebrates official opening of new Rotork manufacturing facility in Leeds



7



EDITOR'S NOTE

A NEW YEAR, A NEW LOOK.

This year we are celebrating 19 years of Rotalk, in its present form.

The re-design of the magazine has given us the opportunity to re-emphasise our commitment to giving greater coverage to all the new companies and products that have become part of the Rotork family in recent years. As Rotork grows the magazine will grow to support and promote these additions. We in the editorial team feel

very strongly about Rotalk being customer focused. As such our aim is to publish a variety of articles focussed on specific products and applications from customers' plants, including some high profile success stories.

I would like to take this opportunity to thank our many readers and Rotork employees for their support of the magazine over the years. I would also like to appeal to you to keep feeding back to the editorial team

with more of your interesting and colourful stories so that we can maintain Rotalk as the interesting and informative magazine that we are committed to producing.

Carlos Elvira
Rotork Group Sales and Marketing Director



THIRD GENERATION SKILMATIC DELIVERS SMARTER FAIL-SAFE ACTUATION

COVER STORY

The Rotork Skilmatic SI self-contained electro-hydraulic valve actuator combines all-electric simplicity with the precision of hydraulic actuation and the reliability of mechanical fail-safe operation. Typical applications for Skilmatic actuators include functional safety related Emergency Shutdown (ESD) and Remotely Operated Shutoff Valve (ROSoV) duties.



The Rotork Skilmatic self-contained electro-hydraulic valve actuator.

SKILMATIC'S ADVANCED CONTROL AND MONITORING SYSTEM has now been further developed with the introduction of its 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 3rd Generation of the SI actuator will consist of four models with multiple actuator sizes known as SI₃1, SI₃2, SI₃3 and SI₃4, enabling Rotork to offer quarter-turn fail-safe actuation from 65 Nm up to 600,000 Nm for functional safety applications. As part of the development Rotork has enhanced the range by introducing the new SI₃3 standard range of spring return actuators with a torque range of 2,000 Nm to 20,000 Nm. This new range offers a wide range of operating speeds, additional ESD options with single or dual inputs and enhancements to partial stroking to meet a wide range of applications.

The resultant Skilmatic SI 3rd Generation combines established features including non-intrusive setting, performance monitoring and configurable data logging 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.

Robustly constructed for challenging environments, SI 3rd Generation actuators deliver a highly reliable means

of valve management and positioning a valve to a safe condition. Safe valve positioning is selectable for fail-safe to open, fail-safe to close or lock in position on either loss of power or a range of programmable ESD signal options.

The SI 3rd Generation 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 hardwire or fieldbus communications. PST tests all the final elements 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. Specifiable for three-phase, single-phase or DC electrical power supplies, the Skilmatic SI₃ range delivers a range of rotary torque or linear thrust outputs that are suitable for valves of virtually any size and design. ■

ROTORK SERVES UP A SUCCESSFUL RECIPE FOR DISTRICT HEATING HOT WATER

The Metropolitan Copenhagen Heating Transmission Company (CTR) has selected Rotork IQ3 valve actuators to replace actuators from another manufacturer that suffered permanent damage from the effects of hot water.

CTR OPERATES THE LARGEST DISTRICT HEATING SYSTEM in Denmark. Seven combined heat and power (CHP) and two waste incineration power plants, supported by 14 peak load power plants, supply heat to the CTR transmission system, consisting of over 100 kilometres of mostly underground pipelines with diameters up to 800 mm. Water is pumped around the system at a pressure of 25 Barg and a temperature of 115 °C. Along the transmission pipelines, 29 exchange and pump stations transfer the heat to the local district heating systems, serving more than 250,000 households and nearly one million citizens of five municipal areas of Copenhagen.

