

rotalk 29



Spotlight on Fluid Systems

Full story on Pages 8 and 9

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Worldwide activity from Rotork's Divisions

Company News

New Rotork Companies and Divisions.

Bill Whiteley retires after twelve years as Rotork CEO Page 2

Bill Whiteley retires after **twelve years** as **Rotork Chief Executive Officer**

It's "business as usual" says Bill Whiteley modestly as he retires as Rotork Chief Executive Officer and hands over to Peter France. But how that business has grown during the 34 years that Bill has worked for it and – for the past twelve years – led it!

Born in Yorkshire, Bill studied for a Degree in Economics at the University of Bath in the 1960s and was pleased to return to the city when he joined Rotork in 1974.

In 1977 he became the Financial Director of the newly created Actuation Division, beginning a succession of management responsibilities for Rotork's electric actuators that has been virtually continuous for 31 years. Between 1979 and 1987 Bill ran Rotork's operations in the USA as President

of Rotork Controls Inc., before returning to the UK and becoming Managing Director of the Actuation Division in 1988. He was appointed Rotork Group Chief Executive Officer in 1996.

"My aim has been to capitalise on the opportunities and developments presented by the international valve actuation marketplaces" says Bill.

"In 1993 we launched the IQ – the world's first intelligent electric actuator with non-intrusive technology – which quickly became



Bill Whiteley at Rotork, Brassmill Lane. Photograph courtesy of Bath Chronicle.

our flagship product. Our fluid power actuator business at the time was ripe for development and has since grown dramatically to become a world leading participant in this market.

As the Managing Director of Rotork Fluid Systems my successor Peter France has played an inspirational part in this achievement. Rotork Gears, our gearbox and valve accessory business, is now the largest manufacturer of these products of its type. Meanwhile,

successive developments of our IQ electric actuator and Pakscan digital control technologies have kept Rotork Controls in its market-leading position.

I have enormously enjoyed every aspect of my involvement with Rotork and feel very privileged to have led it over the past twelve years. Rotork has always had a unique spirit which I feel confident under the talented leadership of Peter France will propel it to even greater success."

Cover Story: Actuators with **Pakscan** at giant bunkering centre

A total of 115 IQ intelligent electric actuators and two Pakscan master stations have been installed during expansion phases 4 and 5 at the Vopak Horizon Fujairah bunkering centre in the Emirate of Fujairah on the Indian Ocean coast.



Vopak Horizon Fujairah is the world's second largest bunkering facility, providing a Middle East hub function for the storage and supply of products including naphtha, petrol, diesel, jet fuel, kerosene, condensate, methanol, fuel oil and crude oil. Following the latest expansion the terminal has a total capacity of 1.5 million cbm (cubic metres), six tanker berths and a single-point mooring system capable of handling vessels of up to 175,000 dwt (dead weight tonnes). In the latest expansion, 51 Rotork IQ actuators were supplied through Tyco Valves and JC Fabrica (Spain). Rotork's agent in Abu Dhabi, Universal Technical LLC, has

carried out the commissioning of all the Rotork MOVs on the site and continues to provide service engineers for local support at what is now recognised as one of the world's main bunker markets. Vopak Horizon Fujairah is a joint venture between the ENOC Group, Royal Vopak (the Netherlands), the Government of Fujairah, Kuwait's Independent Petroleum Group and the Vitol Group. Further expansion will see the addition of six more berths in 2008.

Footnote: Rotork and Universal Technical LLC have supplied over 1000 actuators to ENOC and its subsidiaries for projects such as this in the northern emirates of the UAE.

Rotork's **NEW** Corporate Identity

The establishment of Rotork Process Controls (see full story page 15) coincides with the launch of a new Rotork Corporate Identity incorporating a rationalisation of the Rotork Group Divisions.

In addition to the creation of Rotork Process Controls within the Rotork Controls Division, the Rotork Skilmatic electro-hydraulic product range is now re-positioned within the Rotork Fluid Systems Division, where other electro-hydraulic products are already manufactured.

The three new Rotork Divisional logos – Controls, Fluid Systems and Gears – are shown here, together with the new logo for Rotork Site Services, the department providing life-of-plant support that serves all three.

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Controls

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Gears

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Site Services

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INDUSTRY LEADING VALVE ACTUATION
NEWS FROM THE WORLD OF ROTORK

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COMPANY NEWS

New Rotork Company opens in Brazil

Rotork Brasil, a fully owned Rotork subsidiary company, opened for business in the first week of January 2008, under the directorship of long-time Rotork Latin American Sales Director Emilio Osterling.

"I'm proud of the young and professional team that we have gathered and confident of the success that they will bring to Rotork."

Emilio describes the new company's initial objectives and goals as: "supporting sales and engineering efforts in the country's dynamic hydrocarbon industry, led by the state-owned Petrobras. Following on, we are also committed to opening up new markets for Rotork in Brazil, such as water, power, chemicals, mining and the burgeoning ethanol industry."

In these tasks, Emilio is assisted by his first two employees. Maria Clara Pecy is Office Administration Assistant and Gil Cavalcanti Acunha

has joined as Sales Engineer. Emilio says: "I'm proud of the young and professional team that we have gathered and confident of the success that they will bring to Rotork."

Rotork Brasil will work alongside and support Rotork's established network of representatives in the country – Fluxo Servicos de Petroleo for electric actuators and Superquip for fluid power actuators.

Full contact details for Rotork Brasil can be found on the Worldwide Locator at www.rotork.com



Emilio Osterling and the Team at Rotork Brasil

Rotork awarded third term framework with Thames Water

In face of severe competition from other European actuator manufacturers, Rotork has won a landmark third term framework agreement for the supply of electric valve actuators to Thames Water.

The exclusive agreement, described as "amongst the most prestigious contracts available to manufacturers such as Rotork", runs for a minimum period of three years.

