

# rotalk-23

Valve Actuation News from Rotork

Application, contract and product reports from the worldwide Rotork valve actuator family

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# “Key-milestone” pipeline performance displays Rotork’s international strengths

## Contract News

**Rotork offices in the UK, USA, Italy, Holland, Singapore and Japan have worked together to successfully satisfy the entire major valve actuation and control requirement for the prestigious PGN Sumatra – Singapore natural gas pipeline, described at its opening ceremony as a “key-milestone” in bilateral co-operation between Indonesia and Singapore.**

The pipeline runs from Grissik in South Sumatra to Singapore’s Sakra Island, supplying Singapore with its third source of natural gas for generating electricity over the next twenty years. Rotork’s contracts involve actuation equipment and services from virtually every part of the company’s product portfolio. Fluid System at Singapore won the order from PGN for eighty pneumatic pipeline actuators, together with gas-over-oil actuators for skid mounted plant at two metering and supply stations. Built at Rotork’s Italian factory, most of the actuators were shipped to Singapore for fitting to ball valves made by Audco, Cooper Cameron and PBVS.

Meanwhile, Rotork Japan was working with the contractor and engineering vendor responsible to the metering stations’ operator Power Gas regarding other diverse actuation requirements at the two sites, one at Jurong Island and the other at Senoko, north of Singapore. Rotork Japan successfully proposed an actuation package comprising IQ and Skilmatic electric actuators from the UK, an EH electro-hydraulic unit from the USA and a large number of Exeeco and Alecto manual gearboxes from the UK and Holland. The Skilmatic and EH

actuators were supplied specifically for emergency shutdown and modulating duties in areas where air supplies for conventional pneumatic actuators were not available. The final element of the project involved the remote control and supervision of the valves at Jurong

Island and Senoko from a single control room at Senoko. Working with system integrator Willogen, Rotork Singapore proposed the use of Pakscan IIS network systems at both sites, with a telemetry link between them to facilitate control from a single point. To achieve this, Rotork engineered Pakscan connectivity for the EH and Skilmatic actuators and integrated them into the Pakscan loops. Acceptance by Power Gas of this final part of the proposal completed the success of one of the most comprehensive and diverse actuation packages ever undertaken by Rotork’s international family of companies.



*Above: IQ intelligent electric actuators fitted to Hatanaka ball valves.*

*Right: Fluid system gas-over-oil actuators operating PBVS trunnion mounted ball valves (900mm) on skid mounted gas station metering duties.*

*Below: Fluid System pneumatic actuator fitted to fully welded Cameron ball valve (900mm), providing gas station shut-off duty.*



# Failsafe electric actuators for wellhead choke valves

## Rotork in Control



Rotork Skilmatic electric failsafe actuators have been ordered for wellhead choke valve duties on an oil field development project in North Africa. Twenty-five Skilmatic Model SHL417 flameproof linear actuators will operate Severn Glocon Series 5000 high pressure (Class 1500) severe service globe valves supplied to the Lasmo Elephant Field Development Project, via engineering group MAN in Germany.

Skilmatic actuators provide an economical alternative to the conventional centralised hydraulic installations traditionally used for these applications. Benefits include simplified installation and instrumentation costs as well as reduced operating and maintenance

expenditure. The Model SHL417 is specifically designed for the 4-20mA modulating control of linear control valves, accepting an analogue or digital input signal to provide accurate positional control with minimal power consumption. An electrically operated, self-

contained hydraulic system operates valve movement in one direction, at the same time compressing an internal spring to operate the valve in the opposite direction. On loss of power the actuator can be set to either failsafe or stay put, whilst the positioner discrepancy alarm provides remote indication of a system error. The Skilmatic SHL417 actuators ordered for this project are ATEX certified for operation in Zone 1, Division 1 hazardous areas and environmentally sealed to IP65 (NEM4)

*Above: Skilmatic electric failsafe actuators at the Severn Glocon factory in Gloucester, where they have been mounted on 200mm (8") severe service globe control valves for wellhead choke valve duty.*

## Keynote

Electro-hydraulic actuators offer an economical alternative to traditional hydraulic installations



Maizuru Terminal, pictured here, is the latest Maritime Defence Force installation in Japan to be automated with Rotork IQ intelligent electric valve actuators and Pakscan digital control systems. Rotork Japan has been involved in the modernisation of several of these fuel supply depots since the Rotork IQ/Pakscan package was adopted as the standard system for the automation project. To-date, over 300

actuators have been installed at six locations. Some of the IQ actuators installed at Maizuru are subjected to especially harsh weather conditions, including heavy winter snow, due to its location on the coast of the Sea of Japan. In addition, Maizuru is the first installation in the programme to incorporate a 'hot standby' Pakscan master station within the DCS operating network.

# Rotork wins major valve actuator orders for Singapore water reclamation scheme

Rotork intelligent electric valve actuators have been ordered for installation throughout the liquids processing plant at a giant new waste water treatment plant under construction in Singapore.

The Changi Water Reclamation Plant (CWRP) is the cornerstone of the first phase of the Singapore Deep Tunnel Sewerage System, featuring state-of-the-art, compact and covered treatment facilities, ultimately designed to handle up to 2.4 million m<sup>3</sup>/day when completed in 2006. The plant design and engineering is provided by CH2MHILL, Corvallis, USA and their Singapore office.

Over fifteen hundred of the actuators ordered are Rotork IQ and IQT intelligent units for installation on CWRP Liquids Module 1, encompassing head-works, primary and secondary sedimentation tanks,

bioreactors and effluent pump stations. IQ and IQT actuators share the same advanced features, including infra-red 'non intrusive' commissioning and communication, on-board data-logger and 'system-on-a-chip' intelligent technology providing comprehensive control and indication flexibility. Many of the actuators will be factory fitted with Rotork Profibus connectivity cards for integration with the centralised automation and control system planned for CWRP. The largest portion has been ordered by Fouress Engineering (India) Ltd for the operation of butterfly valves. These, and others ordered by manufacturers of ball and pinch valves, will be supplied to engineering contractors United Engineers, Singapore, and Voltas India.