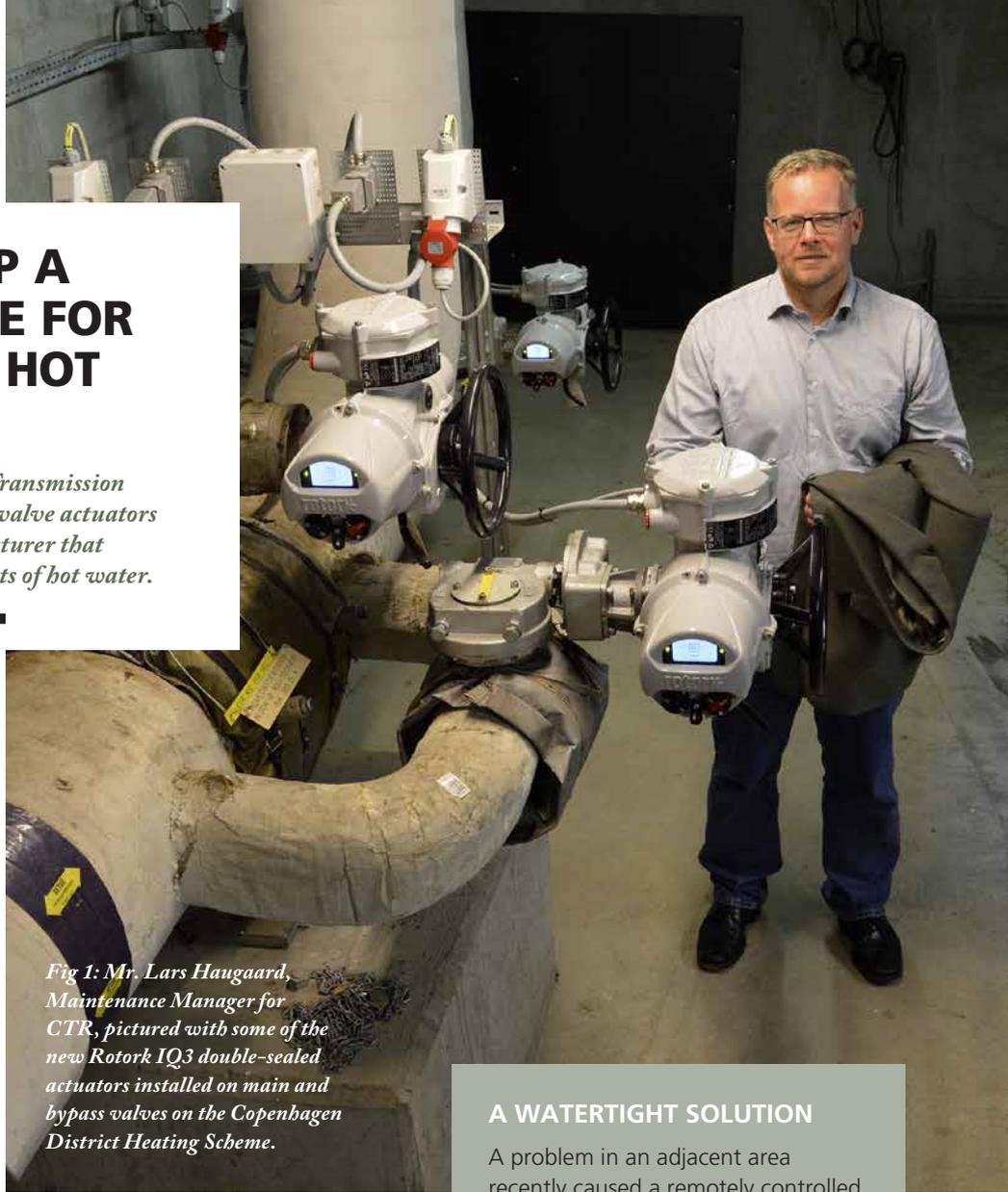


Fig 1: Mr. Lars Haugaard, Maintenance Manager for CTR, pictured with some of the new Rotork IQ3 double-sealed actuators installed on main and bypass valves on the Copenhagen District Heating Scheme.

A WATERTIGHT SOLUTION

A problem in an adjacent area recently caused a remotely controlled underground valve chamber to be flooded with very hot water. Although the problem was quickly rectified, all the electric valve actuators installed in the chamber had been completely submerged in the near-boiling water. Subsequent inspection revealed that the robust double-sealed design of Rotork IQ actuators had protected them from any damage and maintained the integrity of their IP68 temporarily submersible enclosure specification. By comparison, actuators from another manufacturer had been badly damaged by the effects of the hot water reaching internal electric and electronic components.



Fig 2: A Rotork engineer inspects IQ actuators in another area of the valve chamber. The actuator at the top survived the immersion in near-boiling water; the actuator below has replaced one from another manufacturer that was permanently damaged by the flooding.

Following a thorough precautionary inspection in the workshops of Gustaf Fagerberg A/S, Rotork's agent in Denmark, the Rotork actuators were re-installed and put back into service. In the meantime, CTR needed to decide what to do about the badly damaged actuators.

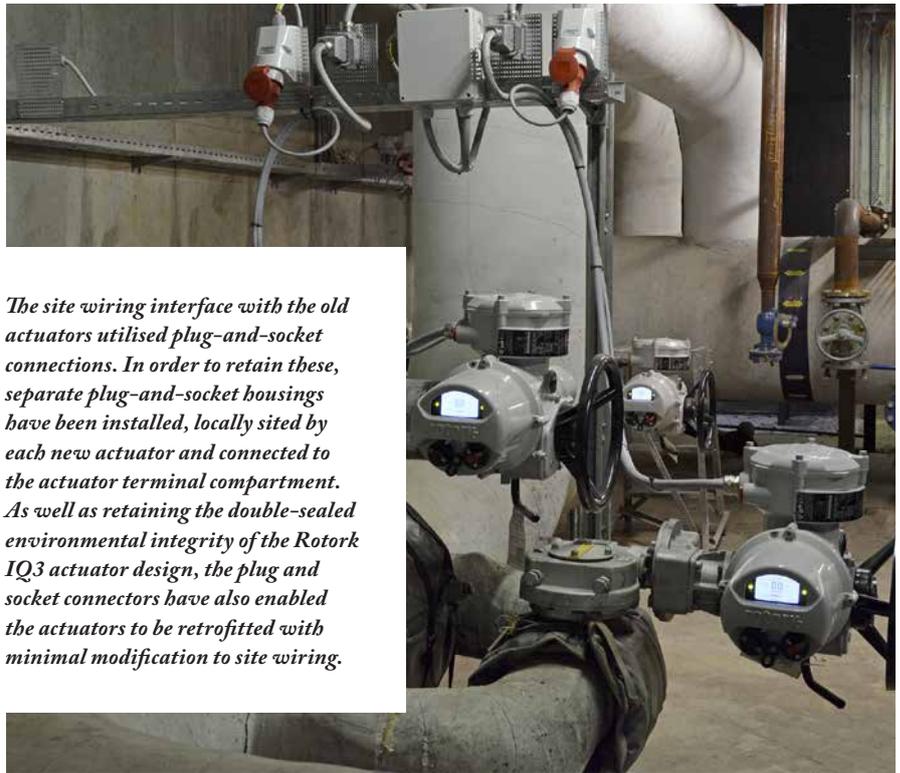
Mr. Lars Haugaard, Maintenance Manager for CTR, commented: "A district heating system is relied upon by thousands of homes and businesses, especially during the cold winter months, so the elimination of any potential interruption of the service must be treated as a priority."

