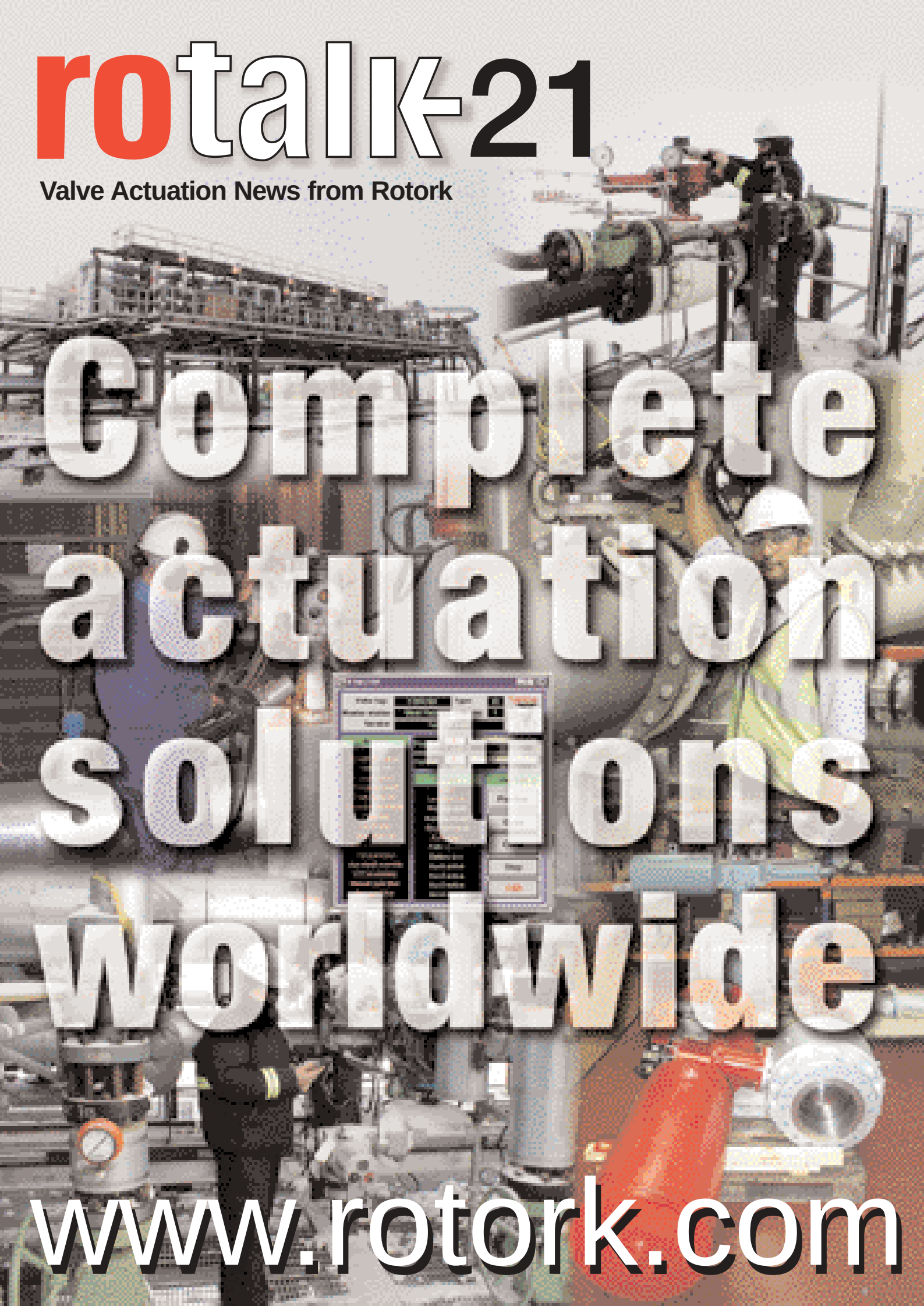
rotalk 21

Valve Actuation News from Rotork



Complete actuation solutions worldwide

www.rotork.com

Contract News

Double the test, double the orders

As reported in the last 'Rotalk' issue, the successful life testing of a Rotork IQ electric actuator – simulating over 50 years of operation by performing 20,000 punishing cycles within a three month time frame – resulted in the award of an order in the USA for over 130 actuators for the expansion of the Explorer Pipeline, delivering petroleum products from the Gulf of Mexico as far north as Chicago.
Tom Matthews, Rotork's sales manager in Houston, has since reported that a subsequent request to perform an identical test with the same sized 24inch Class 600 ball valve from another manufacturer was also successfully completed – using exactly the same IQ70 actuator – which has therefore now completed over 40,000 cycles in its busy life!
At the same time, Tom has also received a second order for the pipeline terminal stage of the project, involving another 40 IQ actuators, complete with a Pakscan IIE master station to provide dedicated two-wire control and monitoring.

