

rotalk 26



Exclusive

Rotork is proud to announce the launch of the New IQ Pro



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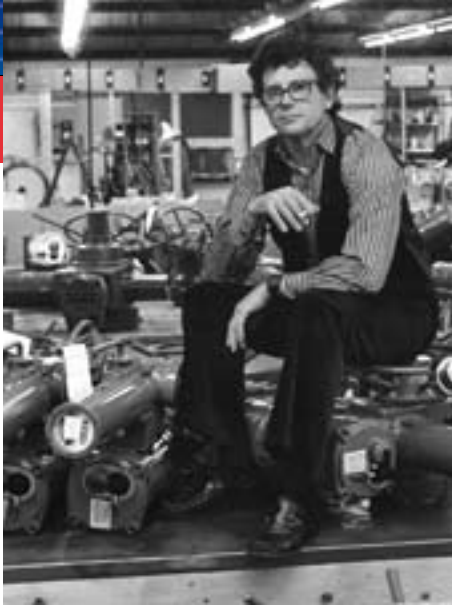
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JEREMY FRY - A CELEBRATION OF THE FOUNDER OF ROTORK

PLUS:
Rotork Around the World
Success stories from around the world



Jeremy Fry 1924 – 2005
Founder and Chairman of Rotork
1957 – 1984

Engineer, inventor and entrepreneur Jeremy Fry – the second son of the last chairman of the Fry’s chocolate business – founded the Rotork Engineering Company in 1957. The discovery of a disused electrically powered water valve in an old iron foundry owned by Frenchay Products Ltd – an aircraft component company set up by Jeremy and his brother David – was the spark that ignited the Rotork story. Jeremy was intrigued with the idea of specialising in the design of electro-mechanical valve actuators and thereafter this became the enduring focus of his innovative and creative talent.

At that time the Fry family lived at Widcombe Manor, a beautiful Georgian house with gardens on a Bath hillside. The house was well known for the Fry’s fondness for entertaining – Jeremy’s life-long friends Antony Armstrong Jones and Princess Margaret were frequent visitors – but Widcombe Manor also became the first and unlikely home for Rotork. Here, Jeremy and a small team of engineers began the development of design benchmarks that still define the modern electric valve actuator, converting what had previously been a machine that was fabricated for each individual valve into a product range, built from standard modules and suitable for all valve types.

Orders were taken and actuators built in the basement, often leaving the Georgian splendour of Widcombe Manor on the back of the Ford Thames Trader lorry that was parked in the driveway. Employees remember how informal it all was, an extension of home life rather than going to work. For Jeremy it was natural to be actively involved in all areas of the business and he expected the same enthusiasm and interest from all of his team. He had the ability to inspire those who worked with him and he entrusted them with considerable responsibilities – irrespective of age and experience.

In memory...

Entrepreneur and inventor Jeremy Fry

Even years later, when the company was first established at its permanent factory site, Jeremy would spend hours on the shop floor assembling components to meet a crucial delivery deadline, or, when the rising waters from the adjacent River Avon threatened to flood the works, join in as the whole workforce moved endangered stock to higher ground.

Much early progress was made in the Middle East, with Rotork actuators installed in the hazardous areas of oil refineries, pipelines and loading jetties. The challenge was to make the equipment both explosionproof and watertight. Jeremy was on a sales trip to Saudi Arabia when he discovered how this design criterion could be accomplished, triggering the radical redesign of Rotork actuators with ‘O’ ring sealed enclosures that were totally protected from the environment when all the covers were in place.

The fundamental breakthrough in sealing was thus achieved, enabling the actuator to develop into an increasingly self-contained and sophisticated device. This was the beginning of Rotork’s spectacular growth. By 1964 Jeremy was able to announce the launch of “The last word in valve actuation, a new revolutionary system..... the only method of its type in the world, the standardised valve actuator which the firm has been working towards ever since its modest beginnings ten years ago.”

In the same year the press reported: “Rotork Engineering Co. Ltd, Bath, have secured \$150,000 of orders for the USA. This follows a sales tour by Mr. Jeremy Fry, head of the firm, who visited about 23 engineering and petroleum industry centres in the US. He conducted lectures and led discussions with demonstrations of working models of Rotork’s range of electric actuators.”

There had been many other successes – the largest an order for 1000 actuators for the French nuclear industry in 1963 – whilst industry in general adopted the concept of centralised control inherent in Rotork’s product

philosophy with enthusiasm. Jeremy’s ideas were very much in tune with the times and by the early 60’s Rotork had fifteen international patents and businesses or licence agreements in six countries, Annual production exceeded 1000 units in 1960, the first production line was established in an old mill and in 1962 a new Rotork factory was built in nearby Brassmill Lane, which is still the company’s international headquarters.

The new factory expanded in an open plan fashion, bereft of the management/worker layout and atmosphere that typified much of British industry in those days. Visiting firms’ representatives were heard to remark that Rotork was far too “modern” to be British, and surely must be an American company! In fact, Rotork was a dynamic British company that would soon be expanding into manufacture in the USA.

Rotork grew even more quickly during the 1970’s when the Rotork name was also associated with additional Jeremy Fry interests including the Sea Truck and the Cyclone vacuum cleaner from which the Dyson evolved, as well as new engineering businesses that were added to the group. Sales Conventions were introduced in order to keep everyone fully informed of the latest developments and a research department was established at Le Grand Banc, a derelict village in France that Jeremy was renovating. Throughout it all, employees recall those days with affection, remembering how informal it all still seemed and how different from other engineering companies it was.

When Jeremy Fry retired in 1984, he had directed his company over a period of twenty-seven years from a workbench in his basement to a leading international engineering group with annual actuator sales of £21 million. Jeremy’s life was filled with many engineering, architectural and artistic achievements. Of these, the creation of the modern electric valve actuator surely represents his most significant and prevailing industrial legacy.



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INDUSTRY LEADING VALVE ACTUATION
NEWS FROM THE WORLD OF ROTORK

COVER: INTRODUCTION OF THE IQ PRO

The new evolution of the best selling IQ actuator range brings new text displays, performance monitoring and datalogging together with a new non-intrusive, intrinsically safe Rotork Setting Tool Pro.....**10**

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COMPANY NEWS



Photos on this page show activity at the Rotork Gears Srl factory including testing of Sub Sea gearboxes

Gearbox merger strengthens manufacture, service and support

Rotork's market leading international valve actuation group is further enhanced by the acquisition of the business and assets of Omag Snc, a respected Italian valve gearbox manufacturer based in Milan.

The acquisition provides Rotork's Gears division with a manufacturing and sales base in the heart of the globally significant Italian valve market in addition to its current manufacturing and assembly sites in the UK, USA and The Netherlands. This will produce a significant step forward in European sales and enable Rotork Gears to improve its service to the Italian valve industry.

Sales Director Ahmed Lakoues explains:

"Omag is viewed in the market as a specialist with unrivalled experience of subsea valve gearbox design. In addition Omag's products will complement Rotork's existing manual and motorised quarter-turn ranges, especially on the large sizes, by increasing torque outputs to 500,000Nm. Rotork will enhance this business with its prominent brand name, world-wide support, financial strength and first class gearbox and valve accessory products."

"The Omag name has changed to Rotork Gears Srl to gain the advantage that the Rotork brand brings to this business and to ensure that new colleagues feel included in the international Rotork family. Omag's owner, Roberto Boldorini, a well respected engineer in the industry, has accepted the new position of General Manager of Rotork Gears Srl."



Exeeco wins OHSAS 18001 health and safety award

The prestigious OHSAS 18001 accreditation for health and safety management has been awarded to Exeeco, the specialist actuation, projects and service company within the Rotork Group.

OHSAS 18001 is the official assessment specification for Occupational Health and Safety Management Systems, developed in response to the need for companies to meet their health and safety obligations in an efficient manner. Exeeco sales divisional director Martin Cheetham explains: "This is a prestigious award that further demonstrates our ongoing commitment to health and safety. The standard covers all the work related activities of Exeeco, Rotork Gears, Rotork Skilmatic and Rotork Fluid System performed at our Leeds facilities and at our customers'

premises. Our clients can therefore be assured that we employ best practice in all we do, in line with this internationally recognised standard."