Replacement actuators would be required as soon as possible to minimise potential disruption to routine operations, but integration with the centralised control system demanded the inclusion of special interlocks in each new actuator in order to ensure the correct operational sequence of main and bypass valves.

In the valve chamber, the design of the Rotork actuators had proved to be superior by protecting them from the damage that was inflicted on the other actuators. Working with Fagerberg engineers, Rotork produced a wiring diagram with customised interlocks to suit the application and confirmed that new IQ3 actuators meeting this specification could be delivered in less than four weeks. CTR therefore agreed to place an order for the Rotork actuators.

In addition to double-sealing, the latest IQ3 actuators incorporate many other features that ensure long term reliability and uninterrupted operation. Secure, non-intrusive wireless commissioning and data transfer, using the hand-held setting tool and easy to follow menus displayed on the actuator screen, mean that once the actuator has been site wired there is no need to remove any electrical covers again. Internal electrical and electronic components are permanently protected. Commissioning itself can be performed with or without mains power connected.

Piezo torque sensing, unlike disc springs or other mechanical devices, is accurate throughout the life of the actuator and unaffected by the effects of wear on moving parts. A patented absolute encoder, with only four moving



The site wiring interface with the old actuators utilised plug-and-socket connections. In order to retain these, separate plug-and-socket housings have been installed, locally sited by each new actuator and connected to the actuator terminal compartment. As well as retaining the double-sealed environmental integrity of the Rotork IQ3 actuator design, the plug and socket connectors have also enabled the actuators to be retrofitted with minimal modification to site wiring.

parts, provides constant sensing and reporting of valve position, even if the actuator is moved manually with the power disconnected.

A sophisticated data logger stores a huge array of information including profiles of valve torque, operational starts, running times, average torque and an event log. Information can be viewed in real time using the large actuator display window or wirelessly downloaded for analysis on a PC running Rotork Insight2 software for

predictive maintenance and asset management purposes.

A direct-drive handwheel delivers reliable emergency operation with no risk of damage to internal actuator parts due to the application of excessive force. Finally, the separate thrust base design enables the actuator to be removed completely without affecting the position of the valve. ■

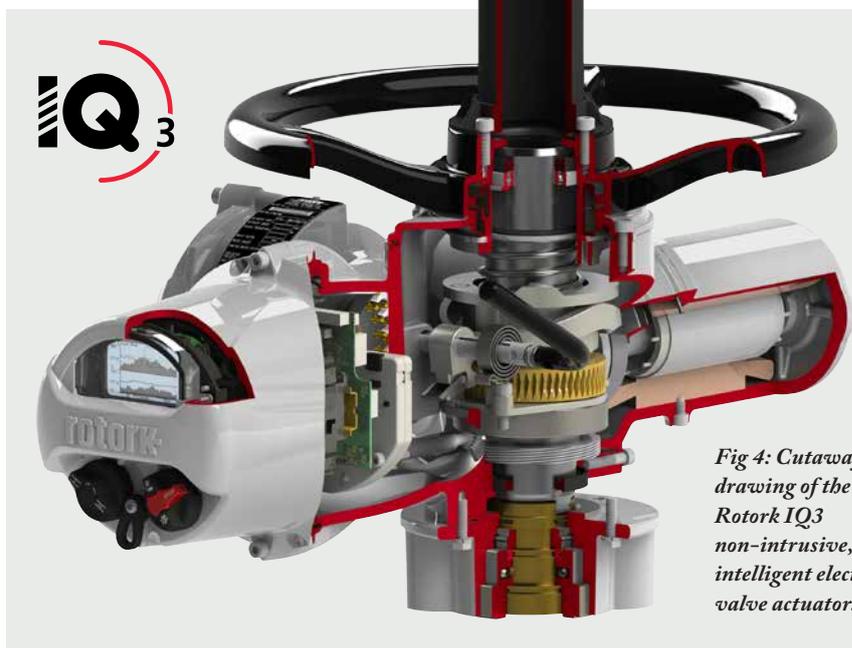


Fig 4: Cutaway drawing of the Rotork IQ3 non-intrusive, intelligent electric valve actuator.

ENHANCED FUNCTIONALITY OF ROTORK CMA BOOSTS ELECTRIC PROCESS VALVE CONTROL

Rotork has announced an extensive advancement of CMA electric actuation technology for the operation of process control valves, introducing new options to meet evolving customer and market requirements.

WITH THE LATEST DEVELOPMENTS, the innovative CMA design can now be specified with increased functionality encompassing local controls, LCD positional display and programmable fail-to-position performance.

Designed for quarter-turn, rotary or linear operation, robust Rotork CMA actuators perform numerous process control valve, metering pump and damper applications demanding precise position control and continuous modulation. Single-phase or DC electrical power is all that is required for simplified installation and control valve actuation. Explosionproof certification to international standards is available for hazardous area applications.

Local controls now offer manual operation at the valve, combined with a sharp LCD display of valve position which also incorporates critical and non-critical fault symbols. Control selection knobs enable selection of Local, Stop or Remote operation and Open or Close input commands in the Local control mode. Each mode can be locked in place to prevent unauthorised operation. The LCD display shows the valve position as a precise percentage of total valve travel.