The majority of actuators involved will be IQ and IQT models, of which Thames Water now has a huge installed base.

Thames was amongst the first of the UK's water companies to embrace Rotork's IQ 'non-intrusive' intelligent actuator technologies when first launched in 1993.

Rotork's two-wire control capabilities, particularly regarding Profibus networks, were also important contributors to the Thames Water decision. Following the signing of the new agreement, Thames Water's technical specialist Dennis Goodlad is pictured with Rotork's UK Sales Manager Laurence Kettle (left) and Business Development Manager Mike Wendt (right).



Thames was amongst the first of the UK's water companies to embrace Rotork's IQ 'non-intrusive' intelligent actuator technologies when first launched in 1993



Dennis Goodlad is pictured with Rotork's UK Sales Manager Laurence Kettle (left) and Business Development Manager Mike Wendt (right).

Rotork in the Frame at **Scottish Water** ... and **South West Water**

As the major supplier of electric valve actuators to Scottish Water sites for over thirty years, Rotork is pleased to have been awarded the shared framework agreement for these important contributors to plant reliability and efficiency.

With several thousand Rotork actuators installed throughout the Scottish mainland and islands, the company has developed a synergy with the industry and its associated contractors, together with an understanding of Scottish Water's aspirations.

Rotork's commitment is illustrated by the presence of Scotland-based sales and service engineers, whilst Rotork Site Services offer a



complete range of life-of-plant actuator support. Rotork's latest IQ intelligent actuators with 'bumpless' Profibus connectivity are key components in Scottish Water's automated new plants and upgrades.

Current projects include the "flagship" Katrine Water scheme, where over 100 actuators are installed in new plant which will protect the supply of drinking water to 700,000 residents of the City of Glasgow and surrounding areas.

Rotork is also proud to be working in long term partnership with South West Water as the framework supplier of electric valve actuators and actuation retrofit services.

As well as supplying the latest intelligent actuators for automated new water and waste treatment plants, Rotork also helps SWW with the asset management of its installed actuator stock, some of which have been operating for over twenty years. The service encompasses on-site surveys and health checks, enabling valve and



actuator maintenance requirements to be identified, prioritised and planned with minimal interruption to normal operations.

In addition, actuators that have been supplied through diverse valve and penstock manufacturers or other contractors are identified and logged by final destination, helping SWW to maintain an accurate database of the thousands of Rotork actuators installed.

Actuated Discharge Valves are **Largest to-date**

Rotork electric actuators have been specified within the terms of Rotork's framework agreement with Thames Water to operate two very large and highly specialised sleeve valves for critical safety-related duties at one of London's main reservoirs.

Designed and manufactured in the UK by Blackhall Engineering Ltd, the Series 3200 submerged discharge valves facilitate the rapid draw down of reservoir water levels in order to safeguard the integrity of perimeter retaining walls and dykes. Weighing

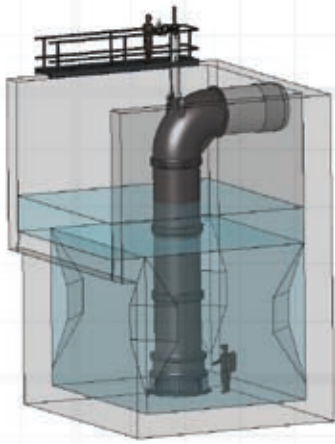
more than 22 tonnes and standing 13 metres tall, each of the custom-designed valves has a maximum flow capacity 13 cubic metres (tonnes) a second. Designed using state-of-the-art computer flow modelling, the valves occupy a small footprint and

deliver very high discharge capacities at low noise levels, a combination of features making them particularly suitable for populated and built-up environments. To open the valve an internal sleeve within the 1600 mm diameter valve base is raised, allowing the water to discharge radially without creating the large plumes of spray that are associated with linear fixed cone or needle valves on similar applications. Each valve is equipped with a top-

mounted Rotork IQM modulating electric actuator and IB10 bevel gearbox, operating a stainless steel non-rising screwed stem to raise and lower the radial sleeve.

The 'intelligent' Rotork actuator is programmed to operate the sleeve in stages that take account of the falling water level to maintain a constant flow rate. A data logger fitted as standard in each actuator keeps a historical record of valve operating data that can be downloaded and compared with the valve commissioning data footprint to analyse operating trends and help to minimise the requirement for routine maintenance.

The two 1600mm valves for Thames Water are the largest of their type built to-date by Blackhall Engineering Ltd, who has been supplying similar designs throughout the world for over forty years. They will be installed on the Queen Mary Reservoir, one of London's largest man-made reservoirs, covering 700 acres in the Staines and Sunbury area and lying approximately 12 metres above the surrounding landmass.



Blackhall engineer Tom Scanlon completes the mechanical installation of one of the Rotork IQM actuators (left). The size of the two valves is apparent in this workshop view (right).

Australia's 'droughtbuster' scheme **chooses Rotork**



Jeff Quarrell with some of the 'droughtbuster' valves in the John Valves factory

Water is front page news in Australia as it has become obvious that drought, climate change, population and consumption growth have combined to make the country's future water security a major social, environmental and political issue.

The Northern Pipeline Interconnector is a key part of the Queensland state government's emergency drought strategy and will play an important role in the area's water distribution grid to connect dams, weirs and other water storage sites.

Australian valvemaker John Valves has been awarded one of the largest contracts on the project including the supply of fourteen 1000mm high pressure mainline gate valves. Manufactured at Ballarat, all are either motorised with Rotork IQ70/IB12 actuator and gearbox combinations or fitted with Rotork Gears IS11 / AS5 'dual input' manual gearboxes. Jeff Quarrell, National Sales and Operations Manager for the valve division, describes the mainline valves as: "arguably the most important in the pipeline structure.