Assessment to OHSAS 18001 ensures that a company takes effective measures and implements the necessary rigorous controls to ensure that safety and risk issues associated with working activities are accurately identified and managed.

Much of Exeeco's work involves the modernisation and upgrading of valve actuation and control equipment during the limited timescales imposed by routine outage programmes on customers' sites. The improved safety levels and risk management inherent in OHSAS 18001 demonstrate a commitment to health and safety issues that is particularly relevant to working in these environments.



Above: Exeeco upgrade in UK power station.

Right: The OHSAS 18001 certificate.

Fluid System—the capacity for market leading success

Rotork Fluid System (RFS) was created as a separate division in 2001 to meet the burgeoning demand for Rotork's pneumatic and hydraulic actuator products. Today RFS produces a full range of linear and quarter-turn pneumatic, hydraulic, gas-over-oil and electro-hydraulic actuators and is one of the fastest growing areas of Rotork business.

The major expansion of Fluid System actuator production first started in 1999 with the purchase of the established manufacturing plant in Lucca, Italy, at the centre of the European valvemaking industry. A subsequent relocation in the city increased manufacturing space by a factor of five by 2002. Further expansion has been achieved through acquisition. For example, German company PCI, purchased in 2005, added complementary high-pressure pipeline products and expertise as

well as providing a strategic base for important markets in Germany, Eastern Europe and Russia.

Lucca remains the main manufacturing centre, supported by RFS factories in the UK, USA and Germany. Investment in engineering and product development has doubled in the last two years whilst the international nature of the business and Rotork's desire to be partners, rather than just suppliers, has generated a growing network of Centres of Excellence to meet the specific demands of local markets.

Centres of Excellence facilitate closer relationships with customers by delivering a product based on Rotork's global, proven technology, but tailored to the regional market. They will typically draw the basic actuator from their own stocks, buy the controls locally, assemble and test the unit and finally provide all necessary documentation and qualifications. Currently, there are nine Centres of Excellence in the UK, USA, Canada, Australia, Singapore,

Germany and Italy. Full details for your nearest RFS office can be found at www.rotork.com/contact/rfs.cfm



Top: Pre-compressed spring packs for 1/4 turn and linear operators in the Lucca, Italy factory.

Bottom: Final assembly line at the Rochester, USA plant.

Sub Sea test sinks to new depths

Rotork Gears' SSW9 sub sea gearboxes have undergone hyperbaric testing to a depth of 2,400 metres as part of a recent contract. Successful testing at this depth was regarded as essential although the actual operating depth for the units is only half this distance – a mere 1200 metres!

Four gearboxes were supplied to Bel Valves Ltd in the UK for the operation of 250mm (10 inch) Class 5000 top entry ball valves. The SSW9 gearboxes were supplied with ROV interfaces via 1.3 metre extension spools. Gearbox and extension spools were supplied with separate pressure compensators.



Rotork Gears SSW9 sub sea gearbox and valve assembly.

CONTRACT NEWS

Emission reduction initiative introduces Jordan actuators at Drax Power Station

Rotork Jordan electric modulating valve actuators have been introduced at the 4000MW Drax Power Station during the latest part of the station's environmental upgrade programme. The Jordan actuators will provide improved boiler control in advance of LCPD (large combustion plant directive) legislation that comes into force in 2008.

Drax is the UK's largest fossil fuel power station and also the cleanest and most efficient, already utilising FGD (flue gas de-sulphurisation), BOFA (boosted over-fire air) and low NOx burner technologies. Complying with LCPD now involves changing existing control systems and enhancing the reliability, control accuracy and maintainability of actuators and final control elements on the affected boiler plant. This continues the removal of redundant and unreliable actuators which has seen the introduction of Rotork IQ and IQT intelligent electric actuators throughout the site, with over 1000 Rotork units currently in operation.

The Rotork Jordan SM6000 electric actuators are specially designed for continuous, high speed modulating control in very high ambient temperature environments. To improve the combustion process at Drax they have replaced old hydraulic units that have proved costly to service and repair and presented a potential damage and fire hazard to surrounding plant from leaking hydraulic fluid.

The first batch of Jordan actuators has been installed on twenty secondary air dampers and eight super-heater re-heater bypass dampers on the first of Drax's generating units during 2005. The entire project involves a total of 84 actuators, which will make

Drax the largest single site user of Jordan SM6000 actuators in the world.

The Jordan actuators have been specified and supplied by actuation and maintenance specialist company Rotork Exeeco. Sales Director Ian Elliott comments: "This is a prestigious contract for our Jordan product range and will enhance our position for the introduction and installation of the SM6000 actuator and control systems at further power stations in the UK and Europe ahead of the LCPD deadline.

"The contract was won on specification and price in the face of rigorous competition from manufacturers in Europe, which is where we now confidently anticipate similar success for these products."

Nick Parker, Drax project manager and Rob Wilson, C & I engineer both commented after the factory acceptance test at Jordan's manufacturing plant in Milwaukee, Wisconsin: "We already had high confidence in the Rotork product range and the services of Exeeco, and we quickly realised that the quality of the Rotork Jordan company was consistent with our expectations. The products are well designed and manufactured to a high standard, giving us every confidence in their long term performance in this particularly harsh and critical application."



One of the SM6000 secondary air damper actuator installations at Drax.

"The contract was won on specification and price in the face of rigorous competition from manufacturers in Europe, which is where we now confidently anticipate similar success for these products"

Rotork Valvekits' ATEX Profibus switchboxes specified for Singapore's giant new waste water plant

Rotork Valvekits' Profibus-enabled switchboxes have been specified for the giant new state-of-the-art waste water treatment plant at Changi in Singapore. The switchboxes are fitted to pneumatic actuators which – combined with a quantity of Rotork IQ electric actuators currently exceeding 2000 – represent one of the largest Profibus controlled valve actuation networks in the world.

The Rotork Valvekits Circa 7000 ATEX Profibus switchboxes were specified by USA and Singapore based Changi design consultants CH2M Hill. Each Circa 7000 box is capable of controlling up to 64 valve actuators on a single 2-wire loop of up to three kilometres length, utilising a directly oper-

ated 3/2 solenoid. The Circa range encompasses a broad spectrum of switchbox models, available "off the shelf" for applications ranging from general purpose to ATEX certified.

The Changi project is a significant success for Rotork's single source valve actuation abilities, with Rotork companies working together to supply actuators, switchboxes and valve accessories.



Rotork completes three-part valve control upgrade at BP Hamble

The Hamble Oil Terminal on the banks of Southampton Water is the latest BP storage depot to complete a comprehensive upgrade of its valve actuation control systems.

Like the BP terminal at Kingsbury, which completed a similar upgrade in 2004, the majority of the tank-side isolating valves at Hamble are fitted with Rotork 'A' range explosionproof actuators that were installed over twenty years ago, together with one of the first Rotork Pakscan two-wire digital control systems to be sold in the UK. With the passing of time it had become necessary to update the control system to secure uninterrupted future operation and, as at Kingsbury, this has been achieved without the additional expense of replacing the actuators. Instead, each actuator has been equipped with an upgraded control module incorporating the latest Pakscan field card in an operation that can be quickly and economically performed without removing the actuator from the valve.

The work has been carried out by Rotork's specialist Site Service Department who first upgraded thirty-two 'A' range and six 'IQ Mk1' actuators on the tanks that store aviation fuel and other refined products. These products arrive at Hamble by ship and leave either by

road tanker or through pipelines to major airports. The actuators are now linked on two serial bus loops to new Pakscan IIE master stations installed in the site's central control room.