*Left:  
Orders for Changi include many IQT actuators for the direct operation of butterfly valves.  
Below:  
An artist's impression of the Changi Water Reclamation Plant.*



# Valve control package for major refit at Saudi refinery

Contract News

**Rotork is supplying a valve control package comprising 352 IQ intelligent electric actuators with Pakscan 2-wire digital control and In-Vision SCADA software for an important upgrade project at an oil refinery on the Red Sea coast in Saudi Arabia.**

Rotork's contract is a central part of the modernisation programme at the Saudi Aramco Rabigh Refinery awarded to Canadian engineering consultant SNC Lavalin, which will ultimately see the installation of a Yokogawa DCS to control the plant. The project involves the removal of Rotork 'A' range actuators that have been operating for approximately twenty years and retrofitting the latest IQ intelligent actuators on the existing valves. Rotork's specialist Site Services Department will perform much of the retrofit design work, as Mike Dale, Site Services Manager, explains: "Rotork has over 40 years experience of retrofitting valve actuators. This valuable resource will be extensively used during the completion of the Rabigh project."

Equipped as standard with data loggers, the new IQ actuators will enable refinery maintenance staff to download comprehensive diagnostic operating information, using dedicated IQ-Insight software. Pakscan will initially provide stand-alone digital control of the actuators on fibre optic loop networks supervised by five fully redundant 120 channel hot standby master stations, utilising In-Vision software. Following installation of the Yokogawa DCS the Pakscan loops will be integrated into the plant-wide system whilst the In-Vision will be retained for maintenance purposes. Each IQ actuator will be connected to the two-wire network via Rotork's Pakbox, enabling individual actuators to be electrically isolated and removed from the network for maintenance without disrupting network communications. Rotork's Saudi based engineers will supervise the installation of the new actuators and Pakscan network, led by Dan Benson, Rotork's Area Manager for the Kingdom. Dan comments: "We are proud to be associated with such a prestigious Saudi Aramco contract and look forward to a close working relationship with the In Kingdom SNC office and Aramco project team. Rotork's ability to handle large projects in the Kingdom is enhanced by local workshop facilities, supported by our local agent Al Hugayet."

# At a stroke – Jordan wins metering pump orders

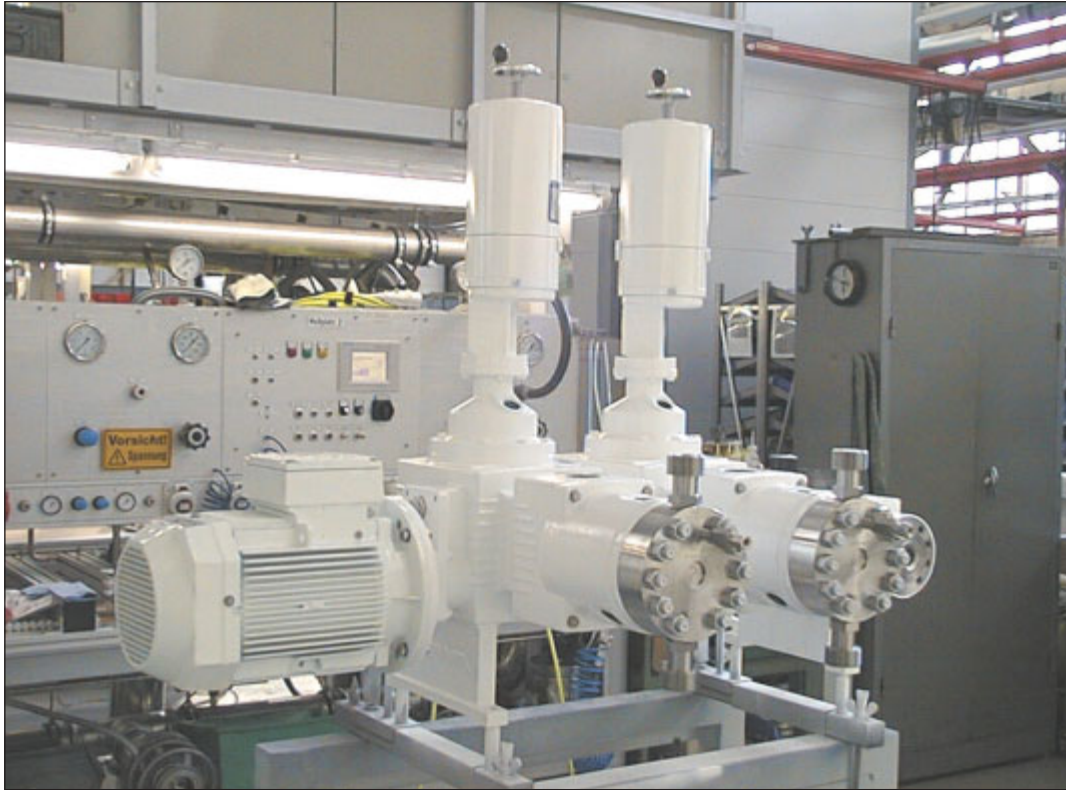
## Focus on Jordan

Jordan Series 1000 and 1500 modulating actuators have been adopted by two world-leading metering pump manufacturers for applications demanding automatic electrical stroke adjustment.

Metering pumps are designed for fluid metering and controlled volume duties – often at high flow rates and pressures up to 1200 bar – in process industries ranging from oil and gas to food and drinks.

A diverse range of applications includes flow metering, acid dilution, gas odourisation, polyethylene cross-linking and chemical injection. Leading international manufacturers Lewa in Germany and OMG in Italy now use Jordan actuators when electrical stroke length adjustment is specified.

Pump stroke adjustment is a demanding duty that regulates the pump performance, requiring a swift modulating action that can be continuously rated, in response to a 4-20mA control signal. Jordan actuators combine compact dimensions, accurate performance and repeatability within 0.25% to suit all these requirements. For hazardous area duties, they are available with ATEX, FM or CSA explosionproof certification. Currently, in excess of 150 actuators have been sold to the two manufacturers, including an order from Lewa for fifteen units at a BASF chemical plant in Germany, and thirty-two units ordered by OMG for installation on the Jebel Ali 'L' project in UAE.



*Left: Metering pumps equipped with Jordan 1500 Series actuators at the Lewa factory.*

## High temperature actuators



A new leaflet from Jordan draws attention to the actuators' high temperature performance, explaining that most of the company's product range is designed for ambient operating temperatures of up to 120°C (250°F).

## Data acquisition by Ethernet

Jordan has developed a special Ethernet data acquisition link, initially for use by one of the largest energy producers in the USA.