Nigerian tank farm success

Rotork Retrofit in the UK has overcome fierce competition from European actuator manufacturers to win an order for the modernisation of over 100 motorised valves on the Nigerian Agip Oil Company's Brass Terminal. Again, IQ intelligent actuators have won the day, together with two Pakscan IIE master station systems, ordered by the Nigerian contractor Sudelletra.

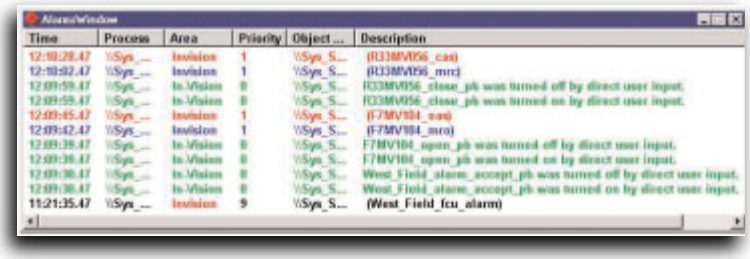
More orders at giant refinery

The giant Reliance oil refinery at Jamnagar on the west coast of India is the destination for more IQ actuators, ordered for a new pipeline distribution network.
This latest order reinforces Rotork's success at Jamnagar, where more than 2500 IQ actuators were installed during construction of the refinery, tank farm and power station during the late 1990's. Occupying a site as large as Central London, the Reliance oil refinery is amongst the world's largest. In many plant areas Rotork Pakscan control systems have also been installed, dramatically reducing the cabling costs of linking large numbers of valve actuators over long distances to Foxboro Intelligent Automation DCS equipment in centralised control rooms.
The latest orders involve over 100 IQ electric actuators to operate valves manufactured by Tyco Valves and Controls Ltd. The distribution network will facilitate the movement of the multi-product petrochemicals manufactured by the refinery to industrial and commercial areas on the Indian subcontinent.

In-Vision brings PC based supervisory control into the 21st century

In-Vision is Rotork's new, user friendly supervisory control and data acquisition software package designed for use with Rotork's Pakscan two-wire control system. Developed from the popular, industry proven Pakvision package, In-Vision runs under Windows 9X, NT or W2000 to introduce many new visual features and operational benefits.

With over 20,000 I/O points, each In-Vision is suitable for automated plants containing up to 480 Pakscan controlled valves. Even larger systems can be controlled by using multiple applications spread across several PCs. In-Vision enables a totally customised, full-colour visual display of the site to be used to monitor and operate the plant using information collected on the Pakscan two-wire control bus. Customisation options include the ability to include photographic images on the animated screen overviews and close-ups that display general plant conditions. Detailed examinations of chosen plant areas can be performed using enlargements featuring coloured animations to highlight alarms or areas requiring attention. To further facilitate plant operation, every In-Vision system incorporates multiple windows providing status and alarm information and showing the condition of every actuator and master station on the Pakscan