The second phase of work involved the five 28.5 million litre capacity tanks that store crude oil delivered from the Wytch Farm field through a 53 mile underground pipeline. This oil is stored at Hamble and exported by sea for refining. Ten 'A' range actuators have been upgraded and linked to a new Pakscan IIS master station, which is specially designed for relatively small numbers of actuators. The last part of the upgrade involved a further Pakscan loop on the sea jetty, controlling the import and export pump valves. A panel in the control room on the jetty also

displays the valve positions on the storage tanks to further assist import/export operations, which normally continue on a 24 hour, 365 days a year basis.

All four Pakscan loops at BP Hamble interface directly with the Endress & Hauser PC-based Fuels Manager 2000 software that supervises the operation of site activities from the central control room.

Integral interlocks in the control structure ensure that the Rotork actuators can only be operated in a sequence that allows the safe movement of products during tank filling,

importing and exporting operations. Successful completion of the Pakscan upgrade has given the actuators a new lease of life, enabling them to continue to control oil movements throughout the 54 acre site with the maximum safety and security.



A view of the Rotork actuators installed at Hamble Oil Terminal.



Rotork A range actuator with newly upgraded internal Pakscan field card at the BP terminal at Hamble.

All four Pakscan loops at BP Hamble interface directly with the Endress & Hauser PC-based Fuels Manager 2000 software that supervises the operation of site activities from the central control room.



Eccentric decision at Sasol

Photographed in the valve-maker's factory, this Orton 60 inch stainless steel Class 150 triple eccentric metal seated butterfly valve is fitted with a Rotork GP200 double acting pneumatic actuator with hydraulic manual override.

The package has been built for Sasol Synthetic Fuels in South Africa as a replacement off-gas to stack valve, fulfilling tight shut-off at very low pressure duty.

CONTRACT NEWS

Rotork's maintenance contract passes the toughest test during Portsmouth's naval celebrations



"The Rotork actuators have passed this test with flying colours" says Mick Huitson from Fleet Support Ltd (pictured right), following days of unprecedented dockyard ship movements during Portsmouth's Royal Fleet Review, Trafalgar and International Festival of the Sea celebrations.

Mick, who is Fleet Support's Facilities Plant Maintenance Manager at the HM Naval Base, was responsible for introducing a landmark contract with Rotork for maintenance of the seventy-three electric valve actuators that control the safe movement of millions of tonnes of water during flooding, emptying and levelling activities in the dockyard's giant dry docks and locks. The first anniversary of the contract virtually coincided with the celebrations, which demanded a level of activity that was out of all proportion to the day-to-day activity in the base, including hundreds of ship movements.

"The event involved over sixty warships of all sizes from many nationalities" Mick explains, "many of which were brought into the Naval Base and opened to the public during two days of the

International Festival of the Sea."

"The amount of pumping and levelling operations in the locks and docks - planned by my staff with meticulous detail and attention to timing - put an enormous strain on the pumping plant and valve actuation equipment. Any breakdowns or problems with these crucial operations would have had disastrous knock-on consequences to the crowded programme of ship movements, especially due to the limited timescale of the whole event."

"In fact, the task has proved to be a fitting climax to the first year of the Rotork contract, as no actuator faults or breakdowns occurred and the whole operation was completed without a hitch."

During the year Mick's colleagues Bob Powell and Phil Marsh worked



closely with Rotork to ensure that all seventy-three actuators - some of which have been operating for over twenty years - were inspected, serviced and given new warranties. Careful co-ordination and planning ensured that even those actuators in daily use were attended to without causing any disruption to Naval Base activity.

The success of the Rotork contract

has now prompted Mick to look at other machinery areas which might benefit from the same type of arrangement. "I thought that the contract would be a win-win situation for both parties, and it has certainly proved to be so," he says. "Over the year there has been a significant reduction in problems, culminating in a successful International Festival of the Sea."



Centralised control on Alaskan pipeline

Rotork Fluid System pneumatic actuators have been installed on remotely sited valves in a project to introduce centralised control on an important Alaskan fuel pipeline.

With a capacity of 40,000 barrels-a-day, the pipeline links the Tesoro refinery at Kenai with Anchorage International Airport, some 70 miles away, supplying jet fuel for what is the key international cross-roads for trans-Pacific air cargo activity. The Rotork LP range linear actuators are mounted on 10 inch M & J gate valves.

Specialised skills win demanding valve pedestal contract

Rotork companies Valvekits and Exeeco have combined their skills to meet the demanding requirements of a British Energy contract awarded to Weir Valves and Controls Ltd.

The contract involved the replacement of a total of nearly five hundred valves at British Energy power stations, some of which required new pedestals for both direct and remote valve actuation. For this part of the contract Weir Valves & Controls employed the specialist actuation and maintenance services of



Exeeco, combined with Valvekits' experience in the design and manufacture of valve accessories.

Detailed engineering and close customer liaison enabled Valvekits to manufacture the specialised products to the high standard demanded by British Energy. The detailed specification included

local indication, two-part epoxy paint finish for use in salt laden atmospheres with varying adaptations to enable each valve location to be actuated manually or electrically from either ground or gantry levels.

Desert duty

Situated in the unrelentingly harsh environment of California's Upper Mojave Desert, this Fluid System pneumatic spring return actuator operates a 20" Flowseal butterfly valve to control the flow of groundwater in the area, which, for the last five decades, has been

the location for the US Naval Air Warfare Center. Airborne systems are developed and tested in an area covering 1.1 million acres, ranging from flat land to rugged mountains, known as the China Lake Weapons Facility.



Installation of Rotork IQ actuators heralds secure operating future for Victorian tidal gateway



Alan White operates an IQ actuator using the plug-in pendant.

Rotork's specialist valve actuation Site Services Department has recently completed a comprehensive modernisation project for the UK Environment Agency to improve operation and safety at a Victorian tidal gateway on the Humber Estuary in Lincolnshire.

The gateway – essentially two locks in one – at South Ferriby maintains the water level and helps to prevent silting in the River Ancholme whilst allowing the passage of ships and boats. In past times the river, which runs in two intertwining 'Old' and 'New' channels – the result of considerable engineering work – was an important route for transporting cargo from rural communities to industrial towns. Today, although the majority of traffic is for pleasure, the river is a significant environmental asset and land drainage channel.

The lock, a Scheduled Monument, was built in 1843 to a Sir John Rennie design and virtually all of the operating machinery that has been modernised dates from that time. Eight gearboxes open and close flood gates and ebb gates within the main lock chamber by means of chain drives whilst a further four gearboxes operate valves – colloquially known as "cloughs" – in the lock walls to allow water in and out of the lock.

Rotork was awarded the contract for Phase 1. Works as part of the Environment Agency framework agreement for valve actuators, with an expanded scope of work relating to the additional site activity

The IQ actuators are individually operated by a hand-held plug-in pendant which enables the lock keeper to observe and accurately control the position of the gates and the water level in the lock. Previously, looking into the lock and hand winding the gearboxes at the same time was not possible, making single-handed operation of the lock difficult as well as laborious.

The successful completion of Phase 1. Works at the South Ferriby tidal gateway modernisation project has secured the future operation of the lock. Senior Lock Keeper Alan White explains: "Motorising the flood gates, ebb gates and cloughs enables us to operate the lock's

'Motorising the flood gates, ebb gates and cloughs enables us to operate the lock's functions more safely and with better accuracy'

required. This involved dismantling and refurbishing the twelve original hand operated gearboxes, the re-manufacture of any worn out parts, design and fabrication of adaptation and pedestals for the new Rotork IQ electric actuators and all site electrical installation and commissioning work.

functions more safely and with better accuracy for the continuing benefit of the river and its environments. Also, with approximately one thousand boats using the lock during the April-to-October season the task will be far less arduous than when it was all done by hand."



COVER FEATURE

Exclusive

Rotork announces the New IQ Pro



Reliable, Intelligent Control

In keeping with our philosophy of evolution through innovation the new IQ Pro now has enhanced data upload and download, a larger clearer display with easy to read icons and multilingual text support.