Designed to fit 1000 Series actuators, the Ethernet option is expected to be extended to the entire Jordan product range. The option runs an HTTP web server using TCP/IP protocol and enables the customer to obtain diagnostic data from the actuator by simply logging on to the internet and clicking a few buttons. In this way the customer can set parameters, view diagnostics and logged data, perform self-tests and control the actuator remotely via a standard web browser.

The original Jordan Ethernet application involves twenty-eight separate hydro-electric turbine plants, where the actuators are used to re-oxygenate water that has passed through the turbines to protect the downstream environmental ecology.



# IQT technology secures reliable valve actuation for Colorado Springs Utilities

Rotork  
in Control

## Record delivery time secures power station start-up

**“Please pass on to all the people at Rotork Bath our thanks for a job well done. This important achievement would not have been possible without their hard work and dedication. We all appreciate the great effort Rotork Bath and Mississauga contributed to make this happen.” Wayne Boyd, President and CEO, Canatom NPM Inc.**

This impressive endorsement was received upon the announcement that Qinshan Unit 2 power station near Shanghai began commercial operation on 24th July 2003, four months ahead of the originally scheduled date.

Rotork has been the major supplier of nuclear qualified valve actuators on the Qinshan 1400 megawatt Unit 2 project, but a last minute on-site problem with one unit threatened to jeopardise the reactor start-up date. Eradication of the problem demanded the building of a replacement 90NA1 unit at Rotork Bath, shipping and installation within a record ten-week lead time.

Close co-operation between Canadian and UK Rotork offices, the customer Canatom NPM Inc and main contractor AECL secured the successful completion of the task, enabling the planned start-up of the new reactor to proceed on time and Qinshan Unit 2 to join Unit 1 in commercial operation.

*Dom DeBaggis, Rotork Rockies Area Sales Manager, reports on an impressive retrofit success utilising IQT actuators at a community-owned water treatment plant.*



**Rotork IQT intelligent electric valve actuators have been installed at the Colorado Springs Utilities' Ute Pass water treatment plant located in Green Mountain Falls, Colorado, to secure improved reliability on the filtration equipment.**

Colorado Springs Utilities is a four-service community-owned organisation providing natural gas, electricity, water and wastewater services to the Pikes Peak region in Colorado. The Ute Pass WTP, one of the six water treatment plants operated by the Utilities, is a 2 MGD (million gallons a day) packaged plant, now consisting of four filters. The plant was originally commissioned in 1987 and a capacity increase from 1 to 2 MGD was completed in the summer of 2003.

From the initial operation of the enlarged plant Utilities personnel were dissatisfied with the reliability of the incumbent valve actuators when compared with the performance of Rotork's IQ/IQT non-intrusive intelligent technology at several installations in other plants. Through their outside engineering consultant they requested a quotation from Municipal Treatment Equipment (MTE), Rotork's municipal sales agent in Denver, for replacement IQT actuators. MTE handled sizing

and Rotork arranged a special delivery, resulting in orders for four IQT250 and twenty IQT125 units to fit butterfly valves in sizes ranging from 3" to 8". IQT technology and software tools enabled Utilities' personnel to install and commission all the actuators with impressive speed and efficiency, with only minimal assistance and training from Rotork and MTE. Extensive use of IQ-Insight software enabled actuator configuration information to be saved and then downloaded to other IQTs installed on identical valves, resulting in valuable time savings as it was necessary to shut down two filters at a time during the changeover.

**Footnote** – Colorado Springs Utilities have also retrofitted four additional IQT actuators at one of their remote flow control facilities, whilst Rotork will also provide more than twenty IQTs for installation at their Northern Water Reclamation facility, currently under construction.

**Extensive use of IQ-Insight software enabled actuator configuration information to be saved and then downloaded to other IQTs installed on identical valves**



# Rotork helps to preserve and enhance historic rivers at Heathrow



Rotork IQ intelligent electric valve actuators are being used in an ecologically important "Twin Rivers Diversion" project associated with the construction of the new Terminal 5 (T5) at London Heathrow Airport. Twenty-three actuators operate stainless steel penstocks manufactured by H. Fontaine Ltd to control the flows within new open channels, built to divert the courses of two of London's historical rivers around the western perimeter of the 260ha Heathrow T5 site.

David Palmer of Black & Veatch Consulting and Rivers Team Leader at T5 owners BAA plc explains: "BAA opted to divert the Longford and Duke of Northumberland's Rivers around the western perimeters of the airport rather than bury the existing courses in culverts

beneath the proposed development. The new diverted channels have been designed with significant ecological enhancements in order to maximise the environmental values of the rivers." At the head of each channel, off-take structures incorporating seven

1.5 metre wide penstocks are operated automatically by Rotork IQ25 actuators in response to analogue signals from adjacent ultrasonic level sensors installed in the river beds. The actuators are fitted with Rotork Folomatic proportional controllers and CPT current position transmitters to enable progressive penstock movement and position signalling to commence when the "bank full" trigger level is approached downstream of the off-take structures. The actuators continue to shut the penstocks until the water level is stabilised, ensuring that the rivers are kept full but the banks are not breached. A telemetry link from

each installation transmits information on penstock status, positions and upstream/downstream water levels to a central control room at Heathrow Airport.

The Fontaine penstocks feature fully enclosed operating mechanisms with bevel gearboxes, enabling the Rotork actuators to be installed in ergonomically convenient positions. This facilitates access to the actuators during installation, inspection and maintenance and removes any requirement for high level walkways or temporary scaffolding.

The "Twin Rivers Diversion" project was started in November 2002 and completed in May 2004.

## Keynote

Rotork Folomatic facilitates partial valve movements for accurate river level control.

*Left and below: The Longford River off-take penstocks. Note that the IQ25 electric actuators have had their handwheels removed and replaced with square key drives, facilitating manual operation with a portable power tool.*



# Actuators in major Hong Kong utility projects

Hundreds of Rotork electric valve actuators are being installed throughout two new major utility projects, built to serve the burgeoning population and economy of Hong Kong.