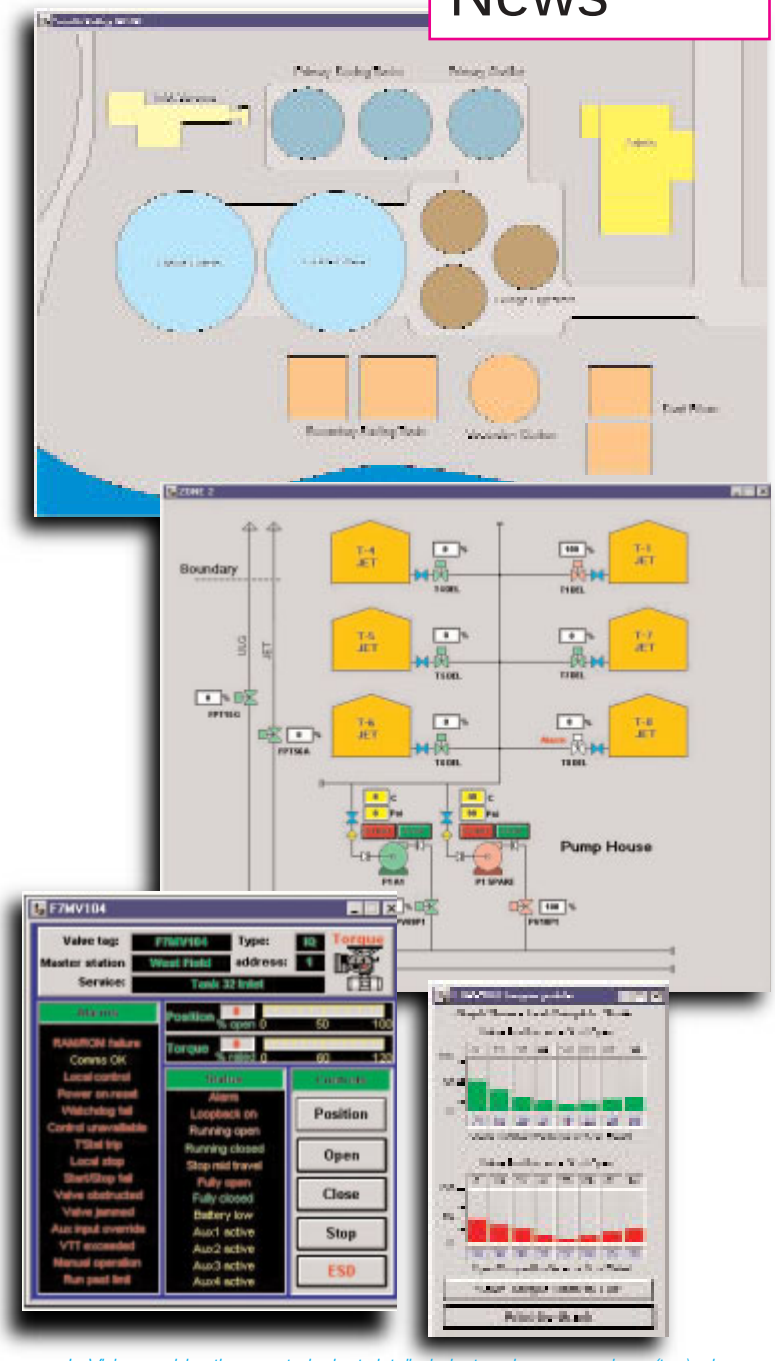


Get the brochure: Contact your local Rotork representative or visit www.rotork.com

Electric actuators for small valves

A new range of compact, direct drive quarter-turn electric actuators for the inexpensive motorisation of small ball and butterfly valves, dampers and louvres is now available from Rotork.
The new units, designated ROM and RBM, complement Rotork's established ranges by extending the scope for directly mounted electric actuation down to valves typically as small as 12mm (½"). Applications include heating, ventilating and air conditioning equipment, chemical processing plant and the food, dairy and drinks industries.
All models feature a watertight enclosure conforming to IP67 (NEMA 4/4X), equipped with continuous local position indication as standard. A comprehensive list of options can be specified, including adjustable torque switches, remote position limit switches, current position transmitter, potentiometer, modulating controller and local control switches.
Available for AC single and three phase or DC operating voltages, all ROM and RBM actuators feature rugged, self-locking and permanently lubricated gear trains for accurate and repeatable performance, offering long term reliability under every day working conditions.

Actuation News



In-Vision enables the user to look at detailed plant and zone overviews (top), alarm screens (left), system status screens (above) and, with IQ actuators, torque profile panels for individual valves (above, right).

system. Audible warnings and action confirmation dialogue boxes can be included to enhance safety where plant controls are critical.

Historical event and alarm data is automatically logged by In-Vision and may be viewed, printed or exported for further analysis on spreadsheets or similar applications.

When used with Rotork IQ actuators, additional displays may be incorporated to show a graph of the torque values at various positions in the valve stroke as the valve opens and closes.

This information may be used in combination with the historical data to maximise plant availability and accurately prepare preventative maintenance schedules.

The In-Vision MD version enables this information to be used as an economical maintenance and diagnostics utility without the customised display and control abilities inherent in the full In-Vision software package.

All that is needed to use In-Vision – which is supplied on a CD-ROM as a run-time version as standard– is a 100Mhz or above Pentium class PC with 128 MB Ram and 200MB free hard disk space. Alternatively, the Rotork TSI touch screen interface – available in a weatherproof enclosure for installation within the plant itself – can be used.

Rotork actuates revolutionary power industry storage plant

Innogy project engineer Abid Sayeed with a Rotork IQ12 actuator operating a 600mm isolating butterfly valve on the electrolyte pipework at Little Barford.

Rotork IQ intelligent electric valve actuators are used in a revolutionary energy storage plant – a giant battery which, the designers say, could change the face of the power industry.

The world's first full sized plant to use the Regenesys regenerative fuel cell technology is nearing completion in the UK on a site adjacent to the 680 megawatt gas fired Innogy Little Barford combined cycle power station.