For over 45 years Rotork has been the world leader in actuator design. By introducing features such as "Syncropak" integral motor control, watertight "double sealed" enclosures and "1600 Series" user selectable indication and control, Rotork laid the foundations for actuator specification in the marketplace - now taken for granted by industry and adopted by all.

In 1993 the revolutionary IQ added "non-intrusive" set up, datalogging and comprehensive valve, control and actuator monitoring to this list. Today, the IQ range sets the "gold standard" for valve actuation.

Introducing IQ Pro

IQ Pro provides the customer with unparalleled support in achieving reliable valve actuation by combining existing proven IQ features with new larger and clearer displays, multilingual text support, performance monitoring and

datalogging - including valve torque signature profiles. In combination with the new non-intrusive, intrinsically safe Rotork Setting Tool Pro, actuator set-up and datalogger files can be transported from the field to the office for analysis. The new ergonomically designed Rotork Setting Tool Pro is compatible with all existing IQ and IQT range actuators.

Torque and Position Monitoring

The IQ range of actuators incorporate real time, instantaneous Torque & Position monitoring as standard. Torque & Position can be used to monitor valve performance during operation. The effect of process changes (differential pressure etc.) can be evaluated. Tight spots in valve travel can be pinpointed as well as gauging torque developed through stroke for torque value setting. Using the Setting Tool, the display can be set to indicate Torque and Position.

Setting Tool Pro Download & Upload

Setting Tool Pro includes a feature which allows the user to extract and store IQ actuator configuration and datalogger files within the Tool. Stored files can be viewed using a PC running IQ Insight[®]. Using This tool, stored configuration files can also be uploaded back to IQ actuators in order to replicate a setup for multiple units (limits must be set individually). Various languages can be downloaded from the Rotork web site and uploaded to the actuator using the new Rotork Setting Tool Pro.

IQ Pro offers a range of powerful features unparalleled in Valve Actuation:

- Larger, clearer icon and text display.
- Customer configurable multilingual text capability.
- Valve torque signature profiling.
- Status & monitoring diagnostics.
- Retrofittable to existing IQ & IQT actuators manufactured since 2000.
- Improved data download speed x10.

Setting Tool Pro features include:

- Non-intrusive, Infra red communication.
- Intrinsically safe for use in hazardous areas.
- On site actuator configuration and data download.
- Data transfer from actuator to PC with free Rotork Insight software available from www.rotork.com *
- Capacity for 10 configuration and 4 datalogger files.
- Multiple configuration capability.
- Compatible with all IQ & IQT actuators manufactured since 2000.

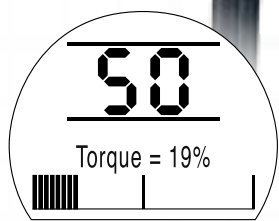
For further IQ Pro information, see publication E1120E available at www.rotork.com or by contacting Rotork.

* Note: Setting Tool Pro data transfer capability is compatible with IQ actuators supplied since 2000.

multilingual
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Rotork have introduced a new enhanced IQ main board and display for all of the IQ and IQT series actuators. The new board is used in combination with the new Rotork Setting Tool Pro.



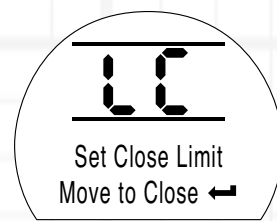
Torque & Position Monitoring



Alarm Screens Clearly Described



Download & Upload (German language)



Set-up Instructions Clearly Described

The Rotork IQ and IQT Pro Actuator Range

IQ - 3 phase multi turn suitable for isolating, throttling duty with a torque output range of 34Nm to 3000Nm (25Ft lbs to 2200Ft lbs). Where increased torque/thrust is required, a range of bevel and spur gearboxes are available to give an output of upto 43,000Nm.

IQH - Designed for applications where fast operating speeds are required with a "self-locking /irreversible" drive, the IQH incorporates an epicyclic, speed increasing gear drive between the motor and final drive worm and wheel. The self-locking ability of high ratio worm and wheels can be utilised with output speeds up to 216 rpm (259 at 60Hz).

IQD - Multi turn DC powered torque output of 34Nm to 305Nm (25Ft lbs to 225Ft lbs). Depending on the torque output required 24V 48V and 110V versions are available. Rotork can supply failsafe charger/battery which can be used in conjunction with custom made solar powered backup system.

IQM - The IQM actuator has a solid state reversing starter in place of the IQ electro-mechanical contactors, and a low inertia motor with the "hammerblow" backlash omitted from the output gear train. They are suitable for up to 1200 starts per hour. IQML uses a linear output drive to provide modulating thrust of 7.94kN to 31.3kN (1785 lbf to 9375 lbf).

IQS - Single phase power IQ actuators are available, from IQS12 to IQS35. Output torque is dependant on supply voltage and output speed. An IQS12 provides from 25Nm to 65Nm with IQS35 135Nm to 450Nm.

IQT - All benefits of the Rotork IQ range of multiturn actuators are now available in a direct drive quarter turn single/3 phase actuator with a torque output range of 50 Nm to 2000Nm (37Ft lbs to 1476Ft lbs).

IQTFS - The IQT Failsafe actuator provides valve failsafe operation by utilising power from a battery source during AC supply mains failure. Under normal supply conditions the actuator operates from the site AC electrical supply. On loss of this supply the actuator automatically switches over to receive power from internal battery or a user supplied 24V DC supply allowing control of the valve to a failsafe position.

IQTM Sharing all the features of the IQT quarter turn actuator the IQTM (modulating) has increased pulse control capability. The actuator speed is factory set to the minimum of a standard IQT.

IQTF - Based on the quarter turn IQT actuator the IQTF provides extended output rotation for part turn valve types requiring more than 90° for operation. Typical valves include 180° and 270° diverter valves and multiport manifolds requiring bi-directional 360° operation. The IQTF actuator has a low output speed for increased positional accuracy.

All IQ and IQT Pro range actuators are available in a series of fireproof options including intumescent coating direct from the factory.

CONTRACT NEWS

Rotork valve actuators assist Severn Trent's improved water quality programme

Rotork IQT intelligent electric actuators for quarter-turn valves are a central feature of a filter improvement project at the Severn Trent Ogston water treatment plant in Derbyshire.

The plant was first opened in 1946 to treat water from the adjacent Ogston Reservoir, now distinguished as where round-the-world record breaking yachtswoman Ellen Macarthur first learnt to sail.

Norwest Holst Construction Ltd has carried out the complete upgrade of twelve rapid gravity filters at Ogston, including the fitting of Tetra block filtration flooring, replacing the old sand and gravel media with an improved sand and anthracite formula and installing a new clean backwash water main. The project also involved fitting new butterfly and plug valves with Rotork IQT actuators in virtually all areas of the plant to automatically control the filtration and backwashing sequence of operations. The actuators are connected to refurbished PLCs and linked to a new master MCC (Motor Control Centre) that runs the plant, treating up to 40 ml/day (megalitres a day) for consumers in the surrounding areas.

Kevin Rodenby, Norwest Holst's M & E Supervisor on the project, appreci-

ates features of the IQT actuator which assist the commissioning and running of the new plant. "Rotork's hand-held, non-intrusive setting tool is especially helpful in simplifying and speeding up commissioning, eliminating the time-consuming effort of removing electrical covers," he said. "Quick and easy to follow setting instructions are clearly displayed on the actuator's indication screen, which also provides local valve position and status information."

IQT actuators also incorporate on-board data loggers where commissioning settings, historical operational data and valve operating torque profiles are stored. This information can be downloaded over the non-intrusive link for analysis and review using Rotork IQ-Insight PC software to maximise plant utilisation and eliminate the threat of unexpected breakdowns.

The IQT actuators operating filtered water outlet and backwash water inlet valves are factory fitted with the Rotork CPT (Current Position Transmitter), enabling partial valve movements to be controlled and indicated in response to an analogue current signal from the MCC. CPTs were also retrofitted to the only actuators retained from the original plant – Rotork AQ units on the forward rinse valves – enabling them to be included in the new control regime and eliminating the need to replace them.