Rotork actuators have a long and successful track record for reliable, low maintenance service in the

harsh extremes of the Australian climate. We especially like the speed and efficiency of 'non-intrusive' commissioning provided by the Rotork IQ, together with the ability to download and analyse valve operating data to minimise routine maintenance.

These were all important considerations for us and the customer when we put together our total valve package for this project, which was won against stiff competition from other Australian and international companies."

The Northern Pipeline Interconnector is being constructed by the Southern Regional Water Pipeline Alliance, a joint venture between Abigroup, KBR and McConnell Dowell Constructions. With the potential capacity to transport 65 million litres of potable water a day, the pipeline will link existing and potential future water sources throughout Australia's Sunshine Coast.

IQs line up with Profibus at Colorado wastewater treatment plant

More than fifty Profibus-enabled IQ and IQT actuators have been installed in a major expansion project at the Littleton/Englewood Wastewater Treatment Plant in Colorado, USA.

Serving over 300,000 residents in the southern Denver Metropolitan area, the plant is in the final stage of the project to meet population growth and stricter pollution control regulations. On completion, the plant's treatment capacity will increase from 36 to 50 million gallons per day. New Rotork IQ and IQT actuators have been installed throughout the plant processes in areas including:

- Headworks' grit channel gates
- Primary clarifier sludge valves
- Secondary solids contact tank air valves

- Blower inlet and surge relief valves
- Centrate inlet, drain and discharge valves
- Denitrification filter inlet gates

All the IQ and IQT actuators are connected to a plant-wide Profibus network that also includes process transmitters, flowmeters and analysers as part of an overall plant automation strategy that enables the operators to closely monitor field data. In addition, using data obtained from the IQ and IQT actuators, the control system has been designed to facilitate access to valve operational



torque profiles. In addition to the electric actuators, 32 P range pneumatic and 2 EH range electrohydraulic actuators from Rotork Fluid Systems have also been installed during the Littleton/Englewood expansion project. The site is also

noteworthy as the first US plant to install an IQT, when first launched in 2003, on a retrofit project to replace a competing actuator. Since then several more IQ/IQT actuators have also been installed on other retrofit applications.

Major Valve Actuation Upgrade Completed

Rotork IQ and IQT range intelligent electric valve actuators have been installed as part of a multi-million pound upgrade and modernisation programme awarded to Interserve Project Services at one of the Severn Trent Water Treatment Works.

A total of 136 actuators have been fitted by Rotork Site Services to existing valves on Rapid Gravity (RGF) and Granulated Activated Carbon (GAC) filter beds to provide a more reliable, economical and low maintenance alternative to the hydraulically operated system originally installed.

Nikki Holden, Interserve Senior Agent at the water treatment works, explains: "The actuators were specified for the upgrade application in line with the water industry's preference for electric actuation, through Rotork's framework agreement with Severn Trent. The choice of installer was the responsibility of Interserve as project manager and we selected

Rotork Site Services for the work due to their specialist retrofitting skills and extensive experience of similar projects."

Each of the fourteen RGF and twenty GAC filter beds at the water treatment works has been retrofitted with Rotork IQ multi-turn actuators on 500 or 600mm inlet and outlet penstocks and IQT direct drive quarter-turn actuators on 200mm air scourer butterfly valves. Rotork Site Services' scope of supply encompassed an initial valve survey, the design and manufacture of new screwed valve stems and pedestals for the penstocks and adaptors for the butterfly valves, actuator sizing, installation and commissioning. Butterfly valve



"we selected Rotork Site Services for the work due to their specialist retrofitting skills and extensive experience of similar projects."

adaptors were sourced from Valvekits, the Rotork Group's dedicated valve accessory company. Rotork IQ/IQT actuators feature 'non-intrusive' commissioning and data interrogation by means of a bi-directional infra-red link to a hand held setting tool. A data logger in each actuator stores historical valve operating data including torque

profiles which can be downloaded and analysed using Rotork IQ-Insight software to minimise the requirement for routine valve maintenance. Rotork's contract is part of an £8 million investment to upgrade the quality and efficiency of water treatment at the site for the benefit of customers in the Cheltenham and Worcester areas.

Renewable Energy Scheme Specifies IQ Actuators

Rotork's latest IQ Pro intelligent electric valve actuators have been installed on an ingenious renewable energy scheme on the south coast of England that generates power from the rise and fall of the tides.

However, unlike the much publicised proposed Severn Barrier, tidal energy has been harnessed on this site for nearly one thousand years and the technology has been used by mankind since pre-Roman times.

The Eling Tide Mill has been grinding grain into flour for at least the last 940 years and is now the only remaining working and productive tidemill in Britain.

The present building, which is believed to date from the 18th century, is owned by New Forest District Council and run by the Eling Tide Mill Trust Ltd. Built on an inlet branching off a tidal estuary, the mill has a dam which incorporates a special type of sluice gate, known as

a 'sea hatch'. The 'sea hatch' consists of two penstocks, incorporating flaps which open with the incoming tide and close automatically at high tide, trapping the water in the mill pond.

This water is then used to operate the mill wheel, enabling a period of approximately four hours working between each tide. The penstocks are raised if the mill pond needs to be emptied in order to carry out maintenance, or if the river that feeds into the mill pond is in flood after heavy rainfall, or if debris that can accumulate in the pond needs to be released.

The old gates and electric motors, which had worn out after many years service, have now been replaced



with a brand new installation, incorporating two Rotork IQ Pro Model 25 actuators. The specification for the new installation was written with the help of two of the mill trustees, Dave Plunkett and John Christmas. With over forty years experience of the UK water industry, John was particularly well qualified for the task, his previous experience with Rotork actuators enabling him to recommend them with confidence for this application. The functionality built in to Rotork IQ control and instrumentation enables the actuators to be operated without

removing vandalproof covers fitted over the local controls by means of a dedicated hand-held wireless controller which was specially designed for the installation. The push-to-run buttons on the controller can be used to operate the actuators either individually or together. The completion of the new 'sea hatch' project has secured the continued operation of Eling Tide Mill well into the future – living proof that, no matter what we are told or read in the newspapers about innovative renewable energy projects, there is really nothing new under the sun!