The energy storage system, developed by Regenesys Technologies Ltd, a subsidiary of Innogy plc, uses regenerative fuel cells to convert electrical energy to stored chemical energy. Two electrolytes are pumped through the fuel cells in individual circuits separated by an ion exchange membrane. When storing energy, the electrolytes convert to a charged state and can be discharged to release energy. This cycle can be repeated as required for the duty of the plant.

The plant will be operated from a central control room, using a Foundation Fieldbus open control system to communicate with an Allen Bradley PLC. In addition to Foundation Fieldbus connectivity, the Rotork actuators are independently linked to an ICS Triplex ESD (Emergency Shutdown) system.

Roughly the size of a typical DIY store, the Little Barford plant will have a 15MW output and be able to store 120MWh of electricity. The plant has been designed to meet the National Grid Company's requirements for 'Black Start' provision at the Little Barford power station, supplying enough power to restart power generation in the event of network interruption.

The plant will also supply electricity to the National Grid at times of peak demand, having been charged at off-peak periods. The technology is very flexible and can be installed virtually anywhere on a power system. As Antony Price, Innogy Technology Venture's marketing manager explains: "This is a very exciting technology that could change the way power systems around the world are planned and operated in the future."

Telephone (+44)(0)1225 733200 or email katrina.swinson@rotork.co.uk

Contrasting environments on both sides of the world

Rotork actuators in Arctic Circle oil developments

Rotork IQ intelligent electric valve actuators are being installed on an oil industry development scheme situated in one of the coldest and most exposed environments in the world.
Situated within the Arctic Circle on the northern coastal slope of Alaska, Borealis and Meltwater are new oil fields being developed to offset declining production from the adjacent Prudhoe Bay field.
The Rotork actuators are installed on prefabricated, skid mounted plant sections, known as pads, that are specially designed to operate in harsh sub-zero temperature conditions and shipped to site as a series of modules. In the Arctic environment the user-friendly virtues of Rotork's non-intrusive commissioning and interrogation technologies are particularly appreciated, eliminating the need to remove electrical covers or perform any mechanical adjustments in the freezing conditions.
Rotork actuators operate high pressure ball, choke, globe and plug valves on the two sites. At the Borealis site, which is operated by BP, the inclusion of a Rotork Pakscan two-wire control and supervision system has been very favourably received. Being the first Pakscan installation on the Alaskan northern slope, it has particularly impressed its operators with its diagnostic abilities. At Meltwater, operated by Phillips 66, Modbus and Extended Modbus protocols are used for actuator control in the majority of cases, linked to a Pakscan system in one area. In total, almost 200 IQ actuators have been installed at the two sites – virtually all fitted with Exeeco gearboxes – together with a number of Rotork Fluid System P range pneumatic actuators.

Rotork engineer Mike Joslin demonstrates the user-friendliness of non-intrusive IQ actuator commissioning in the freezing conditions of BP Borealis (above) and inspects one of the P range pneumatic actuators installed at the same site (top).

Below
Trevor Downing from Stanwell Corporation and Rotork's Jeff Quarrell with seven of the newly installed AQ actuators in the generator hall at Kareeya Hydro.

and Australian tropical rainforest power plant upgrade

Rotork electric valve actuators have been specified during a modernisation project at an important hydro-electric generating plant serving the state of Queensland in North East Australia.

Rotork Australia at Brisbane supplied 70 AQ range IP68 watertight quarter-turn electric actuators to operate ball valves installed at the Kareeya Hydro on the Tully River as part of a project to automate the hydraulic operating system on the main turbine feeder valves. Situated in an area of tropical rainforest in Northern Queensland, the Kareeya Hydro – which takes its name from the Aboriginal word meaning "big water" – has been generating electricity since 1957. The 72 megawatt plant plays an important role in meeting Queensland's peak load electricity requirements, whilst its fast response time also contributes to the security of the state's electricity distribution system.
The four 18 megawatt turbo generating sets each consist of two Pelton turbines and a generator. Water is discharged at high velocity through two nozzles on each turbine, striking wheels equipped with 22 buckets (or 'Pelton runners').
The plant is operated by Stanwell Corporation, who have used Rotork valve actuators for a number of years on power industry projects throughout Queensland. The AQ actuators for Kareeya were supplied by Rotork to Fluid Controls of Brisbane for attachment to the valves.

Rotork achieves 'one stop' solution to 'two shifting' problem

Economiser re-circulation pipework at Ratcliffe, equipped with failsafe Rotork Skilmatic SL and SHL linear and SQ quarter-turn modulating actuators, together with Rotork IQ25 and IQ12 isolating actuators.

A complete 'one stop shop' package contract, involving the installation of new Rotork actuators and control valves, together with associated power and control systems, has been successfully completed at the Powergen Ratcliffe power station. The multi-disciplined contract was awarded to Rotork company Exeeco by main contractor ALSTOM Power Ltd, Performance Projects Derby, as a major part of the work involved in upgrading the station to 'two shift' operation.