For fail-to-position performance, a reserve power pack provides the actuator with the ability to perform a predetermined action on power failure. The power pack also preserves position indication on the LCD display during power failure. Upon restoration of mains power, the power pack is swiftly recharged to ensure continued fail-to-position functionality. Action on power loss is easily configured with the standard CMA HMI interface as part of the user-friendly actuator set-up menu, utilising the 6-segment LCD display and push button configuration.

The maintenance-free CMA drive train, environmentally protected to IP67 and permanently lubricated for operation in sub-zero temperatures as standard, can be mounted in any orientation. Accepting an industry-standard 4-20mA control signal, the CMA provides accurate, repeatable and backlash-free positional control. Resolution is 0.2% on linear and quarter-turn applications 2 degrees on the multi-turn models. All CMA actuators have output speeds that are adjustable down to 50% of full speed in 10% increments and manual operation is provided as standard. Network compatibility encompasses Rotork Pakscan™, HART®, Profibus®, Modbus®, DeviceNet® and Foundation Fieldbus®.

The latest CMA developments follow other recent refinements including a user selectable increased seating torque/thrust option, enabling a more tailored and cost-effective sizing regime to be applied to the combination of modulating and tight seating demands often found in control valve applications.

A new model size was also recently introduced to the rotary CMA design, which together with upgrades to internal electronics and HMI enhancements, completes a range that is suitable for virtually any process control application.

The combination of all these improvements represents a comprehensive advancement of CMA actuator technology and functionality, focussed on precise process valve control, system simplification and reduced maintenance. In addition to traditional control valves, successful CMA applications include choke valves on shale gas installations, stroke adjusters on metering pumps, precision metering on chemical dosing and the operation of dampers. ■



The CMA range is available in standard configuration with internal controls, with local controls and display and with local controls, display and Reserve Power Pack (above).



'Inaccessible location'

GT RACK AND PINION ACTUATORS INCREASE ROTORK'S PRODUCT RANGE

The Rotork GT product range adds an established design of rugged and reliable rack and pinion pneumatic valve actuators to Rotork's comprehensive offering of flow control products.

THE ROTORK GT PRODUCT RANGE encompasses single and double acting rack and pinion actuators, solenoid valves, switchboxes and mounting accessories, providing packaged valve solutions for flow control applications in many industrial processes. For safety critical duties, the actuators are available with SIL3 certification to IEC international standards 61508 and 61511.

Available with torque outputs up to 15,300 Nm, the compact, anodised aluminium bodied actuators operate from air supply pressures between 2 and 10 Bar in a standard temperature range of -50 °C to +70 °C. Special seals can increase the temperature range to +200 °C.

Standard strokes of 90°, 120° and 180°, with +/-5° positional adjustment, can be increased to 240° upon application, whilst customised angles and three position versions are also available. ■



The Rotork GT actuator range is ideal for packaged valve solutions on flow control applications in many industrial processes.

A HELPING HAND FOR LOCAL MONITORING AND CONTROL OF ACTUATORS IN INACCESSIBLE LOCATIONS

PRODUCT FEATURE

The new Remote Hand Station enables safe and secure local monitoring and control of Rotork IQ3 actuators installed in inaccessible and remote locations.

ROTORK'S SUPERIOR SOLUTION provides the user with an exact duplicate of the actuator's own monitoring and control interface, at a distance of up to 100 metres from the valve. Power for the Remote Hand Station is supplied by the actuator, with which the unit shares all the benefits of the same IP68 double O-ring sealed environmental enclosure. There is no need for expensive cabling; standard comms wiring suitable for the operating environment is all that is required between the actuator and the Remote Hand Station.

The user can remotely operate, interrogate and configure the actuator 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 process, showing diagnostic data including the valve torque and usage profiles along with service logs and facilitating real time analysis directly at the unit.

Alternatively, information from the actuator datalogger can be downloaded and transferred to a PC for analysis using Rotork Insight2 diagnostic software to enable valve maintenance requirements to be identified and anticipated.



The Rotork Remote Hand Station provides exactly the same interface as the IQ3 actuator itself. As illustrated here, the local control and communication features on the actuator itself are also retained.

Designed for wall or pole mounted installation, the Remote Hand Station is available with explosionproof certification and can also be equipped with a vandal proof cover to prevent unauthorised interference. ■

ELECTRICAL CONTROL VALVE ACTUATORS ON OIL AND GAS PRODUCTION SEPARATORS

Wherever there are oil and gas production facilities there is one specific piece of equipment that is almost always present – the separator. Depending on the nature of the reservoir, oil, gas and water are present in varying proportions.

THE FIRST STAGE OF ANY HYDROCARBON PRODUCTION PROCESS once the product has started to flow from the well is to separate the gas from the liquids and the hydrocarbon liquids from the produced water.

This is also true of unconventional oil and gas production, such as coal seam gas, shale oil or shale gas production. For shale facilities the hydrocarbon product needs to be separated initially from the flow back water and later from the produced water. Flow back water is the return of the hydraulic fracturing fluids used in “fracking”. Produced water is the water that is naturally present in the geological formations. The process is basically the same for all sites regardless of whether the producing well is on-shore or off-shore. The three phase (oil, gas, water) separator is a fundamental requirement.