New Managing Director for **Rotork Fluid Systems**

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Fluid Systems



Alex Busby has been appointed the new Managing Director of Rotork Fluid Systems.

"I am looking forward to the exciting and challenging task of fulfilling the high expectations of the Division..."

Born and educated in Rotork's home city of Bath, Alex (48) has over twenty years international sales, engineering and business management experience of the fluid power actuator industry. Having worked for Rotork in the 1980s he re-joined the company in 2003, becoming Business Development Director for Rotork Fluid Systems in 2005.

As Managing Director he will guide the Division's continued global expansion with the right products and approvals in existing and new key markets. With four manufacturing plants supported by a growing network of strategically sited Centres of Excellence, Rotork's fluid power actuator activity is experiencing impressive growth and now accounts for a significant proportion of the Group's total business.

Commenting on his appointment, Alex said: "I am looking forward to the exciting and challenging task of fulfilling the high expectations of the Division, a task in which I am fortunate to be working with the most experienced team in the business."

Hydraulic actuators for South Atlantic floating production vessel

Photographed at the Maua Jurong Shipyard in Rio de Janeiro, this Rotork GH range heavy duty hydraulic failsafe actuator will operate a Tomoe Tritec 24inch double flanged Class 1500 ball valve handling liquid hydrocarbons on the giant new Petrobras P54 floating production storage and offloading vessel (FPSO).

Pictured with the valve and actuator is Neil Harden, Tomoe's General Manager Sales & Marketing.

Rotork Fluid Systems has received orders for GH range actuators from valvemakers including Tomoe in the UK and Cooper Cameron in Italy for this significant project, which will produce oil from thirteen deepwater wells in the Campos Basin, off the south eastern coast of Brazil.

The huge vessel will have a daily capacity to produce 180,000 barrels of oil and compress 6 million cubic metres of natural gas from the Roncador Field.



Rotork adds **Smart Valve Monitoring and Critical Valve Testing** capability to product portfolio

The SVM system is used throughout the world to assist in the testing of hydraulically and pneumatically actuated block valves on duties including ESD (Emergency Shutdown), BDV (Blow Down), HIPPS (High Integrity Pressure Protection) and SSIV (Sub Sea Isolation).

The patented SVM technology performs real time partial stroke testing of critical valve installations, enabling the user to assess not

only whether the valve will close as required, but also the performance of all the final elements in the valve loop.

By analysing this performance data over a number of tests the user can also predict any degradation in performance and schedule maintenance accordingly. In this way costly unplanned or extended shutdowns can be avoided and the possibility of failures on demand minimised.

The technology, which has been sold by the Fluid Systems Division for a number of years, has proved to be of great benefit to the partial closure testing of valves in locations as disparate as Sakhalin Island and Saudi Arabia.

Alex Busby, Rotork Fluid Systems Managing Director, explains: "This innovative technology provides us with a platform to further develop our products for safety critical applications."

To give added strength to the promotion of the technology, SVM specialist Richard Harvey has joined Rotork as Business Development Manager for the product.



Richard Harvey
Business Development Manager

Rotork acquires Remote Control Sweden (RCS)

Remote Control Sweden (RCS) is the latest acquisition in Rotork's expanding Fluid Systems Division, providing it with a range of complementary products and market opportunities.

"RCS complements Rotork's existing medium to heavy duty range of pneumatic and hydraulic actuators and brings with it a reputation for quality"

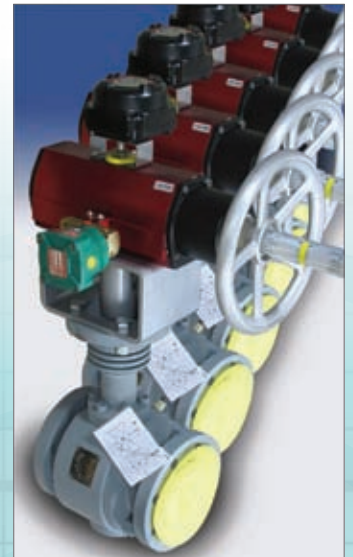


RCS has been trading since 1961 and, under the ownership of Per Larsson, the company has developed a worldwide reputation for quality and service as a manufacturer of pneumatic valve actuators and associated control systems.

RCS products will continue to be marketed through their existing sales channels and integrated into Rotork's extensive international sales network.

Commenting on the acquisition, Alex Busby, Managing Director of Rotork Fluid Systems said: "RCS complements Rotork's existing medium to heavy duty range of pneumatic and hydraulic actuators and brings with it a reputation for quality and service, strengthening our reputation as the actuator company of choice."

The acquisition increases our ability to provide a single source for these products and enhances our presence in existing and new market areas."



Rotork Specified in Mexican Water Treatment Plant

Rotork fluid power valve actuators have been installed throughout a major new water treatment plant which supplies up to 500 litres of drinking water per second to the city and port of Mazatlan in the Mexican state of Sinaloa.

A total of 144 Rotork double-acting, scotch-yoke pneumatic actuators have been installed throughout the two project stages of the Los Horcones water treatment plant, which began operating in May 2007.

The actuators, from Rotork Fluid Systems' CP and P ranges, operate butterfly valves in sizes from 6 to 20



inches. Built for the Mexican water authority Jumapan, the Los Horcones plant treats water from two inland wells named San Francisquito and El Pozole in order to remove iron and manganese. The 11.6 million dollar plant has been constructed by Constructora y Cribados Almoza, S.A. de C.V. The orders for the actuators were won by Rotork's representative in the country, Rotork Servo Controles de Mexico, S.A. de C.V.