'Two shift' operation, which is required to meet the demands of the National Grid, requires that the station is able to come on and off load each day. This continuous process creates large temperature fluctuations, causing huge stresses in the boiler equipment, which are overcome by the installation of a pumping system that continues to circulate heated water around the boiler during the off load periods.

The complex new plant – known as the economiser re-circulation system – needs to detect the temperature of the re-circulating water and control the flow to keep a constant temperature throughout the boiler tubes. Accuracy, fast response to temperature changes, high pressures and high flow rates are all important factors to be considered by the system designers. Rotork IQM and Skilmatic quarter-turn and linear electric actuators were incorporated into the system design due to their ability to modulate continuously as the temperature changes occur. In addition IQ25 and IQ12 actuators were installed on the system's isolating and bypass valves.

Exeeco was awarded the actuator control contract as a complete package, encompassing the design, manufacture, procurement and installation of all power and control cabling, marshalling boxes, power distribution equipment, linear control valves, quarter-turn ball control valves and actuators in accordance with the demanding control philosophy dictated by the customer.

The 'one stop shop' contract provided a total solution for the project, ensuring that the completed system meets the desired specification, whilst simplifying contractual complexities for all the involved companies.

Rotork in Control

Electric and Fluid System actuators chosen for Mexican petroleum industry

The petroleum industry in Mexico has ordered Rotork electric and Fluid System actuators for a number of major onshore and offshore projects.

Electric actuator orders involve a new six part metering skid project, including fixed bi-directional calibration provers, controlled and monitored by a Rotork Pakscan two-wire system at Tuxpan in the State of Veracruz.

A total of sixty IQ actuators operate valves in sizes up to 30 inches on pipelines that bring base gasolines from offshore for storage at the Pemex-owned Terminal Martima de Tuxpan prior to processing at the Tula and Salamanca refineries in Mexico's Central Republic.

Rotork worked closely with Pemex Refinacion to get isolating and modulating IQ intelligent electric actuators specified on the project, together with the Packscan supervisory control systems, which are widely used in virtually all the tank farms in Mexico. Our agent's fast reponse to the quotation requirements and specification writing, combined with proven support with the commissioning of actuators and control systems, all contributed to winning the order in the face of fierce competition from the USA and Europe.

Fluid System orders total nearly 200 GP and P range pneumatic actuators, valued at USD 2.5million, manufactured and packaged at Rotork Rochester for three EPC (engineering, procurement and construction) projects on offshore platforms in the Bay of Campeche. In the largest project, 161 GP and P range actuators will perform emergency shut down valve duties on three drilling complexes and five peripheral platforms sited in the Cantarell Field as part of a multi-million dollar increased production project undertaken by Pemex. In another area of the Bay, GP range actuators have been introduced on the second part of a project where a competitor's actuators were originally installed, enabling the users to compare the product quality and local service abilities of both manufacturers and use this information to influence further purchase decisions.

One of the Rotork-equipped platforms in the Bay at Campeche.

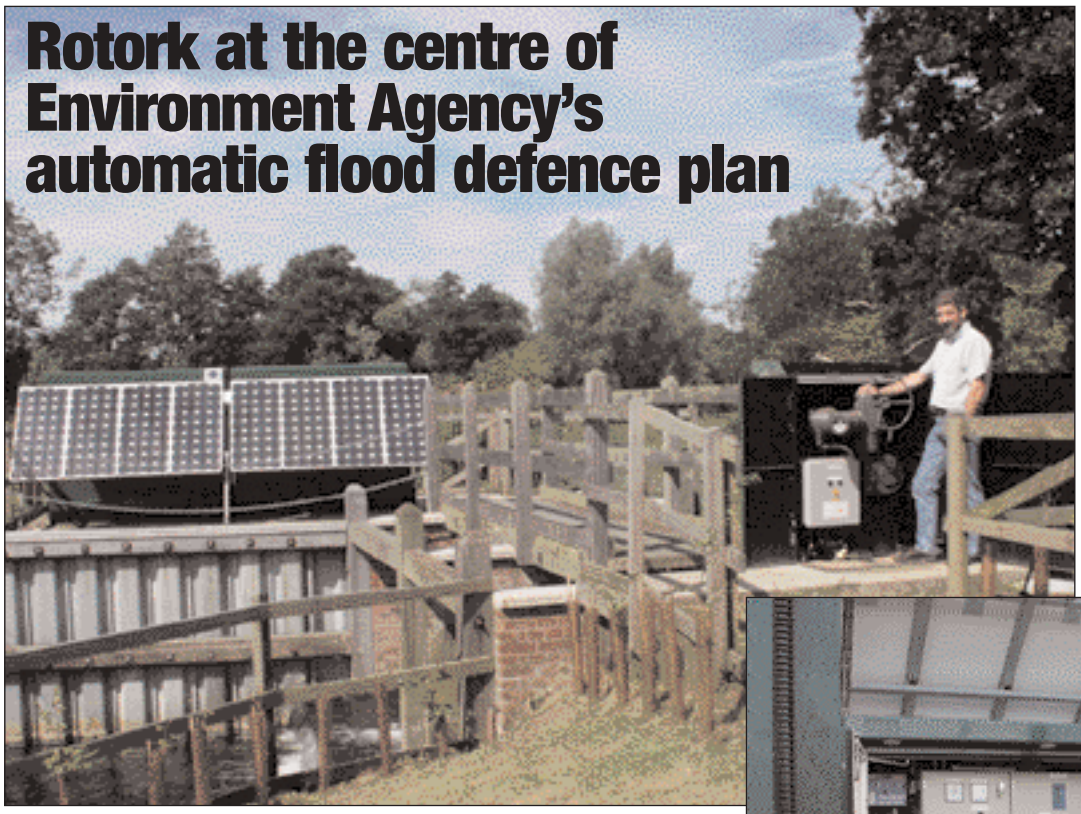
New framework agreements for water industry valve control and services

