

rotalk 31



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The Andasol 1 plant in the Spanish province of Granada is Europe's first parabolic trough power plant and the world's largest solar power plant. The plant's 510,000 m² collector surface area provides a generating capacity of 50 MW, enough to meet the annual electricity demand of 50,000 households or 200,000 people.

The success of Andasol 1 and sister plant Andasol 2 has reinforced the argument for the construction of similar renewable energy plants, many of which are now in progress throughout the world.

The parabolic trough is constructed as a long parabolic mirror with a Dewar tube running its length at the focal point. Sunlight is reflected by the mirror and concentrated on the tube, where it is absorbed by heat transfer oil flowing through it. The oil is used to heat steam in a conventional turbine generator.

At both of the Andasol sites Rotork IQ intelligent electric actuators with Pakscan 2-wire digital control have been specified for valve control in all areas of the generating process.

Pakscan digital control

Rotork Iberia worked closely with the plants' engineering company, to integrate an economical and efficient actuation and control system into the overall plant design.

The decision to use Rotork's Pakscan 2-wire digital control was assisted by the system's extremely long range bus capabilities and cost savings. Designed specifically for the spacious environments associated with the majority of valve actuator

IQ Intelligent actuators for renewable energy in solar power plants



Andasol 1 Solar Power plant, Granada, Spain.

installations, Pakscan can operate a loop of up to 20 kilometres in length without any deterioration in communication performance or the need for repeaters. This has enabled over one hundred actuators at each Andasol site to be controlled and monitored with a single bus loop. Each loop is supervised by a Pakscan P3 120 channel master station, which provides the communication interface with the plant's control centre.

Control, monitoring, interrogation and configuration of each actuator is also available at the master station, offering increased flexibility to the operator. In addition, thanks to the web server installed as standard in the P3 master station, the operator in the main control centre will always have a clear picture of the condition of all the actuators on the loop at all times, even in the event of a failure of the main plant control system.

In all plant areas, on-off valve control has been achieved using IQ multi-turn and IQT quarter-turn electric actuators. For the control valves on each of the networks, IQM modulating actuators were selected, equipped with Rotork Folomatic proportional controllers and CPT current position transmitters, operating from a 4-20 mA control signal.

For the long term

Data loggers within each actuator facilitate diagnostics by recording historical operating data and valve torque trends.

Using Rotork's IQ-Insight software, this data can be analysed in the office to predict any potential operating issues. Maintenance can therefore be planned in advance. A second contract has since been awarded for Extresol 1 and Extresol 2, two similar plants which will be operational in 2010.

Isolating and modulating actuators

The main pipework circuits on a parabolic trough power plant comprise of the HTF (Heat Transfer Fluid) thermal oil pipes that carry the heat transfer oil around the mirrors, the steam plant and the power generation circuits. In addition, a liquid salt heat storage circuit is installed to enable electricity to be generated for up to 7½ hours after the sun has set.



Mike Howard, Rotork System Sales Engineer, with an IQ actuator and Pakscan P3 Master Station.

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INDUSTRY LEADING VALVE ACTUATION
NEWS FROM THE WORLD OF ROTORK

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Profibus-enabled valve actuators in high-tech environmental upgrade

Profibus-enabled Rotork IQ Pro intelligent electric valve actuators are at the centre of an advanced new treatment process at one of the UK's largest sewage treatment works.

A new nitrifying activated sludge plant has been designed and constructed as a major part of an environmental improvement project that ensures compliance with strict new final effluent consent allowances laid down by the European Fresh Water Fish Directive.

The scheme involves the introduction of new activated sludge treatment technology to treat the flow from the site's primary works. The new plant is equipped with state-of-the-art controls, condition monitoring and advanced instrumentation to optimise the process and save energy. The efficient performance of the process, which is entirely natural and chemical-free, depends on the injection of re-activated sludge into both sides of the front-end selector plant, in proportions that are dictated by downstream process conditions. These are constantly influenced by circumstances including fluctuating flow levels and ambient weather conditions.