This dramatic photograph of P range pneumatic actuators was taken at the Sepon Copper Mine in Savannakhet Province, south-central Laos.

Built at Rotork Fluid Systems' factory in Rochester, USA, the actuators are operating Cameron ball valves in the

autoclave plant at the site, which has been mining copper from open cast pits since 2005. Copper ore mined at Sepon is turned into pure copper cathodes, ready for fabricating into wire and rod for customers mainly in Vietnam and Malaysia. 62,541 tonnes of copper were produced at the plant during 2007.

CONTRACT NEWS

Environmental Improvement Project at Ferrybridge Power Station

Rotork intelligent electric valve actuators have been specified for the new flue gas desulphurisation (FGD) plant at the Ferrybridge 'C' Power Station in West Yorkshire. The plant is being installed under the European Union Large Combustion Plant Directive (LCPD), which limits the future sulphur dioxide (SO₂) emissions from existing coal fired power stations.

The FGD plant at Ferrybridge 'C' employs the most advanced technology of its type, using limestone as a readily available absorbent to produce saleable gypsum for use in the plasterboard industry. Over 100 Rotork IQ and IQT actuators, featuring the latest 'non-intrusive' communication, data logging and predictive valve maintenance technologies will be installed on the new plant, operating valves manufactured by KSB.

The Rotork actuators were selected by engineering staff at Ferrybridge 'C' and at sister station Fiddlers Ferry near Widnes in the face of fierce competition from European actuator manufacturers. The final decision

was influenced by experience with the framework agreement held by the stations' owner Scottish and Southern Energy with Rotork's specialist actuation site services company Exeeco.

Dave Bosomworth, FGD Liaison Officer at Ferrybridge 'C' explains: "Ferrybridge were only too pleased to hear that Rotork had become the preferred supplier of actuators for the FGD plant construction, in order to maintain compatibility with the thousands of Rotork actuator products already installed on the site under our framework agreement with Exeeco. These include actuators fitted during Low Nox and BOFA upgrades across the four 400 MW



generating units at the station, as part of our environmental improvement programme.

Exeeco engineers will also be involved with the installation and commissioning of the Rotork

actuators on the FGD plant, construction of which is being undertaken by Lenjes of Dusseldorf. On completion, the FGD plants installed on Units 3 and 4 will remove 94% of sulphur emissions as well as reducing dust particulates.

Rotork Puts On a Show at Opening of New British Energy Training Centre

Rotork valve actuators took centre stage at the recent official opening of a new skills and maintenance training centre at the British Energy Heysham power station.

The million pound investment at Heysham was opened by local MP Geraldine Smith, who praised British Energy for its commitment

to training and investment in staff at all levels. The new facility will give individual workshop and classroom training for maintenance

and engineering personnel at Heysham 1 and 2 stations, provided by a dedicated training team. As an integral part of the facility, Rotork is supplying valve actuator training rigs to enable key skills such as valve commissioning, maintenance and fault finding to be practiced.

Valve actuators play an important role in power station control systems, with hundreds of Rotork products – including IQ Pro actuators featuring the latest 'non-intrusive' communication, data logging and predictive valve maintenance technologies – installed throughout British Energy's nine power stations. To assist in the management of all of its valve actuator assets, British Energy has a framework agreement with Rotork's specialist maintenance, repair, upgrade and technical support company Exeeco.

Within the terms of the framework agreement Exeeco is supplying Rotork actuator training rigs for British Energy power stations at Hartlepool, Torness and Dungeness in addition to Heysham. For the opening ceremony at Heysham, Exeeco also set up a working product demonstration stand, enabling guests including Geraldine Smith to get "hands on" experience of Rotork's multi-task actuator technologies.



Divisional Director APS (Actuation Projects & Service) Martin Cheetham introducing MP Geraldine Smith to Rotork IQ intelligent valve technology

Flooding proves the watertight case for Rotork Actuators

Rotork's 'double-sealed' electric valve actuator enclosure design has proved its worth in the aftermath of the disastrous flooding of the Severn Trent Mythe water treatment works at Tewkesbury in Gloucestershire.

In what has been described as "a once in a two hundred and fifty year event", water from the adjacent rain-swollen River Severn flooded the entire Mythe site at the end of July 2007, in some plant areas to a depth of five metres, cutting off the daily supply of 120 million litres of drinking water to 350,000 customers in the Gloucester, Cheltenham and Tewkesbury areas.

"The Rotork actuators acquitted themselves well, assisting the enormous efforts made by Severn Trent staff and our contractors to bring the plant back into full operation with the absolute minimum of delay."

It was imperative that the works were cleaned, repaired and brought back into operation with the utmost urgency and thanks to the tireless performance of personnel from Severn Trent Water and its contractors this was successfully achieved within the remarkably short period of only four days after the flooding had subsided.

As a part of this colossal task, more than 150 Rotork electric valve actuators – encompassing A, AQ and IQ ranges, controlling the automated sequence of water treatment processes throughout the site – had to be inspected for water damage before they could be returned to service. To assist in this work, Rotork immediately provided two site service technicians when requested on the first morning of the clean-up, who inspected and checked actuators in vital areas including the low lift pump house, which had been

submerged to a depth of three metres. In all cases they found that where water had entered an actuator, it had only done so through cable entries into the terminal compartment and had been prevented from reaching any electrical components within the actuator itself by the O ring seal fitted around the terminal bung. This design feature, known as 'double-sealing', was first introduced on Rotork actuators as long ago as the 1960s and has been a benchmark of Rotork designs ever since.