Rotork's UK water industry framework portfolio for electric valve actuators, control systems and support services has been augmented by the recent award of four new agreements.

In the first, Rotork will supply a complete package of valve actuation services to Yorkshire Water, encompassing actuators and control systems for new or existing plant at water and waste treatment sites throughout the area. This is Yorkshire Water's first

Continued Overleaf

Rotork at the centre of Environment Agency's automatic flood defence plan



Rotork electric valve actuators are being used throughout an innovative river level management automation project performed by the UK Environment Agency in the Anglian region. The ambitious project, designed to improve flood protection in Norfolk and Suffolk, involves automating manually operated sluice gates at river weir and bypass channel locations throughout the area and linking them by telemetry to centralised control rooms.

Traditional manual operation of these sluices could be labour intensive, time consuming and inefficient, as Environment Agency M & E Flood Defence Engineer Ivan Nicholls, who is project manager for the automation scheme, explained: "In many cases it could take a long time even to reach the sites, some of which are in remote locations with poor access. Also, especially at night, they can be potentially hazardous, demanding the despatch of two men per visit for safety reasons.

"Operating the sluices manually provides a relatively crude adjustment, usually fully raising or lowering the gate, which may not always suit prevailing or subsequent river conditions. Electric actuation, working automatically in response to a signal from an upstream level sensor, introduces the ability to raise or lower the gates in small stages at frequent intervals, and therefore react with far more accuracy to changing river conditions.

"However, the lack of a mains electricity supply at some locations was a fundamental complication demanding a well thought out solution before the automation scheme could proceed. Our enquiries revealed that Rotork manufactured a suitable actuator for this type of application which would operate from a DC stored energy source. We were therefore able to design an entirely self-contained package, including all the control elements, running from a bank of batteries that are kept charged by wind and/or solar power. The first site to be modernised, on the River Yare at Keswick Mill near Norwich, was commissioned in 1999."

The plant installed at Keswick Mill is typical of all the battery-powered sites, although it is unusual in having both solar panels and a wind turbine generator. Four solar panels and the turbine are used to charge the 48 volt batteries for actuator operation, whilst one solar panel is dedicated to the 12 volt control and telemetry system. A Milltronics ultrasonic level sensor and controller communicates with the actuator via a 4 to 20 milliamp analogue gate positioning signal. In order to maximise energy preservation, the plant is normally "asleep", waking every hour to check its status and make any adjustment to the gate position before closing down again. By making only small adjustments at hourly intervals the system is able to react accurately and sympathetically to the status of the river, without the danger of over-compensating for changes in the water level. Real-time data from the site is transmitted to the Environment Agency's Anglia Region telemetry system control rooms at Peterborough and Brampton, and can be accessed at other control rooms.

Downstream from Keswick, the multiple gate weir at Trowse is one of the sites where the Environment Agency has been able to install the latest Rotork IQ intelligent electric actuators, due to the availability of a mains power supply. A Mitsubishi PLC with MMI (Man Machine Interface) touch screen control panel is utilised for mains powered sites, enabling the control system for all actuators on the site to be housed in the same sized compact cabinet as the single gate battery-powered sites. At Trowse the introduction of the automatic river management scheme has been blended in with an impressive new housing development, built on the site of a derelict printing works.