Ogston is the latest in a programme of water treatment plant upgrade projects, undertaken by Norwest Holst Construction Ltd and utilising Rotork

actuators, designed to bring improved water quality to users in the Severn Trent Water area.

"Rotork's setting tool is especially helpful in simplifying and speeding up commissioning"



Rotork IQT actuators in operation on filter air scour valves at the Ogston filtration plant.

Breakthrough contract at the compressor station

A recent order for Fluid System actuators represents a noteworthy breakthrough for Rotork at the Howard Compressor Station at Ennis, Texas, where Atmos Energy had previously always used competitors' products.

A gas pipeline expansion upgrade at the end of 2005 enabled Rotork agent McJunkin Corporation to successfully propose the introduction of P and GP range pneumatic and HPG range high pressure gas actuators for the

twenty-six valves involved on the site. The HPG actuators, which are specially designed to use the pressure of the gas in the pipeline as the operating source, were required for seven of the valves and are the first HPG's to be used in any part of the Atmos network.

All the installation work was performed on site, where some of the valves were already installed, with Rotork Fluid System's Houston Centre of Excellence assisting with the commissioning. The photo shows Rotork Houston Sales Engineer Ed Robinson working on site with one of the HPG actuators.



Depending on automation that's reliable

The New Covert Generating plant, located in the township of Covert, Michigan USA, about 48 miles west of Kalamazoo, is one of the most advanced natural-gas fired power generating facilities in the world.

It is a combined-cycle merchant plant owned by Mach Gen, LLC, and operated by North American Energy Services. The electric power produced is primarily sold to competitive wholesale markets via the Michigan Electric Transmission Company, a subsidiary of Consumers Energy.

While it can produce up to 1170 megawatts, it only operates when market conditions for electricity are favourable. Therefore, the plant is faced with the challenges associated with having to start-up dependably upon relatively short notice. To meet the challenge, the entire plant was designed to incorporate a high level of automation with components and systems that deliver superior reliability, maximum efficiency, flexibility, and ease of maintenance.

Only 23 Employees Required

There are several features of the plant and the way it is operated that make it special.

One of the most impressive features is that because of the plant's extremely high level of automation and reliable technology, only a total of 23 employees are required for around-the-clock staffing of the entire operation.

That number includes all administration, office staff, operational technicians, and maintenance personnel.

DCS Interface with Pakscan

Construction of the plant began in late summer 2001, and it became operational in August, 2003. The plant went commercial in March, 2004. Stone & Webster, a subsidiary of the Shaw Group Inc., was the primary contractor for the project.

The facility consists of three identical combined-cycle units. Each unit has a natural-gas fired Mitsubishi 501G combustion turbine and steam turbine that drive electric generators. Each unit can output 390 megawatts.

The gas and steam turbines are controlled by a Mitsubishi Netmation control system, which is linked to the plantwide Emerson Ovation DCS. The Ovation system interfaces with the Rotork Pakscan system via redundant IIE masterstations.

The 165 Rotork IQ actuators installed in this facility automatically operate gate, globe, and butterfly

valves used in the high-pressure steam, high-pressure water and water delivery systems. To begin start-up, a control room operator initiates the process at a computer. There, the operator can monitor every phase of the process as well as access vital data about the status and operation of key valves, pumps, motors, and other essential equipment.

In addition, another technician performs hands-on checks of critical

165 Rotork IQ actuators together with a Pakscan network are installed in this advanced natural gas fired power plant

valves used in the high-pressure steam, high-pressure water and water delivery systems.

The process is extremely clean and environmentally friendly with stack emissions limited to 2.5 parts per million of NOx.

One of the World's Most Automated Gas-fired Plants

The New Covert Generating plant is one of the world's most sophisticated and automated electric plants.

When energy traders notify the plant that market conditions are favourable, start-up soon commences and the plant begins generating electricity, which is sold to its wholesale customers.

components at designated plant locations.

New Covert Generating Benefits

From the beginning, the plant was designed to be efficient, environmentally friendly, and safe.

Stack emissions are limited to 2.5 parts per million of NOx, and automation results in a safe workplace by limiting the need to manually interface with equipment.

The New Covert Generating plant is an example of how today's technology can be used to accomplish power generating goals that benefit a variety of stakeholders, including the public at-large, power customers, workers, and owners.



Above: When market conditions for electricity are favourable, Control Room Operator Gene Vasquez can initiate fully automated plant start-up at his computer screen. The electricity that is produced is distributed via existing transmission lines.

Right: Lead Maintenance Technician Bucky Ray likes the IQ infrared setting tool for troubleshooting. He can use it to easily check valve status and/or change torque and position limit settings without having to remove the IQ's covers.



"Zero failures" for power station's electro-hydraulic control valve solution

Protracted problems with pneumatic control valves have been successfully eliminated by the introduction of electro-hydraulic alternatives at the Scottish Power Longannett Power Station in Clackmannanshire. The new equipment – comprising ball valves and Rotork Skilmatic actuators – has been installed to control water levels in direct contact heater and condenser plant areas.

Derek Duncan, C & I Engineer at Longannett explained: "Historically the air system at the site has not been of good quality, causing problems which increased following the introduction of a new distributed control system (DCS) in 2000. The SMART positioners retrofitted to

pneumatic actuators at that time are particularly intolerant to moisture in the air supply. It was therefore decided that the best way forward would be to adopt a new approach to the actuation.

In discussion with various suppliers a fully modulating actuator with a soft seated ball valve became the preferred option."

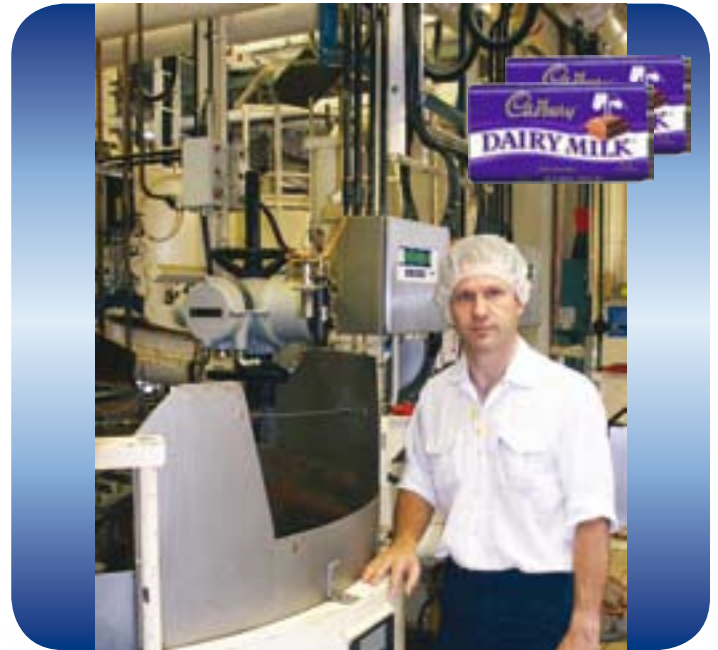
The Rotork Skilmatic electro-hydraulic actuator and ball valve combination was recommended by specialist actuation service provider Exeeco, a company with a long and successful history of supply and maintenance at Longannett. The Skilmatic actuator provides the simplicity of electrical operation, combined with the precision of hydraulic operation for modulating or failsafe applications. The actuators operate directly from an electrical supply and control signal, without relying on a pneumatic supply.

The new actuated valves were installed during a major outage on Longannett Unit 2 in the summer of 2004. Derek Duncan observes: "To date this system has run on auto with zero failures and all concerned are very satisfied with the outcome."

"To date this system has run on auto with zero failures and all concerned are very satisfied with the outcome."



An engineer completes the commissioning of a Rotork Skilmatic actuator at Longannett.



The IQ installation on the re-melt valve at Cadbury.

Accurate IQ valve control assists chocolate bar production for Cadbury

"People cannot believe how complicated chocolate bar production is" says Mark Smith, Process Engineer at Cadbury's Bournville factory, who has just completed a project to install a Rotork IQ intelligent electric valve actuator in a key area of a moulding plant.