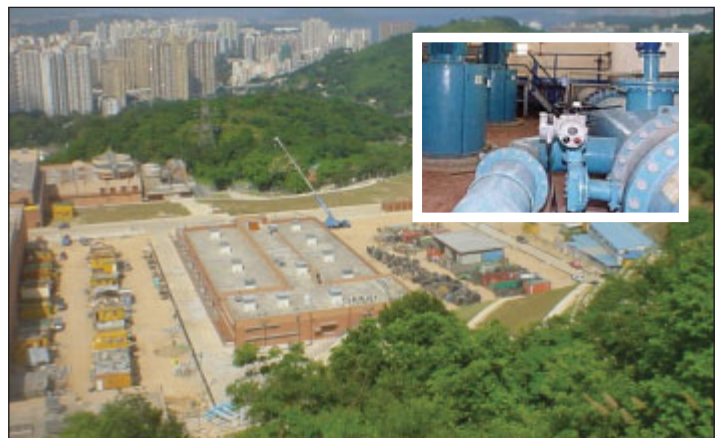
Eric Li at Rotork Hong Kong has been closely involved with both projects since construction first started in the 1990's. Black Point Power Station (above), situated in northwest New Territories, will be one of the world's largest natural gas-fired combined-cycle power stations when completed in 2006, with a planned generating capacity of 2,500MW. Nearly 400 Rotork actuators are installed on the

CAPCO owned project, which is being built by a consortium comprising Alstom Combined Cycles International and the General Electric Company at a total cost of around HK\$ 24 billion.

In addition to Hong Kong's largest power station, Rotork actuators also feature throughout the territory's newest water treatment works at Tai Po (right). Here, nearly 500 Rotork IQ actuators are being installed on plant that will eventually have a designed treatment capacity of 1.2 million m<sup>3</sup>/day. The advanced treatment process encompasses coagulation, flocculation and clarification by dissolved air flotation, aerated biological filtration for

ammonia removal, rapid gravity filtration and final disinfection. Provision is also made for the inclusion of ozone and GAC filters if found to be necessary. Designed by Black & Veatch, the plant is being constructed by Gammon

Skanska. With a total cost approaching HK\$ 2 billion, Tai Po water treatment and water transfer facilities will ensure that Hong Kong's water supplies meet the high standards laid down by the World Health Organisation.



# Electro-hydraulic solution to power station's control valve headache

**A heavy duty Rotork EH electro-hydraulic linear actuator has solved an expensive and repetitive valve operating problem at the Entergy Willowglen power station in Mississippi.**

The valve – an Edward Class 2500 14" x 12" x 14" high pressure non-return globe control valve on boiler feed water pump discharge service – was motorised with an obsolete electric actuator that was no longer supported by its manufacturer. The actuator was regularly causing self-inflicted damage to its drive bush and gearbox when the valve was operated, forcing the station to repair it on an annual basis. Because all the required replacement parts were not available from the manufacturer, they had to be specially made, dramatically increasing the repair cost. Seeking a solution to the problem, Entergy contacted Rotork.

Rotork's suggestion was to replace the electric actuator with an EH range electro-hydraulic linear unit – customised for the plant's requirements – which would utilise the same electrical power supply but operate the valve hydraulically, providing the swift and responsive actuation required without the risk of damage to either valve or actuator. Modifications were also made to increase the actuator's manual override operating speed before the unit was fitted in the middle of 2001, since when it has been providing reliable and problem-free service. In September 2003, Rotork sales engineer Skip Kuehn was allowed to invite engineers from another power company, who had similar problems

with a number of Class 2500 pressure seal bypass valves, to visit the Willowglen site and find out about the EH actuator's performance. Entergy were able to supply a very positive recommendation, reflecting their satisfaction with the EH installation.

**Keynote**  
EH actuator delivers swift, responsive valve positioning from an electrical power source.

## Rotork in Control



**Before** **After**



## Award winning performance from Spare Parts Cell

The important contribution made by Rotork's Spare Parts Cell to the successful on-time completion of a challenging Canadian power station upgrade project has been recognised by the award of a special commemorative plaque. Bruce Power Station in Ontario was undergoing a major environmental upgrade programme which included refurbishment of Rotork nuclear qualified valve actuators that had been installed when the station was built in the 1970's.

*Clockwise from left: Paul Kennedy with Spare Parts Cell members Gary Barnett, Simon Mellowes and Richard Knight.*



(continued on page 14)



*Rotork IQM actuator operating the linear water inlet valve on one of the turbines at Mary Tavy. Far right: Rotork d.c. actuators on the main turbine inlet valves.*

## Rotork helps South West Water to make the most of renewable energy

Rotork electric valve actuators are contributing to a noteworthy renewable energy refurbishment programme at a power station owned by South West Water. Opened in 1932, the plant at Mary Tavy is still England's largest hydro-electric power station, working with smaller stations at nearby Morwellham and Chagford to produce a total of 3,340 kW of electricity from the water resources of Dartmoor. When the plants were acquired by South West Water in the 1990's, they were still largely operating with

their original 70 year old turbines, switchgear and gauges. As such they represent an important piece of industrial archaeology, attracting regular visits from educational, institutional and engineering groups. South West Water has therefore embarked on a refurbishment programme that will improve efficiency without altering the authentic overall appearance of the plant and machinery, panels and gauges. The £850,000 project entails the installation of new turbine wheels, modern switchgear and valve actuation, and the introduction



# 21st Century upgrade at National Grid Transco Bacton includes new Rotork valve actuators

Rotork has been awarded phased contracts to install new electric actuators on an approximate total of three hundred major valves during a strategic modernisation and upgrade programme at the National Grid Transco (NGT) gas terminal at Bacton in Norfolk. Rotork is replacing earlier versions of its own actuators which, in many cases, have been in operation since the Bacton plant first began processing North Sea natural gas in the early 1970's.

Actuator replacement is being carried out by Rotork's specialist Site Services Department, working closely within the daily operational constraints of the site to minimise the risk of any interruption to normal plant operation. The latest ATEX certified Rotork IQ2 intelligent electric actuators are being installed, the majority being IQ70 models operating buried service 900mm (36") Cameron pipeline ball valves. Most of the valves control the movement of gas received from three North Sea gas producers

situated on an adjacent site. The gas undergoes filtering, blending and quality assurance processes, including checks on calorific value, volume, pressure and temperature, before it is pumped into the NGT National Transmission System. For the last two phases Rotork took on the total installation responsibility including the electrical work and appointed Dabbrooks Ltd from Great Yarmouth to connect the actuators to Bacton's upgraded centralised monitoring and control system. Each actuator provides



**Keynote**  
Careful retrofit planning minimises the risk of disruption to normal plant operation.

continuous valve position and availability data, supported by alarm signals covering, for example, loss of power or incomplete valve movement. As a part of the NGT-wide Ulysses Project, data from the Bacton control system is also being communicated by telemetry to NGT operational headquarters at Hinckley in Leicestershire. Rotork's contracts are being performed in several stages. Work began in 2002 and is expected to continue for another two years.