Further automated sites include Hellesden Mill at Norwich on the River Wensum and Glevering Mill near Woodbridge on the River Deben. At all the sites the Environment Agency has carried out the civil and mechanical work whilst the equipment design and installation has been performed by Dabbrooks (Eng) Ltd of Great Yarmouth. Rotork's recent announcement of a DC version of the IQ intelligent actuator introduces the ability to standardise on the IQ for all future sites, whether mains or battery powered. With this in mind, Ivan has recently signed a framework agreement with Rotork for the Environment Agency Anglian Region.

Ivan Nicholls demonstrates the solar powered Rotork actuator installation at Glevering Mill (left) and the 12volt telemetry and control system installed at Keswick Mill (below).

Rotork in Control

Continued from previous page

framework agreement to cover valve actuation equipment, further strengthening the close relationship with Rotork that has been developed over many years. In a similar move, West of Scotland Water (now Scottish Water) has signed up Rotork to supply electric actuators and support services for new plant and refurbishments. This agreement comes at a time when an important modernisation programme is being planned and implemented at clean and waste water plants throughout this area of Scotland.

Meanwhile, Severn Trent Water has reappointed Rotork for a further framework period following the expiry of its original five year agreement, whilst Rotork's framework agreement with Southern Water has also been extended for a further period. Rotork has been amongst the pioneers in establishing such agreements. In addition to the above, Rotork has frameworks with Thames Water and South West Water.

Jordan electric modulating actuators in the power and oil industries

Gas lift automation – digital or analogue control

Jordan 1000 series actuators have a proven record of more than four years of reliable choke valve operation in over 3000 continuous gas lift well applications. Available with linear or multi-turn outputs, the 1000 series operates with a low current draw from a 24V dc power supply, making it particularly suitable for battery operated applications. This not only minimises capital plant costs in remote or offshore locations but also introduces the possibility of using solar panels to maintain battery power sources. To further preserve power a sleeper circuit version reduces power consumption to only 0.9mA if a control signal is not received after two seconds. Modulating control can be communicated by means of a 4 to 20mA analogue signal or a HART digital multi-drop diagnostic circuit. The compact, corrosion resistant design further contributes to a low maintenance service life that has provided up to 15% savings in operating costs compared to traditional choke valve actuation whilst improving production output by 12% through the ability to quickly and economically alter operating parameters.

SM6000 – the new name for high performance

SM6000 rotary actuators deliver positional accuracy within one tenth of 1% throughout a standard stroke of 313 degrees. Designed for precise damper operation in power generation, steel mill, paper making and oil refining industries, the SM6000 provides up to 36,540 Nm (26,000 ft lbs) of torque at high speed for unrestricted, continuous modulating duties in exposed environments. An internal digital amplifier is fitted for commissioning and programming, which is easily achieved by means of an innovative keypad and fluorescent display on a control panel that is either attached to the actuator or mounted separately. SM6000's can be specified for single or three phase power operation, with manual override fitted as standard. The actuator is self locking in position on loss of power, whilst loss of control signal can be programmed to either stay-put or move to pre-set failsafe position modes.

Find out more about Jordan: www.jordancontrols.com

Valvekits expands into Europe

Actuation News

Rotork Valvekits has built a reputation in the UK for next day and express deliveries of custom made stainless steel valve mounting kits. This service is now available on the European mainland.

In response to customer demand for fast, guaranteed deliveries, Rotork Valvekits has launched this service from a new base in Losser, Netherlands, which is centrally located for all northern European countries. Complementing this service is a new catalogue which contains comprehensive mounting kit drawings and an easy order guide, supported by an innovative CAD software based design service. Kits to either ISO5211 or customised dimensions are made to order or selected from an extensive stock held at the new European manufacturing satellite. Quality control is maintained as all design work is performed at the company's Nottingham UK headquarters, with manufacturing activities completed by dedicated Rotork Valvekits personnel. Rotork Valvekits managing director Martin Hunt explains: "This venture will develop relationships with existing and new customers in Europe by providing important local support for the entire range of products offered by Rotork Valvekits."

Heavy duty spool kits for oil and gas industry valves

This large oil industry high pressure ball valve and pneumatic actuator is one of a number united by means of custom built spool kits supplied by Rotork Valvekits. As the UK's leading valve accessory company, Valvekits is best known for activities involving small and medium sized valves, although it also has the engineering and production resources to manufacture adaption and spool kits for the largest valve and fluid power actuator combinations used in the oil, gas and petrochemical industries. Valvekits' spool kit service encompasses design, stress calculations and manufacture for valve sizes up to or in excess of 900mm (36"). All activities are performed to ISO 9001 quality standards and include full material certification when required.