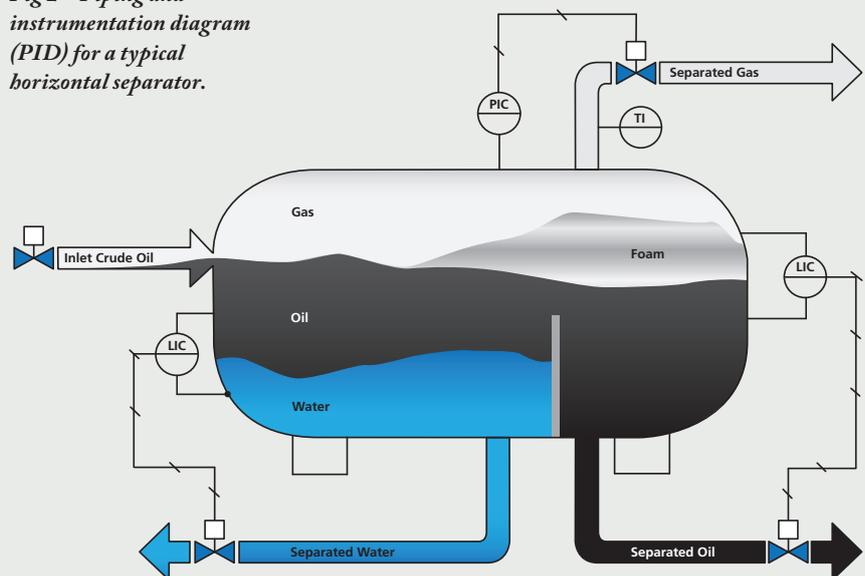
Oil, gas and water, mixed together, enters the separator from the wellhead via the wellhead pipework and the flow is usually controlled by the wellhead choke. Inside the separator, gravity works on the water so it settles at the separator base. Oil floats on top of the water and, above the oil, gas is collected. A mist extractor will remove any further liquid from the gas which is drawn off from the top of the separator vessel. There is usually a weir over which the oil can flow into a separate compartment to be piped away. This leaves the water, which is drained from the base of the vessel. From a control point of view there are a few key parameters. The first is the volumetric flow into the separator vessel. This is controlled by the inlet valve position, often the wellhead choke valve.

The outflows from the vessel are controlled by three control valves. The pressure inside the vessel is controlled by the gas outlet control valve. This is operated from a pressure controller using a pressure sensor to measure the internal pressure of the vessel. Control of the level of the interface between the water and oil is of primary importance to ensure that there is no carryover of liquids through the gas pipework due to high liquid level, nor any blow-by of gas into the liquid pipework due to an excessively low liquid level. A level sensor determines the position of the water oil interface. This feeds to the water outlet control valve, via a controller, to make sure that the outflow of water maintains the oil water interface within the tolerance bands. The outflow of oil is similarly controlled by a level controller taking a reading from an oil level transmitter and controlling the oil outlet valve.

The control of the separator is a continuous process maintaining the two levels and the internal pressure of the vessel within the required tolerance bands for various flow rates from the well. The control valves associated with the separator vary in sophistication; sometimes level control is simply an on/off function. When a level reaches a certain point, the outlet valve is opened until the level drops to the lower tolerance band, at which point the valve is shut.



Fig 2 – Piping and instrumentation diagram (PID) for a typical horizontal separator.





Many well sites are in remote locations and present their own sets of problems:

There may be extremes of temperature and precipitation at the site. Wellhead equipment therefore needs to be robust, durable and reliable, to minimise the maintenance requirements.

The remoteness of the wellhead may preclude the possibility of a power supply from a conventional electric grid.

Sometimes the produced gas pressure can be used as a power source, but producers are reluctant to vent produced gas to the atmosphere, particularly on unconventional production facilities where there may already be a high degree of environmental constraint.

For these reasons, many remote well sites are solar powered, resulting in the control and supervisory equipment being restricted to the minimum of power consumption to operate the drill site.

Fig 1- Vertical oil and gas separators in a typical installation.

However, much smoother continuous control can be achieved by proportionally positioning the control valves to accommodate a more steady flow of water and oil from the separator. This allows the downstream production equipment to operate with a minimum of fluctuation and disruption. Downstream equipment could include, for example, scrubbers and gas conditioning on the gas side, water treatment on the water side and desulphurisation on the oil side.

There are both horizontal and vertical types of separators. Generally speaking horizontal types are used where there are larger volumes of gas. The vertical types have good solid handling capability but are harder to service. They also have a smaller footprint.

SEPARATOR PROBLEMS:

Typical problems for a separator would be:

- Liquid carryover into the gas line
- Gas blow-by into the liquids line
- Emulsification of the interface between the oil and the water
- Foaming

There are various methods of minimising the emulsification and foaming problems using baffles and vortices. However, the avoidance of blow-by and carryover issues are functions of the manipulation of the inlet and outlet control valves. In addition to the process control valves there are ESD (Emergency Shutdown) valves to isolate the separator. The separator must also have the capacity to accommodate slugs and surges in the well flow.

Once the main hydraulic fracturing or dewatering pumps with their associated generators leave the site and the well is in its normal production mode, a simple solar powered control system is often employed.

The system may include a remote terminal unit and telemetry, coupled with high-efficiency actuators that require minimal current draw to provide the optimum solution for wellhead and separator control.

The conventional spring diaphragm pneumatic control valve for pressure and level control requires either the produce gas or an instrument air supply to run the actuators. Alternatively, low power electric control valve actuators can operate from a DC solar power unit.

story continues...

The electrical solution:



Fig 3 – Rotork CVA electric actuators like this are used on separator skids, often as part of a solar energy package.

Electric control valve actuators for this type of application require certification for hazardous environments as well as a robust enclosure. They must also have the ability to constantly adjust valve position to accommodate a changing flow rate from the well.