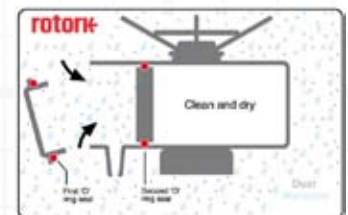
As a result, all the actuators inspected by the Rotork technicians were found to be fully functional and could be immediately returned to service after cleaning and drying out some of the terminal compartments.



AQ and A range actuators in the rapid gravity filter plant. The flood water level here reached above the ceiling of the chamber



Severn Trent Area Manager Andrew Bowkett with one of the 'A' range actuators in the low lift pump house, which was flooded to a depth of 3 metres



Double-Sealing

In Rotork's experience, the flooding at Mythe is the latest in a long list of worldwide events over the decades where the Rotork 'double-sealed' enclosure design has prevented serious damage to actuators that have been submerged.

Severn Trent Water Area Manager Andrew Bowkett described the flooding as "unprecedented in the 137 year history of water treatment at Mythe.

The Rotork actuators acquitted themselves well, assisting the enormous efforts made by Severn Trent staff and our contractors to bring the plant back into full operation with the absolute minimum of delay."

Penstock Upgrade at Thames Water Beckton

Rotork Site Services has completed an automation upgrade on the main inlet penstocks at the Thames Water Beckton Sewage Treatment Works, involving motorisation with the latest IQ Pro intelligent electric actuators. The IQ Pro actuators were specified for the application within the terms of the framework agreement which Rotork holds with Thames Water.

Beckton is the largest sewage treatment works in the UK. Situated on the north shore of the River Thames in the London Borough of Newham, the site treats the sewage from 3.4 million London residents and businesses. Someone has taken the trouble to calculate that this is enough to fill 34 Olympic sized swimming pools every hour!

The first stage of sewage treatment is fine screening to remove solids and debris. A total of twelve inlet and outlet penstocks are installed in the screening plant to enable the flow to be diverted and screens to be isolated for routine maintenance.

The substantial penstocks, each measuring approximately 150 by 300 centimetres, were fitted with electric hoists and chains to lift them out of the inlet channels.

The hoists, which had provided satisfactory service for many years, were reaching the end of their operating life and required replacement to prevent potential interruptions and reliability issues in this crucially important area of the works.

In addition, operation of the electric hoists was a relatively labour intensive process that could only be performed locally and a more up to date and automated solution was therefore required.

Engineers from Rotork Site Services first carried out a survey of the existing plant and then designed the new drive systems and top works on which the new actuators are mounted. The hoists and chains were replaced with threaded rising stems, operated by Rotork IQ Pro Model 35 actuators and IB7 bevel

gearboxes. In addition to precise and reliable operation, the new actuators also enable a particular operating characteristic of the penstocks – which used to be performed manually – to be now carried out automatically, thanks to the flexible functionality built in to the Rotork IQ Pro control package.

When the penstocks are in the shut position sludge, debris and solids settle out on the bottom of the channel adjacent to the penstocks over a period of time. If a penstock is opened in one uninterrupted movement, this concentrated build up would rush through onto the screening equipment and potentially overwhelm it.

Therefore, it had always been the practise to raise each penstock by approximately 10% of its travel and then stop it for a set period, which enabled the build up of sludge to disperse slowly before the penstock was fully opened.

The successful completion of this sequence used to rely on the eye of the operator but is now automatically performed by the Rotork actuators. Each actuator is programmed to communicate a

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signal to its supervisory plc when it reaches the 10% position of opening travel, at which point the plc stops further travel for a preset time before then asking the actuator to complete the opening operation.

During original project discussions this sequence of operations was to be triggered by external position switches attached to the penstocks themselves, but Rotork's Site Services engineers were able to demonstrate that using the standard features inherent in the IQ Pro control package provided a solution that is more reliable, less expensive and more flexible. For example, it is easy to programme the actuator to pause at a different opening position if operating experience dictates.

The alternative would be to physically move the external switch on the penstock. Rotork Site Services' contract encompassed the survey, design of new adaptation and topworks, installation and actuator commissioning. Completion was achieved on time and on budget, continuing the long and successful association that Rotork has enjoyed with Thames Water.



Beckton STW inlet penstocks upgraded with Rotork IQ actuators

Second upgrade at clean technology power station



Connah's Quay Power Station on the north Wales coast is no stranger to Rotork IQ actuators. Almost 200 were retrofitted on the cooling towers at the 1420MW Combined Cycle Turbine (CCGT) station in 1999, after the American designed actuators originally fitted had proved vulnerable to the saline coastal atmosphere.

Now, in a further cooling tower plant upgrade, Rotork Site Services has installed another 80 IQ and IQT actuators in a project designed to

increase the generating efficiency at the E.ON – owned station. By increasing the cooling capacity of the plant, emissions of carbon dioxide are minimised as is the amount of water lost to drain. Both improvements have a beneficial effect on the surrounding coastal environment.

Tony Higgins, from E.ON's electrical engineering department at Connah's Quay commented that Rotork was selected again for this latest project as a result of the proven reliability of the installed IQ actuators, the benefits of 'non-intrusive' setting and the valve diagnostic capabilities inherent in the latest IQ Pro actuator technology.

Skilmatic in environmental upgrades at UK power station

The 1455MW RWE nPower Aberthaw power station in South Wales is undergoing a series of environmental improvement projects including the introduction of flue gas desulphurising technology to enable the station to operate under the latest European environmental regulations.



Rotork Site Services is involved in the projects, installing Skilmatic actuators to improve valve performance in critical areas, two of which are illustrated here. The existing, customised electro-hydraulic actuators on the mill isolation dampers had become increasingly time consuming and expensive to maintain due to obsolescence. The Rotork Skilmatic SI electro-hydraulic quarter-turn actuator with its integral failsafe design has provided an ideal engineering solution.