Valvekits has launched a complete range of high quality fabricated steel handwheels, available in sizes from 150mm (6") to 1200mm (48"). Applications include gearboxes, valves, shutters, chainwheels and manual extensions.

Contact Rotork Valvekits: hmutters@valvekits.co.uk

Rotork
Fluid System

Rotork awarded critical duty contract by Shell Expro

Rotork Fluid System has been selected by Shell Expro at Aberdeen to supply failsafe pneumatic valve actuators for an emergency shutdown critical duty offshore application.

The fast-track contract, achieved in ten weeks by Rotork Fluid System's centre of excellence at Leeds, involved fitting and testing Rotork RP and GP actuators with ANSI Class 900 metal seated ball valves manufactured by International Ball Valves Ltd. The completed valve packages are being installed on Shell's Anasuria Project in the North Sea FPSO Central Field.

Left:
Some of the completed Rotork Fluid System actuated valve packages destined for the Shell Anasuria Project

Rotork's UK Fluid System Divisional Director Mark Thomas describes the order as "a significant step; our ability to design, fabricate and deliver in such a short timescale was paramount to securing the order."

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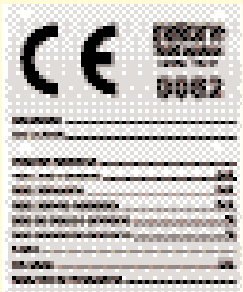
Approvals news:

PED

Rotork Fluid System actuators are now approved in accordance with the European Pressure Equipment Directive (PED) when applicable, following validation conducted by Bureau Veritas. Where required, all pressure vessels now carry the CE mark.



GOST

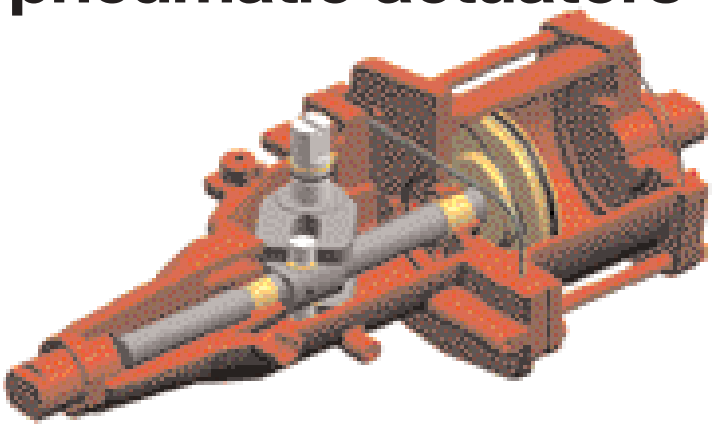
Rotork Fluid System has also successfully obtained GOST approval, enabling the product range to be used in Russia.

New Italian sales office

The sales office for Rotork Fluid System in Italy has moved to new premises at the following address:

Via Scapuzzi 44/D
Fiorenzuola d'Arda
Piacenza 29017
Telephone +39 0523 243311
Fax +39 0523 243310
Email: sales@fluidsystem.it

CP range – the new name for compact pneumatic actuators



Rotork Fluid System has introduced a new range of small quarter-turn pneumatic actuators, enabling the proven benefits of Rotork's larger, heavy duty scotch yoke actuator designs to be applied to the operation of small to medium sized valves.

Like its big brothers, the CP range features a sturdy, modular design. Internal support bearings in the fully sealed centre body maintain piston alignment to ensure a long service life, whilst the nitrided yoke provides enhanced bearing surface performance. Cylinders are electroless nickel plated on internal surfaces to prolong piston seal life.
The dual mounting capability facilitates open or close failsafe operation, with control mounting pads on both body faces to assist with the packaging of control equipment. NAMUR standard drive shaft dimensions are compatible with most valve designs, simplifying the adaptation requirements.
Designed for a maximum pneumatic operating pressure of 12 Barg, CP actuators provide an end of spring torque range of 28Nm to 1456Nm. The modular design enables actuator components to be swiftly assembled from stocks that will be held at Rotork Fluid System centres of excellence around the world.

- ❑ **PED compliant**
- ❑ **Suitable for SIL applications**
- ❑ **NAMUR standard interface facilitates accessory mounting and reduces costs**
- ❑ **Versatile dual valve and accessory mounting faces**
- ❑ **Modular design provides for easy and efficient stockability**
- ❑ **Outboard mounted pneumatic cylinder for serviceability**
- ❑ **Electroless nickel-plated cylinders**
- ❑ **Integral manual override**
- ❑ **Optional materials: stainless steel cylinder cast steel body**

For further information, ask for publication F1100E.

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