*Pictured – new Rotork IQ70 actuators installed at NGT Bacton.*



of automated site control under PLC supervision. Nine Rotork electric actuators are being retrofitted at Mary Tavy, replacing manually operated equipment to control and govern the flow rate of water into the three Pelton wheel and three Francis wheel turbines on the site, an operation that used to require constant manual attention. Six Rotork IQM modulating actuators will continuously alter the position of the original linear water inlet valves in response to signals received from the PLC. Three Rotork actuators with d.c. motors and Rotork-designed battery control panels are also installed to automatically shut the main inlet gate valves to the turbines in the event of a power failure or similarly important alarm. Actuator installation is an integral

part of the turbine refurbishment contract that has been awarded to the turbines' original manufacturers, Gilbert Gilkes & Gordon Ltd. Steve Cryer, South West Water's Hydro Manager, is enthusiastic about the future of hydro-power in the area. He explains: "The programme at Mary Tavy is the first part of a scheme to increase our production of renewable energy at a total of nine existing hydro-electricity sites. In addition a new station is

**Keynote**  
Rotork actuators control turbine operation with permanent failsafe security.



being built and there are plans for a further four. Most of the work is being carried out by our experienced in-house staff and a centralised workshop is being established at

Mary Tavy to service all the plants. Automation will not only improve efficiency but also enable our staff to work with more flexibility at the power stations."

## Rotork impresses with filter plant upgrade performance

Rotork's performance throughout a major water treatment works upgrade project has made a good impression.

Rick Velderman, Maintenance Supervisor at the Wyoming Water Treatment facility in Holland, Michigan, enthuses: "We are very happy with the performance of the Rotork actuators on this project. From the time that they have been installed, we have had virtually trouble-free operation and an overall much smoother plant process. The Rotork units are a major reason for this improvement."

The Wyoming Water Treatment facility has upgraded twelve filters for improved reliability and operational efficiency, opting for the electrical actuation of existing filter and pump control valves. Equipment replaced consisted of water hydraulic cylinders with external torque arms that had been in operation for over twenty-five years. The plant required new electric actuators for sixty-three butterfly valves ranging in size from 18" to 48", as well as two large 24" and 30" ball valves for high service pump check service.

All isolating duty valves were equipped with IQ intelligent actuators and IW gearboxes, whilst modulating and failsafe filter valves were fitted with Skilmatic electro-hydraulic actuators. In addition, the large butterfly and ball valves on the high and low service pump circuits were equipped with EH range electro-hydraulic units, completing an all-electric isolating, modulating and failsafe valve actuation solution, from a single source.

The impact of the new actuator installations has been immediately noticed, as Rick Velderman explains: "We see a big benefit over our old actuators from a maintenance standpoint, one being the functionality of remote SCADA control and local control at the actuators. This is a big plus from a

maintenance standpoint, since we need to be down at the valves working on equipment. Being able to simply stroke valves and have consistent response is very important. The Rotork units give us this ability. It is also very nice to have two different actuator technologies supplied and supported by the same company. "We were all extremely impressed with Rotork's on-site training, that was provided as part of the project. The local rep and the Rotork area salesman came in with actual units, dismantled them and taught us real maintenance. Several of my guys have since commented that Rotork was right at the top of the list of all suppliers on this large project, in terms of quality of training."



## ATEX approved explosionproof switchboxes in demand

Last year's introduction of ATEX certified explosionproof switchboxes has created a much higher level of demand than could have been predicted, says Rotork Valvekits' MD Martin Hunt. The SIRA certified, ATEX approved Circa 7000 switchbox range encompasses switch, sensor, ASI 2-wire connectivity and remote position feedback options. A unique feature of the Circa range is the high visibility 'beacon' position indicator, which has also received ATEX explosionproof approval, due to its rugged, compact design. ATEX certification is establishing the Circa 7000 as a high quality and economical switchbox



choice throughout its UK and European markets. Recent applications include twenty units for valve position indication at a petroleum tank farm in Holland. Valvekits' contract encompassed the supply of new manual valve gear operators, switchboxes and mounting brackets.

## Lock, stock and barrel

Valvekits has recently supplied a customised, key operated interlocking adaptation for installation on a hazardous chemical delivery valve for Severn Trent Water. Designed by Integrated Safety Solutions Ltd the installation uses a sequenced key routine to permit the safe delivery of sulphuric acid through a 3-way ball valve, ensuring that it is routed to a storage tank and preventing any possibility of it being discharged to the drain via the third valve outlet.



**"We are very happy with the performance of the Rotork actuators on this project. From the time that they have been installed, we have had virtually trouble-free operation and an overall much smoother plant process. The Rotork units are a major reason for this improvement."**

## Exclusive framework for Rotork Exeeco at Scottish and Southern Energy

Rotork Exeeco has achieved an exclusive framework agreement for the supply, installation and servicing of Rotork products at power stations owned by Scottish and Southern Energy plc. The new agreement follows several years of close co-operation between the two organisations during actuation upgrade projects at several power stations.

The framework covers the repair, renewal and replacement of all

actuator types, whether electric, pneumatic or hydraulic, together with on-site specialist services during tightly programmed outages as well as servicing and running repairs.

Exeeco Sales Director Ian Elliott explains: "Offering Scottish and Southern Energy an exclusive framework for our products and services was seen as a welcome move forward for both companies. Working closely with our clients

helps to give them confidence and promotes a working partnership in sourcing the best technical and product solutions in this specialised field."

Rotork Exeeco can claim over 30 years experience of actuation and automation in power plants. As the largest service provider in its field in the UK, Exeeco currently holds term maintenance contracts with over 75% of the power generation plants in the UK.



*Ian Elliott meets Andy Cunna, Maintenance Manager at Scottish and Southern Energy's Keadby Power Station during an on-site training programme performed within the framework agreement.*

## Fina Antwerp Olefins chooses fireproofed Rotork valve actuators for increased safety

The Fina Antwerp Olefins refinery has been the subject of a thorough revamp and expansion project known as NC2X, which is now in its final stages. The project has the objective to increase annual ethylene production capacity to 1.4 million tonnes whilst also introducing improved safety systems.