Simple compact devices that have good environmental protection are essential so that a minimum of maintenance is required over the operating life of the well.

Because some unconventional production wells have a shorter life than conventional wells, the equipment needs to provide all of the functionality but at a cost that allows pay back over the shorter well life. Electric actuators that can provide the required functionality and reliability at a competitive price point are therefore attractive for automating well site separators.

Until recently, the modulating performance of electric actuators could not match the performance of pneumatic control valves. Rotork CVA actuators have introduced continuous, repeatable modulating electrical control with a programmable fail to position option. Operating on an industry standard 4-20 mA control signal or digital network, the resolution, repeatability and hysteresis performance is quoted at <0.1% of full scale, offering suitability for the most demanding applications.

Mechanical features include Rotork's well-proven 'double-sealed' enclosure, which permanently protects internal electrical components from the effects

of the operating atmosphere. The IP68 dust tight, watertight and temporarily submersible enclosure is universal to all models in the CVA range, including those with hazardous area approvals. On loss of mains power, built-in super-capacitors allow the actuator to move the valve to a desired position, programmable as open, close, any intermediate position or stay-put.

CVA actuators utilise Rotork's innovative and well established 'non-intrusive' communication technology for actuator programming and adjustment. Actuator set-up and configuration is performed using a *Bluetooth*® enabled PDA or PC running Rotork Enlight software.

Every CVA incorporates an onboard data logger, enabling operational data such as valve torque profiles, dwell times, actuator events and statistics to be downloaded for detailed investigation and diagnosis. After analysis, any required configuration changes can be uploaded into to the actuator.

Digital control network options include HART®, Modbus® and Profibus® protocols, facilitating enhanced installed economy as well as giving the CVA the increased ability to dovetail into existing asset management systems. The all-electric design, which can be specified for single-phase AC or DC supplies, also simplifies the process of retrofitting actuators onto existing valves. ■

PRODUCT NEWS

THE ROTORK CQ RANGE OF COMPACT ACTUATORS - POWER AND PERFORMANCE WHERE SPACE IS LIMITED

The launch of the Rotork CQ Compact introduces a fully concentric range of pneumatic and hydraulic valve actuators that deliver a reliable and efficient self-contained solution for applications demanding functional integrity and safety where space is limited.

THE TOTALLY ENCLOSED, rugged CQ weatherproof housing contains a helical mechanism which transforms linear piston motion into 90° (+/-5°) rotation for the operation of quarter-turn valves. In addition to providing optimum dimensions when compared with conventional scotch-yoke actuators, the CQ's symmetric design also presents a perfect weight balance on the valve, enabling increased efficiency for assembly and disassembly.

CQ Compact actuators are available for single or double-acting operation with output torques up to 600,000 Nm. Environmental and hazardous area certifications include IP66M/IP68M, PED, ATEX, IECEx and GOST. The actuators are also suitable for SIL3 safety related duty. The standard operating temperature range is -30 °C to +100 °C, with an optional low temperature limit of -60 °C, providing suitability for applications in harsh and challenging environments. ■



CQ compact actuator.

NEW RANGE OF HAND OPERATED BEVEL GEARBOXES

The new range of HOB/MPR bevel gearboxes from Rotork Gears is designed to offer robust and cost effective manual operation of gate valves, globe valves and penstocks. Eleven body sizes deliver a torque output range of 380 to 8,018 Nm. The corresponding thrust range is 54 to 1,557 kN, facilitating the hand operation of a broad range of valve sizes.

THE TOTALLY enclosed, maintenance free gearing has been designed with carefully chosen ratios to maintain user-friendly handwheel rim effort across the range. Manufactured with cast iron gearcases, ductile iron baseplates and zinc plated fasteners, the new range has been life-tested to ensure that maximum performance, reliability and quality is consistently maintained. Standard ambient operating temperature range is -40°C to $+120^{\circ}\text{C}$, with other ranges optionally available.

Further options include increasing the IP67 watertight environmental enclosure to IP68, local position indicators, two speed input reducers, two or three input shafts at 90° and 180° configurations, flexible extensions, special coatings for aggressive environments and a Firesafe trim conforming to ISO10497. ■



HOB/MPR bevel gearbox.



PROJECT NEWS

ROTORK CVA DELIVERS ACCURATE PRESSURE CONTROL FOR CITY'S WATER SUPPLY NETWORK

Rotork's innovative CVA electric control valve actuators are enabling the Sydney Water Corporation in Australia to control the pressure in the city's water supply network with greatly increased response and accuracy.

WATER AUTHORITIES need to control the supply pressure in their potable water pipeline networks throughout the day in response to user demand. Pipeline pressure also needs to be controlled to reduce network water leaks and to mitigate pipe bursts and consequential expensive repairs. To perform this vital function on the Sydney water supply network, Rotork Australia has supplied more than 150 Rotork CVL-500 linear control valve actuators with adaptation for fitting to pilot valves.

Typically, spring pressure in a pilot valve is modulated over a short 1 – 4 mm stroke; this controls the output of the pilot valve, which in turn controls the pipeline pressure. Network pressure can range from 15 metres to over 90 metres head. The characteristic of the Rotork CVL-500 actuator enables very accurate control of the network in increments

of 0.4 metres of head pressure. For the Sydney Water network this is an improvement on the previous coarse control resolution of up to 7 metres head, just by changing to the Rotork CVL-500 actuator. Using a PID control loop, the Rotork CVL-500 provides repeatable and reliable ongoing pressure control.