The Rotork actuator has replaced a hydraulic cylinder to regulate the flow of re-melted chocolate back into the production stream – an apparently simple duty which in fact demands a very accurate level of modulating valve control.

Mark explains: "This highly automated Moulded plant operates 24 hours a day and makes more than sixty different chocolate bar variants. Precise modulating control of the re-melt valve is essential for the maintenance of product consistency and weight variation performance."

The IQ actuator was introduced to provide a more reliable and accurate valve control performance than the hydraulic cylinder, whilst also reducing maintenance requirements and removing the risk of hydraulic fluid

leakage. In addition to providing cleaner electrical operation the IQ also provides simplified connectivity with the Allen Bradley PLC that supervises the operation of the plant – in this instance the device is hard wired to the output card. Even so, the complicated nature of chocolate handling is illustrated by the PLC software used to control the operation of the actuator. Specially developed for the application by Mark, the logic is based on intricate equations involving vessel weight, viscosity, flow rates, temperature and time.

Rotork's specialist Site Services Department was responsible for the sizing and mechanical installation of the IQ actuator, including the design and fabrication of the valve adaptation. Chocolate production at Bournville originally started in 1879 and the site remains Cadbury's single largest production facility. The site is equally famous for the adjacent Bournville Village, created by Richard and George Cadbury to provide a pleasant 'green' environment for their employees, in stark contrast to the oppressive conditions of the Victorian industrial scene.

Skilmatic SI's in strong demand

Oil, gas and water industries have created a strong demand for the SI 'intelligent' electric modulating and failsafe actuator range since its launch in 2004. Available in two sizes, the SI combines Skilmatic's traditional virtue of electrical operation and precise hydraulic control with the advanced 'non-intrusive' commissioning, communication and control features found in Rotork's market-leading IQ actuator range.

Originally launched as an IP68/ NEMA6 watertight actuator, the SI has since gained ATEX, FM and IEC Ex certification for use in zone 1 hazardous areas. Many of the contract successes have resulted from these approvals, especially in the Middle East.

For example, in one of the four projects in Saudi Arabia that have ordered Skilmatics, sixteen modulating actuators are employed on petroleum loading pump duties whilst a further forty-five failsafe actuators with ESD (Emergency Shutdown) functions perform inlet to storage tank and pump loading and unloading duties on petrol and diesel lines. Meanwhile, in Kuwait actuators have been supplied for pressure control duties on crude oil and fire mains pipework in a refinery power station.

In Spain SI failsafe actuators operate inlet valves on vapour recover units installed on truck loading plant at a tank farm, whilst sixty failsafe actuators have been ordered in Germany for installation on gas pumping skids for a Russian pipeline and a further nineteen are being supplied to Venezuela for pipeline metering skids.

The USA water and waste treatment industry is another growing market for Skilmatic actuators which is now adopting the SI version for the majority of new applications. At Carmel in Indiana they have been supplied as part of a package including IQ and IQT actuators to control the flows into water filtration plant, whilst at the Kalamazoo waste water plant old units are being replaced with SI's to control air flows into aeration tanks for activated sludge treatment.

SI actuators have also been ordered for environmentally demanding applications in the US oil and gas industries. In the first, 59 Skilmatics and over 100 IQ actuators are installed on the Gulfterra Power Hub semi-submersible in the Gulf of Mexico.

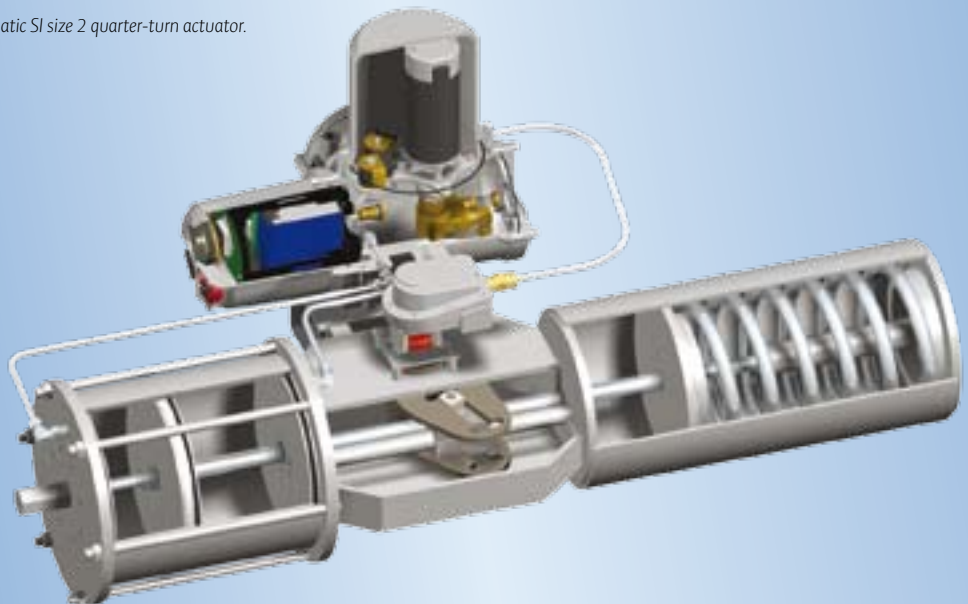
The SI's provide failsafe control of the hub's buoyancy, a duty demanding IP68 watertight integrity at a depth of seven metres for 72 hours. The second contract is supplying low temperature specification actuators to Conoco Phillips for installation on an Alaskan pipeline.



Above: Rotork Skilmatic SI actuators on a pipeline metering skid in Venezuela.
Below: Skilmatic SI size 1 and 2 Linear and Quarter-turn actuators



Rotork Skilmatic SI size 2 quarter-turn actuator.





Rotork Fluid System has built Rotork's largest ever pneumatic actuator, for delivery to a pipeline project in Thailand. The model GP350 spring return actuator will operate a 42 inch Class 900 Cooper Cameron ball valve and has been supplied together with sixteen other model GP actuators

to provide mainline shutdown duty on the Third Transmission Pipeline Onshore Project, constructed for the Thailand Oil and Gas Authority. Reliable valve operation is essential for this vitally important function.



Rotork Fluid System's innovative self-contained EH electro-hydraulic actuators have been introduced for the operation of large gate valves during the expansion and upgrade programme at a sewage treatment plant in the Denver metropolitan area of the USA serving more than 300,000 residents.



Rotork's range of AWT watertight electric actuators has been ordered for several water treatment improvement projects, undertaken by the Provincial Water Work Authority of Thailand. The latest order is for sixty-seven units for the Cheingmai WTP, supplied by Rotork Thailand to their authorised agent Unithai. This order follows similar successes at Samprian, Surin and Tak WTPs.



This picture shows some of the Rotork Gas-over-Oil (GO) actuators installed on the Pemex Lazaro Cardenas gas terminal in Michoacan, Mexico. Ten of these specialised actuators, which use the line pressure from the pipeline itself to operate the valve, are installed on pipeline ball valves in the terminal's filter separation system. GO actuators are entirely self-contained units, equipped with pressure tanks and controls which can be either attached to the actuators or mounted separately.

Worldwide Round-up

A quick round-up of interesting success stories from around the world



Rotork IQ's are installed in the National Portrait Gallery as part of the air conditioning plant which helps look after the well-being of a priceless collection of 10,000 portraits together with a photographic collection, archives, a library and visiting exhibitions. Their installation has enabled the system to operate with improved efficiency and economy.



Malcolm Shaw, an engineer from Rotork's Site Services Department, has recently completed a series of visits to two platforms in the UK's largest oil and gas field, situated in the North Sea. There can be few more challenging environments for electric valve actuators, especially those situated twenty metres below sea level in the cold, damp, highly saline and hazard-

ous atmospheres within the platform legs. Most of the actuators have been installed for more than twenty years and in spite of the severity of the environment Malcolm was able to report that the actuators had survived well and could be expected to continue operating after recommended maintenance and repairs were completed.