Rotork valve actuators are already used on the site, which was originally built fifty years ago. Therefore, IQ and AQ electric actuators, together with Fluid System actuators, mostly fitted with K-Mass fireproof coatings, were specified for the automation and expansion of the NC2 plant, which has been in operation since 1969. For the compressors, located at the beginning of the process, a special design was conceived to automate the large, previously manually operated emergency block (shut down) valves. These gate valves, in sizes up to 42", isolate and protect the main plant from the supply of product in the event of a gas leak or fire.

Due to the critical importance of the application to plant safety, the IQ actuator installations required customisation to comply with detailed specifications. This was successfully achieved with the involvement of Dirk Stroeckx (Fina), Chris DePaepe (Kellog, main contractor), Mike Gover (Rotork UK) and Frederik Van Acker (Prodim – Rotork's agent in Belgium). The design ensures accurate remote valve position indication to

enable the compressors to be safely shut down. Each valve spindle is fitted with an indication rod the same length as the valve size (42 inch valve = 42 inch indication rod). The rods are made of two materials in equal proportion – top half stainless steel, bottom half aluminium.

Each IQ actuator is equipped with a K-Mass coated covertube, twice the length of the indication rod, in the middle of which are attached three proximity switches in a 120° array, fitted in springed cover tubes so that they push against the indication rod to ensure positive contact throughout valve movement. These switches indicate aluminium but cannot 'see' stainless steel, therefore providing three additional "valve 50% closed" signals independently from the actuator.

Dirk Stroeckx explains: "This system was required for additional safety and independent availability. We chose 50% closed indication as we don't want to wait until the valves are completely closed before tripping the compressors. "Our experience with Rotork



### Contract News

*Frederik Van Acker from Rotork agent Prodim inspects one of the IQ actuator and proximity switch installations at the Fina Antwerp Olefins refinery.*

## Keynote

Team effort achieves specific safety demands

products has been good. Personally I think they are very reliable and of good quality. We are also very satisfied with the level of service provided by Prodim."



## Rotork valve actuators help with Thames Water sewage treatment improvement programme

Rotork electric valve actuators have been specified for the mechanical and electrical upgrade programme at one of London's largest sewage treatment works.

Rotork IQ range intelligent actuators are replacing obsolete equipment at Thames Water Deephams STW, which serves a population of over 800,000 in the London boroughs of Barnet, Brentfield, Enfield and Tottenham.

The majority of new actuators are being installed on valves and penstocks on primary sedimentation tanks in a project designed to introduce automatic desludging at the site. Together with the introduction of new inlet screens, refurbishment of aeration lanes and final sedimentation tanks, the Deephams upgrade will enable

100% of the plant to meet strict new Environment Agency consent targets.

Rotork's specialist retrofit team carried out a survey of the valves requiring new actuators, which were ordered by contractor Laing O'Rourke under the terms of Rotork's framework agreement with Thames Water. Laing O'Rourke are carrying out all the installation work at Deephams, including linking the actuators to a new centralised PLC control system that will supervise the daily treatment of up to 460,000 cubic metres (tonnes) of effluent at the site.

# Applications, worldwide locations...

## Peru: Automated gas measurement



Pictured at the Flow-Quip valvemaking plant in Tulsa, Oklahoma, this shipment of P range and R range pneumatic actuators are to be installed on gas measurement skids for the Camisea Project in southern Peru. Each

Rotork actuated valve package is equipped with a manual override and stainless steel control cabinet with remote and local valve controls. The consignment is en-route to specialist skid manufacturer Daniel Measurement in Houston, Texas.

## Kuwait: Online catalyst regeneration



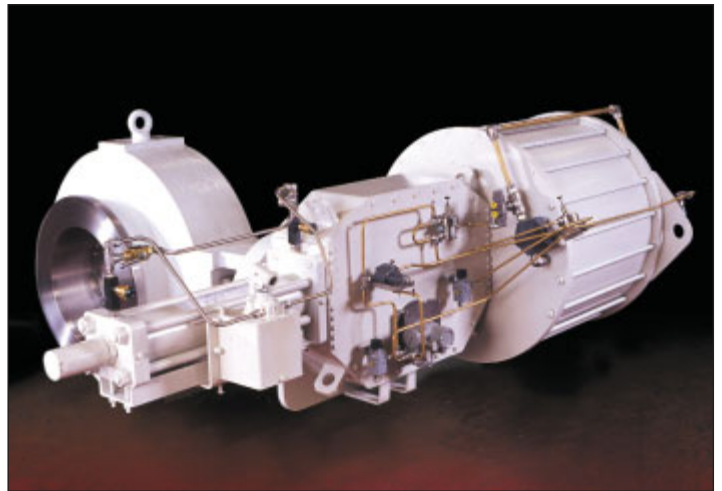
Rotork area manager Keith Phillips is pictured at the factory of Mogas Industries in Houston, manufacturer of severe service metal seated ball valves. This consignment of pneumatically actuated valves is on the way to a Chevron/Kuwait National Petroleum Company

project in Kuwait for online catalyst regeneration duty. Front-end engineering and design was performed by ABB Lummus in Houston and detailed engineering was carried out in South Korea by LG Engineering.



# Fluid System News

## Russia: Offshore production platform



One of a consignment of large pneumatic actuators ordered from Fluid System at Leeds by valvemaker Tomoe Tritec for the Sakhalin Island offshore platform in

Russia. The actuators will operate 600mm (24") Class 1500 butterfly valves as part of a control valve package ordered by Dresser. The project main contractor is Amec.

## Russia: Anti-surge pipeline skid



SPX Daniel Valve in the USA required an actuator for a 100mm (4") V-port ball control valve that would operate normally with an 80 psi supply pressure but could also cope with up to 1000 psi. This unusual requirement has been met

by utilising a Fluid System spring return hydraulic actuator package recommended by Rotork Houston. The actuator operates a bypass valve in order to activate the anti-surge skid on a pipeline project in Russia.