Existing feed water regulation valves with pneumatic actuators were causing operational problems and proving uneconomical to maintain. Aberthaw decided to replace the

valves and actuators and selected new valves manufactured by Weir, fitted with Skilmatic SI electro-hydraulic modulating linear actuators which matched the technical requirements for fast acting, high thrust and accurate valve positioning.

Aberthaw has utilised Rotork actuators for many years and has found that the latest 'non-intrusive' features inherent in Skilmatic SI, IQ and IQT actuators provide reliable service with the added benefits of time and cost savings during commissioning. IQ and IQT actuators have been recently installed on applications including feed system and boiler valves and quarter-turn dampers.



FEATURE STORY

Rotork at Heathrow – from 1955 to T5

Heathrow – the world’s busiest international airport – has been in existence for about ten years longer than Rotork and, like Rotork, its history is characterised by continuous growth. Rotork actuators have been involved in virtually every stage of Heathrow’s expansion, culminating in the recently opened Terminal 5 where over 400 Rotork actuators are now installed.

In many respects, Heathrow has grown in the same way as an expanding city, demanding an infrastructure including power generation, drains and sewers, clean water, waste treatment and a secure network for the supply, storage and distribution of fuel. Valve actuators are important control and safety plant elements in all these areas, which explains why Rotork has been active at the airport for fifty years.

Terminal 5 (T5) is a huge undertaking with many of the Rotork contracts helping to fulfil the need for improved infrastructure and utilities. Some also reflect the increased importance of preserving or improving the environment which is inherent in contemporary planning, whilst others illustrate innovative uses for valve actuators in more unconventional applications. Rotork’s first T5 contract, in 2002, was for an environmental project in which the courses of two historical London rivers were diverted around the western perimeter of the site to preserve them and create ecological enhancements. Twenty-three IQ electric actuators were installed on penstocks at the heads of each new channel, operated automatically by signals from adjacent ultrasonic level sensors to ensure that the new river courses are always kept full without breaching their banks. Operating data from the site is linked by telemetry to a central control room at the airport.

The T5 terminal building is served by new road and rail tunnels, which provided the application for Rotork’s next contracts. More than 100 mostly IQT electric actuators have been supplied for the operation of ventilation and fire protection dampers, manufactured in the UK and Europe. The dampers provide

vital protection in the event of an emergency and because of this many of the Rotork actuators are fitted with fireproofing that has been tested to ensure that they will continue to operate for up to an hour whilst exposed to an ambient temperature of 250°C.

These contracts echo similar Rotork activity in the 1990s when 50 fireproofed actuators were supplied for the same duties in the Heathrow Airport Express Rail Link Tunnel that provides a non-stop direct link to London’s Paddington main line railway station. Back at T5, fireproofed IQT actuators have also been installed to provide ventilation and fire protection for the terminal’s transit system through the operation of specialised dampers manufactured by Sirocco. T5 utilises the latest, energy efficient CHP (combined heat and power) technologies to generate electricity whilst providing space heating and hot water. The Rotork electric actuators installed in the CHP generating station include isolating and modulating IQs, some of which are equipped with battery packs to provide operation on loss of mains power. As part of the same system, several Rotork Skilmatic electro-hydraulic failsafe actuators are also installed. Beyond the plant room other new Rotork actuator installations include new fuel distribution pipelines and the wastewater treatment works, which treats effluent from the terminal and drainage from the considerable new aircraft standing areas.

The additional aircraft handling facilities at T5 are served by a new pipeline from Gatwick and a tank storage farm. Rotork IQ electric actuators with ATEX explosionproof certification control the import and



IQ actuator installation in progress on one of the T5 fire doors

export operations for the aviation fuel, utilising sequence interlocks to safeguard against accidental spillages. For additional environmental security the facility is enclosed by an embankment housing Rotork actuated penstocks to allow drainage but prevent the accidental escape of any fuel into surrounding areas and drains.

These penstocks are one of a number of sensor activated automated systems involving Rotork valve actuators at T5. Possibly the most unusual can be found on the roof of the building. Here, architect-designed “fire doors” are part of an automatic safety system that will minimise the risk of smoke from a fire disrupting the evacuation of the building. In the event of a fire, one of the three doors, each of which measure 6 metres by 4 metres, opens upwards and, at the other end of the building, a giant fan is started. The resulting air draught draws the smoke up to the underside of the roof and out of the building through the fan.

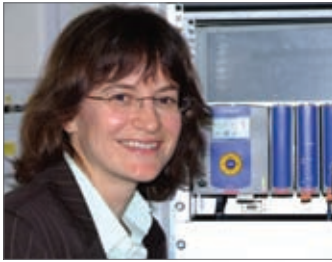
Rotork actuators were specified for this duty rather than ordinary electric motors because of their watertight enclosure and inherent ability to signal position indication to the centralised control room.

However, special measures were required to ensure that the IQ actuators could open the doors within the one minute timescale specified. Even the maximum 144 rpm output speed of the fastest available actuator was too slow, so Rotork Retrofit engineers devised an ingenious solution. Connecting the actuator to a linear drive gearbox increased the output speed by a factor of eight whilst retaining enough torque to successfully drive the screw jacks that open the doors.

Rotork engineers also carried out further calculations to ensure that the system would work in high winds or when covered in snow before finally closing the file on new Rotork actuators for the T5 project.

New Sales Manager for Network Systems

Rotork's Pakscan and open network systems activity has been strengthened by the appointment of Chartered Engineer Shelley Pike as Systems Sales Manager.



Shelley is now responsible for supporting and guiding Rotork customers on the best choice of network system for their actuation applications and sales support for the Rotork network product range.

In addition, Shelley will be actively involved in the definition of Rotork's future networks strategies.

Shelley joined Rotork on a four year electronic engineering apprenticeship in 1988, following which she successfully achieved a first class honours degree in Electronic Engineering at the University of Plymouth in 1995.