The Rotork CVL-500 actuator can operate in a flooded pit, as the enclosure is IP68 rated, whilst only low power 24 V DC or 240 V mains is needed. The CVL-500 uses *Bluetooth*[®] to enable remote configuration and monitoring from outside the pit or confined space.

With the integral manual override control the CVL-500 allows operation with or without power by electrical and mechanical engineers as well as site operators. ■

GAS BLENDING PROCESS ADOPTS ROTORK CVA FOR IMPROVED ACCURACY, ECONOMY AND ENVIRONMENTAL PERFORMANCE

Rotork's innovative CVA electric control valve actuator technology has successfully delivered an improvement in performance with reduced operating costs for the vital gas blending process on a European natural gas distribution network.

FLUXYS IS THE INDEPENDENT OPERATOR of the natural gas storage and transmission system in Belgium, supplying domestic and industrial consumers throughout the country. Because the natural gas can come from different sources and the composition of each source varies, the quality of the gas is closely monitored for calorific value and density at blending stations. The gas blending process is therefore a critical part of the transmission and storage structure, impacting on product quality, environmental regulations and profitability.

Wishing to improve the blending process, Fluxys identified valve actuation as a key area. Improving process valve response times whilst reducing dead-time and overshoot would increase control efficiency and eliminate potential cycling and variability problems. If an electrical solution could also be found, it would reduce operating costs and improve environmental performance by eliminating the requirement to waste gas through venting to air as determined by existing equipment.

Prodim, Rotork's agent in Belgium, proposed the use of the CVL-5000 electric control valve actuator as an alternative to the existing actuator on a blending flow control valve in a trial at the Fluxys booster station at Le Roeux.

As well as simplified, all-electric operation with low power consumption, the CVL-5000 delivers a high thrust linear output performance that suits the heavy duty demands of the large control valves used in the application, combined with a programmable integral fail-safe capability.

Engineers fit the CVL-5000 to the installed gas blending valve at the Fluxys Le Roeux plant in preparation for performance testing.



Engineers from Fluxys, Rotork and Mokveld removed the existing actuator, fitted an ATEX certified explosionproof CVL-5000, re-connected the control signal and carried out a series of tests that demonstrated improved response times, accurate valve positioning, low running costs and fail-to-position operation on loss of mains supply.

As a result, Fluxys has decided to adopt the CVL-5000 as the standard actuator for its gas blending plants; over time, existing valves will be retrofitted whilst new valves will have the actuators factory fitted. It is estimated that the improved performance achieved by each valve installation can be accompanied by an annual saving of up to 5,000 euros in operating costs per unit. ■

SMART-LOC™ DELIVERS THE MODULAR SOLUTION FOR PNEUMATIC ACTUATOR CONTROL

The Rotork Midland SMART-LOC introduces a high integrity modular concept for pneumatic actuator control assemblies.

Constructed in 316L stainless steel, the SMART-LOC system is particularly suitable for the control and sequencing of process valve actuators on oil and gas rigs and pipelines.

COMPARED TO TRADITIONAL fabricated panel mounted assemblies the SMART-LOC offers a lighter, stronger and more compact alternative, together with significant capital and operating cost savings. Complex, labour intensive arrangements using panels, pipes and additional fittings are eliminated and replaced with a fully assembled and tested interface block, ready to be fitted directly to the actuator. Delivering best in class flow characteristics, the units will interface with all global pneumatic actuators.

A range of field proven components – valves (spool, poppet or direct mounting) and filter regulators – connected in series on the interface, are tailored to meet the requirements of individual projects, ranging from standard shut-off circuits to intricate control circuits. The unique SMART-LOC clamping system for individual components incorporates static o-rings for higher integrity and long term reliability. No design work is required from the contractor and all components are kept in stock, resulting in very short lead times. With ATEX approval, SMART-LOC components are suitable for hazardous areas and industrial use.

The integral SMART-LOC clamping system also simplifies field maintenance, enabling individual components to be simply and swiftly unclamped and replaced.



SMART-LOC™

The SMART-LOC is designed with the benefit of more than 50 years' experience in the manufacture of stainless steel pneumatic components, during which time Rotork Midland has developed a range of field proven specialist products that are renowned for their performance and reliability. ■



SMART-LOC manifold with integrated components.

K-TORK RANGE EXTENDED

Rotork has extended the K-Tork Range of vane actuators during a recent product upgrade to further enhance this successful and widely known product. New smaller size actuators have been added, while the choice of options and ancillary items has been further extended.

K-TORK ACTUATORS are now available with Rotork manual gearboxes, Soldo switchboxes, YTC positioners and Alcan solenoid options, in addition to the existing

ancillary items. The extended range has been re-designated, with the former K-1 now becoming KT-10, K-2 size now KT-20, etc.



FULL INFORMATION

is detailed in the new brochure, Rotork publication number 097-001-00, available via www.rotork.com or from Rotork offices worldwide. ■

KT-03 actuator with Soldo SK limit switch box.