## Texas: Cogeneration pipeline

Rotork Houston worked with Barber Industries to fulfil this demanding application, where no external source of actuation energy is available. The solution was a specially designed, self-contained hydraulic control system, operating a Rotork H range spring return hydraulic actuator. The only intervention required is the manual re-pumping of the actuator control

system in the event of a signalled hydraulic fluid release to the reservoir. Three of these actuated valve packages are being supplied for the Exxon Mobil Beaumont Cogeneration Pipeline project in Texas, through Mustang Engineering in Houston. The valves are 400 mm (16") Class 300 and Class 600 Dresser ball valves.

## Distribution Update:

### Houston, Texas

Established and experienced valve automation specialist **Baro Controls** is the new distributor for Rotork electric and fluid power actuators in Texas. With premises in Houston, Corpus Christie, Beaumont, Dallas, San Antonio and Midland Odessa, Baro stocks a comprehensive range of Rotork pneumatic and electric actuators, positioners, limit switches and gear operators, as well as valves from world leading manufacturers. Baro's experienced actuation specialists are on hand to design automation solutions to individual specifications, supported by in-house fabrication and packaging facilities. Baro Controls' President Shelly White comments "Rotork's comprehensive product line and commitment to quality and growth first attracted us, heralding the signing of this landmark agreement." For more information: [leo.laborde@rotork.com](mailto:leo.laborde@rotork.com) [tom.matthews@rotork.com](mailto:tom.matthews@rotork.com)

### Durban, South Africa

**Valve & Automation** has been appointed exclusive distributor for Rotork Fluid System products in South Africa. With a new factory in Durban, supported by offices in Johannesburg, Richards Bay and Secunda, Valve & Automation has years of experience of fluid power actuation markets in the oil, gas petrochemical and paper industries. Rotork Africa General Manager Howard Mutters enthuses "This is a major step forward in our ability to provide a complete product offering. For many years Rotork in South Africa has been associated with electric actuators and control systems. We can now look forward to greater market awareness for our complete range of actuation products." For more information: [howard.mutters@rotork.co.za](mailto:howard.mutters@rotork.co.za)

## Deanquip strengthens Fluid System in Australia

**Rotork's acquisition of Deanquip Valve Automation Pty at Melbourne brings comprehensive local support and service to Fluid System sales in Australia.**

Deanquip, established for over twenty years, specialises in the control and monitoring of pipeline and process valves and wellhead controls in the oil and gas production, transmission, mining and process industries. As Fluid System's latest Centre of Excellence, Deanquip now offers exceptional experience in the

design, fabrication and packaging of valve automation solutions, supported by installation, commissioning and field maintenance services. More information can be obtained from Lydon Dean, General Manager, [lyndon@deanquip.com.au](mailto:lyndon@deanquip.com.au)



## IP66 & 67M Certification for CP, GP and LP actuators

Rotork's CP, GP and LP pneumatic scotch-yoke and linear actuators have been successfully tested for IP66, IP67M (tested whilst operating) and Deluge watertight and dustproof certification.

Tests were performed in Italy by independent testing authority Nemko S.p.A. using standard-build Rotork products. Following stringent test procedures, including total immersion, the actuators were dismantled and neither water nor dust were found to be present inside any of the enclosures. The photographs show the recently launched CP range compact quarter-turn actuator during dust, water jet and submersion testing.



## Another GO success



### India: Natural gas distribution

Photographed at the premises of valvemaker Audco India Ltd, these GO range gas-over-oil actuated valves are some of the total of thirty similar packages supplied for the GSPL Paguthan to Baroda pipeline in Gujarat State, India. Customer satisfaction with Rotork's

performance during the initial stage of this pipeline project has resulted in Rotork actuators being specified throughout the next phase of the scheme, involving approximately 130 km of pipeline connecting Baroda to Kaloi and Ahmedabad.



*(continued from page 8)*

## Award winning performance

The station's operators supplied their local Rotork sales office at Mississauga with a list of replacement seals, bearings and mechanical components for the eighteen Rotork 30NA and 40NA actuators involved, all of which were required on a fast turnaround to meet the shutdown schedule. To assist with identification, the station also supplied examples of many of the items required, taken from the actual actuators.

Rotork Ontario passed the parts list and samples to the Spare Parts Cell at UK Bath head office for immediate action, where it quickly became apparent that not all the required parts were still "on the shelf". This would dictate extended delivery times whilst the out of stock items were identified and procured, which might jeopardise the station's planned re-commissioning date. On receipt of this news Bruce Power despatched engineer Perry Karsten to Bath to assist Rotork senior contracts engineer Paul Kennedy in checking and tabulating all the missing parts that now needed to be urgently ordered.

Paul takes up the story: "In view of the age of these actuators it is not surprising that some of the required items were not immediately available. However, access to the

actual actuators' detailed engineering drawings, build schedules and test certificates at Bath helped us to quickly and accurately pinpoint all the relevant parts, in most cases check them against the samples supplied and then begin the task of sourcing replacements.

"We had to search as far as Japan to successfully find some parts, but in the event this was a worthwhile effort as the manufacturer proved able to supply us in only seven days. In fact, the entire Bruce Power spares order was eventually fulfilled in less than three weeks, including the creation of a complete list of non-metallic actuator components and materials required as an essential part of their environmental qualification approval procedures. "Without the support of the dedicated Spare Parts Cell team it is very unlikely that this could all have been achieved within such a short timescale."

As a result of these efforts, the refurbishment of the actuators did not delay the re-commissioning of the power station which was completed on time. To commemorate this achievement, Bruce Power awarded a specially commissioned plaque to Rotork as a permanent record of the event.

## Rotork Gears-up in the USA

Clay Hightower, Rotork Gears' Americas General Manager, reports:



Rotork Gears now has the capability to assemble AB series and ILGS series quarter-turn gearboxes from component stocks held at Rochester. In addition, to serve short lead time orders for manual

gearboxes, we now bore and key IW worm gearbox drive sleeves, thread IB bevel and IS spur gearbox drive sleeves and machine quarter-turn quadrants to customers' specifications. This investment in new

## Enhanced Modbus connectivity for Rotork electric actuators

# Actuation Update



**Rotork electric valve actuators are now available with improved connectivity to the popular Modbus automation protocol, facilitating an increased range of control and communication information including historical operating data.**

Fitted within the environmentally sealed actuator enclosure for maximum reliability, the Rotork Modbus card uses the familiar Modbus RTU protocol on a low cost RS485 communication network. With the card fitted, all the normal commands associated with moving the actuator become available on the Modbus multi-drop highway for PLC supervision. When fitted to IQ and IQT intelligent actuators the Modbus card also makes available a subset of the standard data logger feedback information. A torque profile is provided for every valve operation together with the total number of times that the motor starter has been energised in each direction. This information can be accessed periodically to update the control system with the latest data.