After a year in Quality Control she joined the Electronics Department where she became a Senior Electronics Engineer. During this time Shelley's main activities involved the development of Rotork's network products, starting with Profibus in 1998.

When not busy with Rotork's network management duties, Shelley relaxes in another management role – looking after a motorcycle endurance racing team. Using Shelley's own 600cc Yamaha machine, her team won its class in the 2007 British Championships. Shelley takes up her new duties at an exciting time for Rotork's network products. Sales of Pakscan doubled in 2007 following the launch of the P3 master station whilst new developments, including wireless technologies, promise to further extend the options available to Rotork's network customers in the future.

Exeeco wins fourth year service agreement with United Utilities

"Over the past three years actuators have been repaired both on and off site and the Exeeco service and response to this important contract has been excellent." - Neil White, United Utilities.

For the fourth year running Exeeco will be responsible for actuation service and repair activities across north-west England, where United Utilities operates one of the largest

water and wastewater networks in the UK. More than 700 water and sewage treatment plants and 140,000 kilometres of pipework and sewers serve a population of seven million.

The contract gives United Utilities 24 hours-a-day access to Exeeco's broad range of skills, built up over 30 years of experience as the UK's largest actuator service provider. Services are performed by a fully trained specialist actuator workforce, supported by large spares stockholdings, strategically held at Exeeco's head office and workshops in Leeds.



Exeeco's workshop is equipped with custom-built actuator test rigs

Rotork Process Controls: the new name for Jordan

Following another year of success at Jordan Controls, the decision has been made to rename the company Rotork Process Controls (RPC), as an independent group within the Rotork Controls Division.

Derek Olson, based at the Milwaukee factory, has been appointed Managing Director of Rotork Process Controls, whose products and representatives will now be fully integrated into the Rotork Controls worldwide sales network.

In this task he is supported by Chris Warnett, who has been appointed Rotork Process Controls Sales and Marketing Director and Howard Williams who will add the

responsibility for all RPC sales in the USA to his Rotork Controls role as Sales Vice President.

The new organisation is committed to sale and support of existing Jordan products as well as exciting new products in the wide range of industries traditionally served by Jordan, including pharmaceuticals, food and drink, chemicals and ethanol, in addition to oil, gas, petrochemicals, power and utilities.



GPSA Actuator

PRODUCT NEWS

Rotork IQ Pro electric valve actuators with the **SIL (Safety Integrity Level) option**

"If something is to do an important job, it needs to be reliable, and the more important the job, the more reliable it should be."

Reliability has always been the overriding priority for Rotork valve actuator design, and now Rotork IQ Pro intelligent electric valve actuators are available with a Safety Integrity Level (SIL) option for applications requiring SIL2 and SIL3 levels. Rotork's SIL qualification has been certified by TUV, the leading international organisation providing testing, certification and qualification services.

What is SIL?

Safety Integrity Level (SIL) is defined as a relative level of risk reduction provided by a safety function. Four SIL levels are defined, with SIL4 being the most dependable and SIL1 the least. A SIL is determined through the consideration of quantitative factors in combination with qualitative factors such as development processes and safety life cycle management. The international standard IEC 61508 defines SIL using requirements grouped into two broad categories – hardware safety integrity and systematic safety integrity. A device such as a valve actuator must meet the requirements for both categories to achieve a given SIL. A full description of SIL

requirements would take up too much space in this article. Suffice to say that hardware safety integrity is calculated by performing a failure modes and effects analysis (FMEA).

The actual targets required vary depending on the likelihood of a demand, the complexity of the device and the types of redundancy adopted.

The SIL requirements for systematic safety integrity define a set of techniques and measures required to prevent systematic failures (through 'bugs', for example) from being designed into the device or system.

Rotork's SIL qualification is certified to IEC61508 with the addition of IEC61511, which is a specific adaptation of IEC61508 for the process industry. This standard is used in the petrochemical and hazardous chemical industries, among others.

Rotork IQ Pro actuators are certified for SIL2 and SIL3 levels of safety. SIL2 applications relate to a 1 out of 1 (1oo1) actuator installation, whilst the increased safety level inherent in SIL3 demands a 1 out of 2 (1oo2) configuration.



How does it work?

Rotork's IQ Pro actuators with SIL certification are equipped with the Rotork SIL safety PCB assembly, which monitors the standard IQ/IQT control board and provides diagnostic coverage and redundant control in order to perform the desired safety function if an invalid command signal is generated and/or if the standard actuator control system fails. A safety function status relay provides indication of the actuator availability and redundant safety function operation, with the same status duplicated locally on the actuator display. The SIL safety PCB can be specified with any new IQ or IQT actuator or retrofitted to existing actuators supplied since 2000.

Safety functions – Stayput and ESD

The two safety functions applicable to valve actuators are Stayput (High Demand) and Emergency Shutdown (ESD) (Low Demand).

Available with IQ and IQT actuators, the Stayput function dictates that the actuator shall not move without a valid remote open or close command signal. If an internal failure is detected the actuator will give an alarm signal.

Dual hardwired control input signals are required for remote control. Signals must be maintained "push to run" only. Available only with IQ actuators, the ESD function will ensure that the actuator will perform the commissioned ESD action (open, close, stayput) if an ESD signal is active. Again, if an internal failure is detected the actuator will give an alarm signal.

The ESD signal must be derived from a contact breaking and must be maintained during ESD. Combined Stayput and ESD safety functions can also be provided with IQ actuators only. In this configuration the actuator will Stayput or else perform the ESD function, with the ESD having priority. SIL commissioning settings are programmed into the actuator using the hand held setting tool and "non-intrusive" infra-red link, following the dedicated SIL menu on the actuator's display screen. Once set, SIL actuators must only be operated by remote control. Local controls are therefore padlocked in the "remote" configuration and hand-auto levers similarly padlocked in the neutral position to prevent the handwheel being operated.



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