Rotork Fluid System pneumatic actuators have been supplied to valvemaker Puffer Sweiven in Houston for the Kizomba A and Kizomba B deepwater development projects in offshore West Africa.

Kizomba A and B are FPSOs (Floating Production, Storage and Offloading vessels) that operate in Angola's Block 15, each recovering 250,000 barrels of oil per day from sub-sea drill

centres in ocean depths of over 3000 feet. The projects are an important part of Exxon Mobil Corporation's activities in the coastal seas of Angola, where Esso Exploration Angola holds interests in seven offshore deepwater blocks covering 8.4 million gross acres.



Pneumatic, hydraulic and electric actuators valued at over 2 million Euros have been specified for the TengizChevrOil 'Second Generation Project' in Kazakhstan. The actuators operate ball, butterfly, gate and special service valves in new field production, processing, storage and exporting plant associated with a major expansion of the Tengiz oil fields.

Parsons Fluor Daniel UK specified Rotork for the project, which is expected to increase crude oil production from 13 million tonnes per year to over 25 million upon completion in 2007. The actuators are being ordered by HS Pipe Equipment in the UK and delivered to valvemakers in Europe and India as well as directly to site.

NETWORKS EXPLAINED

Choosing a Network

finding the right solution for your application

It's hardly surprising that engineers get confused when trying to find the ideal network for each particular application. Often they will follow the instructions of their client, or simply repeat the choice they made on the last project, irrespective of differences in the application. Because there are several potential solutions for each application, Rotork can advise on the merits of each and assist in the choice of the system that is most likely to meet with satisfaction on completion of the project.

This article considers three of the most popular systems on offer from Rotork,

- Pakscan – the Rotork proprietary system
- Profibus DP – the most widely used Open network
- Foundation Fieldbus – the attempt at standardisation by the industry

Control systems using actuators have a primary function to ensure that the valve can be moved whenever the process demands. A secondary, slightly less important, function is to be able to report the actual position of the valve.

Network Fundamentals

A network generally uses a simple field cable, usually with 2 cores, and interconnects a number of actuators to an interface that in turn reports the information and controls to the automation system. The automation system may be within the site containing the actuators and valves, or it may be located some considerable distance away.

The initial cost of installation and cabling will be lower when using a network as 2 core cable is lower cost than multicore and the number of connections is fewer. This cost reduction is offset by an increase in the actuator cost for the inclusion of the network interface.

- It is important to make sure the customer looks at the cost of controlling the actuator as well as the purchase cost of the actuator itself.

The network has several advantages compared to a conventional system. The increased amount of actuator data allows planned maintenance and direct performance diagnostics to be included in the controls package and lifetime costs for the plant are reduced when more information is available. Full position control, direct at the valve, is

Direct Cabling

Advantages	Drawbacks
Simple to understand Easy to install High reliability	Increased cable cost Rack rooms for cable termination Panel space for buttons/lights Hardware for control scheme interface Limited data reported

Network Control

Advantages	Drawbacks
Increased data availability Reduced engineering costs Lower installation cost Easy interfacing to PLC/DCS Lower lifetime running costs	Higher actuator cost Increased commissioning complexity Can tie in to one supplier

usually included in modulating duty actuators. When redundancy is included, usually of the cable network, the system integrity is increased to a level allowing safe control of critical systems.

Reduction in the weight of the cabling can be an advantage – particularly on oil rigs and vessels, whilst the saving in building space to house interface racks can reduce overall running costs due to savings in environmental control.

Open v Proprietary Network

In general a proprietary network will be more suited to valve control than an open network since a dedicated system has one specific target whilst the open system has no particular target application. Open systems must try to match their capability to any and all applications, for example they must deliver commands to actuators with equal priority to collecting data from flow transmitters. A dedicated actuator control system can place a higher priority on moving the valve than reporting valve position as control output is the primary activity for the valve actuator.

Open Systems

Open systems include Profibus and Foundation Fieldbus systems. The system specification includes how to connect devices, what kind of electrical signals are to be sent to and from the highway, how many wires will be used, how fast the data can be transmitted and how many devices can be connected. There is usually a Certification procedure to verify the compatibility of the device with the network.

Open Systems

Advantages	Drawbacks
Products from several different suppliers may be connected to the same highway Network has a defined performance Specifications allow users access to the network secrets	Tries to meet all the different requirements with one solution No flexibility Performance claims often found to be optimistic System responsibility rests with the purchaser, not the component suppliers

Proprietary Systems

Advantages	Drawbacks
Network has a defined performance Optimised for the target application Special features can be included such as those on the Pakscan master station System responsibility rests with the supplier – Rotork for Pakscan	Limits the purchaser to a single supplier Future expansion has to be with the original supplier's products Product may become obsolete

Rotork actuator can be connected to Profibus and Foundation Fieldbus systems using certified interface cards. The actuator performance is described to the host system using a device description and there is one for each type of network.

Despite the flexibility to include devices from many suppliers on the network generally only a single manufacturer's equipment is used on each network. Despite the certification process, difficulties can arise in mixed systems and it is difficult to determine the party responsibility for the problem.

- With an Open system the responsibility for the overall performance rests with the purchaser.

Proprietary Systems

With a proprietary network, such as Pakscan, the performance is aimed to maximise the efficiency for a particular application. The system performance will be specified in the same way as the open system, but how it is achieved is a secret retained by the manufacturer. The equipment that can be connected to the network will only be available from the original manufacturer.

- When the system is purchased from a single source the responsibility for the overall performance is clearly defined and rests with the one supplier.

Pakscan uses Modbus to connect to the host system and it also includes an Ethernet connection to allow the system to be interrogated over the internet

Comparing the Systems

Foundation Fieldbus

Foundation Fieldbus is designed to replace all 4-20mA type instrumentation with an equivalent bus based product. It is primarily intended for transmitters and controllers, and is based on 'Function Blocks' for inputs and outputs. For example the valve position feedback signal uses an Analogue Input block. It is intended to provide 'control in the field' by doing away with DCS based control loops.

The data highway uses two wires with an external power source, redundancy of the cables is not possible and the distances are limited by the number of devices and the cable cross section. Typically a network will be about 1200 metres from end to end with 12 to 16 devices connected. Often the number of actuators that may be connected is limited by the DCS capability. Each function block uses up some of the limited DCS system resource. With the Rotork Foundation Fieldbus interface most systems can be configured using 4 function blocks per actuator, allowing 16 actuators to be connected.

The communication speed is fixed at 31.25Kbaud and the highway traffic involves a substantial overhead with system information and new devices detection carried out continuously. Scan times will depend on the number of blocks used per actuator.

Actuators can be isolated without causing network disruption unless the function blocks are interconnected between actuators, if this is the case the controls scheme will fail. In practice 'in the field' controls are not often used, so losing a device does not cause a problem. If there is permissive control between the actuators then loss of one actuator may cause unexpected actions on another.

Profibus

Rotork actuators use Profibus-DP and this version allows more devices than the intrinsically safe Profibus-PA, Profibus-DP is intended for process control and factory automation. Profibus uses a master-slave system and the master is usually a card in a PLC or DCS.

The data highway uses 2 wires and a special cable to ensure the network will perform as stated in the

data sheets. There is a need for powered termination devices at each end of the highway, so it is often wired out from the control room and back, but not in a ring or loop. Cable redundancy is not possible unless RedCom compliant field units are fitted in the actuators. Rotork is able to supply RedCom compliant actuator field units.

A maximum of 32 devices (31 actuators and a PLC scanner card) may be connected to the network and the length is dependent on the desired speed. In general 1200 metres is the maximum although repeaters do allow this to be extended, together with the number of devices (up to the maximum of 125).

Speeds as high as 1.5Mbit/s can be achieved, but only over 200 metres, for 1200 metres the top speed is 93.75kbit/s. With a master-slave system, increases in speed produce a corresponding reduction in scanning time, but the PLC or DCS may not be able to process the data.