Generally, up to thirty-two actuators can be connected to a single RS485 network with a typical cable length of one and a half kilometres and a data transfer speed of 9600 baud, making Rotork Modbus installations ideally suitable for the centralised control of small to medium sized processes such as water treatment plants.

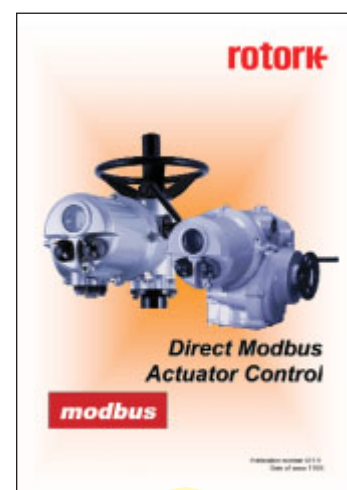
Three versions of the card are available – single channel, with and without repeater, and dual channel. The single channel is the simplest

implementation, connecting the actuator to one RS485 highway and including an additional input for a standard analogue instrument signal. The single channel with repeater module includes an internal repeater to allow the Modbus highway to be extended over greater distances or for applications where a ring is to be constructed. The dual channel module caters for applications where redundant highways are used for high integrity field connection. The two channels are isolated from each other and provide independent communications.

**Modbus connectivity is available for all Rotork current range electric actuators, either as a factory fitted option for new units or retrofitted on existing installations.**

*Left: Rotork Gears' machinist Ray Torres gets busy completing another order for AB series gearboxes at Rochester.*

machinery and increased stock should greatly increase the level of service to existing customers and increase penetration of the small valve manufacturing and distribution markets.



The new Modbus brochure can be downloaded from [www.rotork.com](http://www.rotork.com)

For further information on Rotalk articles and features contact Nicky Harrington at Rotork Bath . . . . ➔



# Seminars spread the IQT word

Rotork International Sales has recently completed a series of seminars to update agents and customers at strategic locations on the benefits of the latest IQT actuator technology.

As these photos illustrate, Rotork agents were given full product training and maintenance seminars in Riga, Vienna and Dubai. Meanwhile, at five locations in India and Pakistan, countries of increasing importance to Rotork, customers were given presentations on IQT actuators and the latest version of IQ-Insight set-up, configuration and diagnostics software. Rotork's success in this part of the world is illustrated by a recent order for over 100 IQ valve actuators for the White Oil Pipeline project.



# Approvals first for Rotork in Australia



Roy Pentland (left) of ISC hands Rotork's AS/NZS3800 accreditation certificate (no. PRD/R61/0143) to Peter Gingell, QA Manager at Rotork Ballarat.

Rotork's subsidiary in Australia is the first valve actuation company in that country to achieve essential third-party accreditation to the latest AS/NZS3800 standard for the overhaul and repair of explosionproof electrical equipment in hazardous atmospheres.

Accreditation is a mandatory requirement in Australia for companies that install or work on electrical equipment in hazardous areas, or have workshops for the repair and overhaul of such equipment.

Companies must prove that they have the approved systems and procedures in place, as well as competent people to carry out the work.

Rotork Australia employed the services of ISC (International Standards Certifications Pty Ltd.) to obtain AS/NZS3800

compliance at its head office workshops at Ballarat to cover the overhaul and repair of all Rotork Exd certified electric valve actuators.

Rotork Australia General Manager Lee Howard comments: "I believe that we are the only actuation company in Australia to receive this accreditation. Access to original Rotork hazardous area certification drawings gives us the exclusive ability to overhaul Rotork equipment to the AS/NZS3800 standard."

# The pressure is on for IQ actuators in China



The IQ intelligent electric valve actuators pictured here are on one of the current total of thirty-eight take-off stations installed on the West to East natural gas pipeline in China.

Rotork is supplying a projected total of over 700 IQ actuators on the 4000 kilometre pipeline, described as the largest and most significant gas industry project ever planned in China.

Rotork actuators on the take-off installations are IQM modulating versions, seen here operating

Mokveld Class 600 axial flow control valves. These are the critical "first in line" control valves that reduce gas pressure from the main transmission line operating pressure of up to 99 bar to the downstream distribution network pressure of 25 to 45 bar. Rotork b.v. in the Netherlands has supplied IQM10 and IQM12 model

actuators to Mokveld Valves for the operation of axial flow control valves in sizes from 100mm (4") to 250mm (10") for off-take applications on the West to East pipeline, which, when completed in 2005, will have the capacity to carry 12 billion cubic metres of gas a year from the Tarim Basin oilfields to the Yangtze Delta.

## Skilmatic in Kazakhstan oilfield development

Rotork Skilmatic has received the first orders for wellhead manifold actuators for the Alibekmola Onshore Infield Gathering project in the Republic of Kazakhstan.

Orders for 130 actuators have been received from Kurvers Piping in Italy for the operation of 100mm Class 900 ball valves on production wellheads in ambient temperatures as low as -35°C. The ATEX approved Skilmatic electro-hydraulic design was selected for the application following eight months of discussions and design work with design contractor Kellogg Brown & Root.

During discussions, space considerations were a major concern. The Skilmatic self-contained design was chosen as the most technically suitable

solution due to the overall space available, speed of operation, low temperature, maintenance and cost. The actuators will be installed in vertical and horizontal orientations on wellhead production and test loops handling crude oil and sour gas at pressures up to 135 bar. The actuators, which operate from a single-phase 230Volt electrical supply, are configured to failsafe closed and equipped with manual hand pump overrides.

It is expected that this project will run for a number of years as this important oilfield is developed and linked to the Caspian Sea and beyond.

## 'Lean' times is good news from Holland

Rotork Gears has announced that manual gearboxes from the Losser factory in Holland will be available on short delivery lead times as new, 'Lean' production systems come into effect. Full details will be published in the next 'Rotalk' issue.

### rotork

<http://www.rotork.com>

*UK head office*

Rotork Controls Limited

tel/ Bath 01225 733200

fax 01225 333467

mail@rotork.co.uk

*USA head office*

Rotork Controls Inc

tel/ Rochester (585) 328 1550

fax (585) 328 5848

info@rotork.com

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