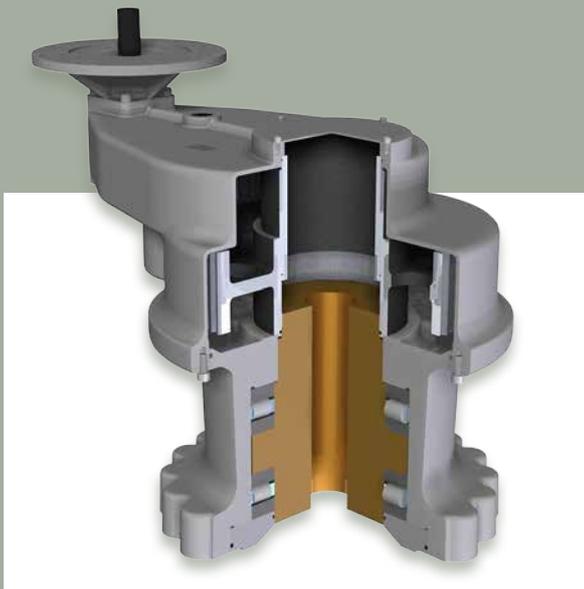
HIGHER THRUST RATINGS FOR SPUR GEARBOXES

The introduction of the IS21 gearbox adds higher thrust ratings to Rotork's established range of multi-turn, thrust taking spur gearboxes. Retaining most of the parts from the IS20, the IS21 incorporates a new F60 cast ductile iron thrust base, thrust bearings, spigot ring and output sleeve.

THE RESULTING THRUST RATING rises to 4,350 kN for manual operation and 2,900 kN for motorised operation, an increase of 30% over the previous maximum. Corresponding maximum output torques rise to 46,100 Nm and 43,386 Nm respectively.

Designed for the operation of gate, globe and sluice valves and penstocks, all IS gearboxes are designed with customer stocking in mind, featuring a removable output sleeve for separate spindle machining. The standard IP67 watertight and temporarily submersible enclosure can be optionally increased to IP68, whilst the standard operating temperature range of -40 °C to +120 °C can also be expanded to suit specific high or low temperature demands.

The totally enclosed gearing is grease filled for life and available in a wide range of ratios. The option of combined spur and bevel gear combinations adds even more operational flexibility. The addition of the IS21 to the existing range enables the gearboxes to be used for the manual or motorised operation of the largest valves to be seen in markets including water and waste treatment, power generation, petro-chemicals and general industry. ■



IS21 gearbox.

COMPANY NEWS

ANGOLA'S LATEST FPSO START-UP MARKED WITH LETTER OF APPRECIATION FOR ROTORK

The recent start-up of the CLOV FPSO (Floating Production, Storage and Offloading) vessel in Angola's Block 17 offshore oilfield has been marked with a letter of appreciation to Rotork from the leading Korean engineering company DSME (Daewoo Shipping and Marine Engineering).

DSME PERFORMED THE DESIGN and construction of the CLOV FPSO on behalf of Total E & P Angola, with much of the work carried out in Angola as a part of Total's commitment to increase local content in its projects. Since 2011, Rotork Fluid Systems has supplied more than 400 heavy duty CP and GP Range pneumatic valve actuators on the project. Rotork's professional performance throughout the duration of the contract and contribution to the timely start-up has been recognised with the letter of appreciation.

A total of 34 subsea wells will be tied back to the CLOV FPSO, which has a processing capacity of 160,000 barrels of oil a day and a storage capacity of nearly 2 million barrels. The Rotork actuators are installed

in many areas of the 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.

The CLOV FPSO is one of a number of Rotork Fluid Systems contract successes in Angola's offshore oil industry. These include over 500 pneumatic actuators which were supplied for the Pazflor FPSO in Block 17, following similar orders for the Kizomba A & B FPSOs in Block 15. Rotork pneumatic and electro-hydraulic valve actuators are also used on Angola's onshore LNG pipeline network, delivering gas from offshore to the processing plant at Soyo. ■

OPEN DAY CELEBRATES OFFICIAL OPENING OF NEW ROTORK MANUFACTURING FACILITY IN LEEDS

An Open Day for customers and suppliers on the 19th September celebrated the opening of the new 7,450 m² manufacturing and operation centre for Rotork UK in Leeds. The new £8 million facility was officially opened by Rotork Chief Executive Peter France and Chairman Roger Lockwood.

ROTORK UK IS ACTIVE IN ALL INDUSTRY SECTORS including the power, water and chemical industries. The Leeds facility supplies actuation solutions and service support to companies throughout the UK and Ireland, providing sales and customer support operations for Rotork Controls, Rotork Gears and Rotork Fluid Systems.

Following the official 'Ribbon Cutting' guests enjoyed a tour of the new factory and service facilities. The tour included assembly stations for Skilmatic, Fluid Systems and Gears product ranges produced in Leeds together with a presentation highlighting Rotork UK's many services and capabilities.

The centre also houses Rotork Site Services, providing 24/7 support to companies and industries throughout the UK.

As a Rotork Centre of Excellence (providing best practices, research, support and training), the Rotork UK facility offers complete valve solutions.

The dedicated team is trained and qualified to serve customers with custom-engineered solutions and complete project management – from contract award through assembly, test and inspection, to installation, commissioning and finally service, preventative maintenance and life of plant support.



Rotork Gears supplies locations worldwide with gearboxes and gear operators manufactured in Leeds.

Rotork Fluid Systems produces the Skilmatic range of intelligent electro-hydraulic actuators at the Leeds facility which also combines as a Centre of Excellence for Rotork Fluid Systems.

The 5,550 m² workshop facility offers full service and overhaul support for all Rotork electric, fluid power and manually operated products and includes Rotork's largest UK product stocking centre, dedicated to enable immediate distribution throughout the UK. ■

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Assisted by Rotork Chairman Roger Lockwood, Rotork Chief Executive Peter France addressed employees and guests and performed the ribbon-cutting ceremony marking the official opening of the new Rotork manufacturing facility at Leeds.



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