- High speeds are only possible on short cable runs

Isolating an actuator will not upset the network unless the actuator contains the line termination device.

Pakscan

This is the Rotork proprietary actuator control system. It uses a master slave protocol and requires a master station to interface to the DCS or PLC.

The data highway uses a 2 wire cable and is wired in a ring to provide full system redundancy to every actuator on the system. The highway can be up to 20km in length allowing large areas to be covered, and up to 240 actuators can be connected on a single cable. In practice the best performance will be achieved with 60 actuators and 10km loops. With these parameters an acceptable scan time will be achieved of around 250 mSec per actuator.

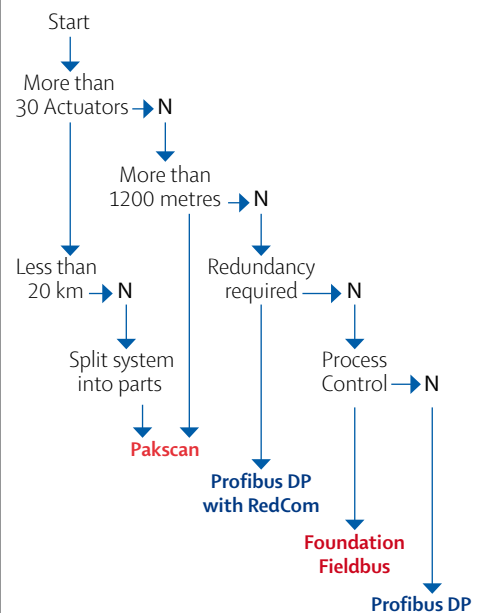
The master station interfaces to the DCS or PLC using Modbus RTU protocol over RS485 or Ethernet. The included web server allows direct PC connection with a web browser interface. The system allows for actuators to be switched on or off at any time without detriment.

Where full system redundancy is required (as well as field cable redundancy) a hot standby master station is available complete with multiple host connections.

Making the Choice

- Control Room update time
- Highway length and redundancy
- Number of actuators

The first critical choice is the required update time at the control room, most electric actuators are moved infrequently and as a consequence they do not change their information to report. This leads to acceptable update times in the order of 1 to 2 seconds.



The second factor will be the highway length, this can often be quite long and may compromise the update time that is achievable. Greater distances slow down the data access time. The need for redundancy also has to be considered as control of the actuators may be critical. Finally the number of actuators on each highway needs to be determined.

In practice these three fundamental decisions are often reversed in their selection order, but they are so inter-related that the order of choice is not very important. Speed may be compromised for reliability and so on.

In the final analysis the DCS or PLC to be used will also be a factor in the choice of network. The network must be capable of supporting the chosen control system.

Whatever the final decision, Rotork can supply an actuator fitted with the appropriate network control card.

Further information can be found in the following brochures –

- Pakscan Systems – S000E
- Profibus – S113E
- Foundation Fieldbus – S114E

Basic Comparison Chart

	Pakscan	Foundation Fieldbus	Profibus DP
Highway Length	20 km	1900 m	1200 m
Maximum (Typical)	(6 km)	(1200 m)	(1000 m)
Numbr of Devices	240	32	32
Maximum (Typical)	(60)	(12)	(20)
Topology	Redundant Ring	Linear Bus	Linear Bus
Data Speed Bits/sec	2400	31.25 kbits/s	1.5 Mbit/s
Maximum (Typical)	(600)	(31.25 kbits/s)	(19.2 kbits/s)
Scan Time/actuator (typical)	250 mSec	250 mSec	100 mSec

PEOPLE NEWS

Rotork Gears



Dave Littlejohns
Managing Director

Dave Littlejohns is the new Managing Director of the Rotork Gears Division. Dave has been with Rotork for twenty years, working mainly in engineering and sales. Prior to this appointment he was West Coast Regional Manager for Rotork Controls Inc, based at Petaluma in California.

Rotork Fluid System
Senior Sales Management
Appointments



Nigel Willis
Sales and Marketing
Director

Nigel Willis is Rotork Fluid System's new Sales and Marketing Director, following his promotion from International Sales Manager. Nigel has fifteen years' experience of the valve actuator business initially joining Rotork as Fluid System Regional Sales Manager for the Middle East. More recently he has been responsible for sales into Scandinavia, Eastern Europe, the Middle East, India, Pakistan and the Far East. Nigel, who has recently achieved a Masters Degree in Business Administration (MBA), will now focus on the continued expansion of RFS sales activities throughout the world in traditional and new market areas.



Vittorio Stefani
General Manager, Sales
(Italy)

Vittorio Stefani is promoted to the position of General Manager Sales at the main Fluid System manufacturing plant in Lucca. This new position is designed to strengthen sales, after sales and contracting activities at Lucca, where Vittorio has been Italian Sales Manager since 2003. Vittorio has worked in valves and actuators since 1975, when he joined Rotork's electric actuator company in Italy. From 1980 onwards he worked in export sales management for a number of valvemakers, eventually achieving Sales and Marketing Director level before starting his own consultancy business.



Stefan Davis
Operations Director

As Operations Director, Stefan Davis's responsibilities now encompass Fluid System's worldwide manufacturing operations. The aim of this new position is to further utilise the capacity of the three main production plants and the Centres of Excellence, whilst also establishing further operations to support continued growth. Stefan joined Rotork in 1991 in the Systems and Service division of Exeeco, moving into Exeeco's Fluid Power division after two years and becoming Engineering and Production Manager in 1995.

Since 2000 he has been General Manager at the main Rotork Fluid System factory in Lucca.



Alex Busby
Business Development
Director

Alex Busby brings over twenty years experience of fluid power actuation to this new position in the organisation. Before joining Rotork in 2003 Alex was working for a US manufacturer as a General Manager for Europe, Middle East and Africa, having previously operated in the SE Asian market, setting up and running a regional office in Singapore. He originally entered the industry fulfilling technical, application and engineering management roles, having achieved a BSc honours degree in Technology.

Alex's new responsibilities encompass product and market development, the creation of strategic alliances in existing and new markets and the identification, assessment and management of acquisition opportunities.



Howard Mutters
UK and Ireland General
Manager

Howard Mutters has been appointed UK and Ireland General Manager for Rotork Fluid System, based at the Leeds Centre of Excellence. Howard joined Rotork Controls in 1988 and worked in UK and international sales, becoming Middle East Area Manager, based in Bahrain, in 1998. From 2001 he was Valvekits Sales Director before moving to Rotork Africa as General Manager in 2003.

Rotork - Africa



Karl Rautenbach
General Manager

Karl Rautenbach has joined Rotork as General Manager, Rotork Africa. Karl brings extensive experience of the valvemaking and end user industries to this position, having worked for US ball valve manufacturer CCI in the Sub Sahara Africa area for nearly ten years. This work involved him in power generation, petrochemical, oil, gas and paper/pulp industries, including projects in the UK, Europe, the Middle East and Asia. Prior to this, Karl worked for the South African electricity supply company Eskom at the Duvha power plant in Mpumalanga.

In his new position Karl will continue the expansion of Rotork's complete range of actuation activities in this important and rapidly developing area.

Rotork - Korea



SW Chun
General Manager

SW Chun has been appointed General Manager of Rotork Controls Korea following the retirement of YK Kim.

Mr. Chun joined Rotork in 2005 from Alfa Laval Korea Ltd where he was Sales and Marketing Director for the process and energy divisions. His new appointment is the culmination of nearly twenty years experience of sales, marketing and engineering responsibilities which have involved him with many of the industries of South Korea.

Rotork Fluid System - Italy



Mariangela Renieri
Marketing Department

Mariangela Renieri has joined Rotork Fluid System to manage the marketing activities at the Lucca factory. This involves assisting with literature production and news gathering for press releases and Rotalk. In addition Mariangela is looking after the division's demonstration requirements and generally handling marketing and sales support activities.

For more information on ROTALK articles and features contact Nicky Harrington at ROTORK Bath: +44(0)1225 733200 email: nichola.harrington@rotork.co.uk



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