Flowmeters and oxygen sensors in the activated sludge plant lanes communicate data to a PLC which

then signals positional changes to two Rotork IQ Pro modulating electric actuators operating 1400mm Dezurik plug valves on a pipe feeding the selector plant from surplus activated sludge storage tanks. The accurate positioning of the two valves determines the flow rates into both sides of the selector plant to ensure that the correct mix is introduced into the activated sludge process. Control and instrumentation communication on the plant utilises a Profibus digital network to provide swift and comprehensive data transmission and economical installed wiring costs. Connectivity with the IQ Pro actuators is by means of Rotork's Profibus highway termination module, which enables the bus to be connected and disconnected from the actuators if necessary without interrupting communication with other devices on the network.

On completion of the activated sludge process the residual sludge is pumped to new and refurbished final settlement tanks, from where it is thickened and finally used as fuel to generate electricity for the site.



A Rotork engineer downloads valve operating data from one of the Rotork IQ Pro modulating actuators on the selector plant using the 'non-intrusive' hand tool that enables data to be transferred for analysis on a PC running Rotork IQ-Insight software. The Rotork IQM12 modulating actuators on the plant are fitted to Rotork Gears MOW9R spur/worm secondary gearboxes.

More than one thousand Rotork intelligent electric valve actuators have been ordered for the US\$ 1.6 billion Qinzhou Refinery project in South China. The new refinery, which is owned by PetroChina, is designed to improve the energy supply throughout southwest China.



Rotork IQ Pro valve actuators installed on a processing area of the Qinzhou Refinery.

Rotork IQ actuators specified for southwest China's first major refinery

Rotork IQ Pro intelligent actuators with Pakscan P3 network control systems are being installed in areas including the crude oil, LPG, petroleum and diesel tank farms, processing and water purifying plants and waste water treatment works.

The actuation contracts are being co-ordinated and supported by Rotork's office in the city of Guangzhou, in Guangdong Province.

The Qinzhou Refinery is among the latest in a series of Rotork project successes in the Chinese oil and gas industries.

Qinzhou is a port city in China's Guangxi Zhuang Autonomous Region. The refinery will process oil imported from Sudan and will have a daily processing capacity of 200,800 barrels after production starts at the end of 2009.

Three firsts for Rotork Korea Irrigation in California

Rotork Korea has recently completed an order which marked three firsts in their local market.

The order, for over three hundred Remote Control RC200 pneumatic actuators, was Rotork's first project order for this product in Korea. It was supplied to 3Z, a Korean manufacturer of sleeved plug valves,

and was the first order to have been received from this company. Finally, it was the first time that Rotork Korea supplied the actuators with locally sourced and assembled controls.

The actuators were ordered for the Ethylamines Project for Arabian Amines in Saudi Arabia, which is engineered by Hyundai Engineering in Seoul.



Remote Control RC200 pneumatic actuators in the Rotork Korea workshop.

Supplied by irrigation equipment specialist Fresno Valves & Castings Inc, this photograph shows Rotork IQ actuators controlling the Francher Creek Headworks, one of many similar installations on the Fresno Irrigation District in California.



State-of-the-art valve control is a key part of the management of over eight hundred miles of canals and distribution works - the majority originally constructed between 1850 and 1880 - which were used to create the Fresno Irrigation District under the California Irrigation Districts Act in 1920. In spite of urban expansion, the District still

irrigates an agricultural area in excess of 150,000 acres, diverting an annual volume of 500,000 acre-feet (616,750,000 cubic metres) of water. The District is also expanding and improving its distribution system to deliver water to agricultural land which up until now has had to rely on groundwater pumping.

Saudi gate valve is largest to-date

Photographed in the workshop of Saudi National Valves, this gate valve is one of the largest locally manufactured valves to have been built for the Saudi Arabian oil industry.

Fitted with a K-Mass fireproofed Rotork IQ70 electric actuator, the 20inch, Class 150 wedge gate valve has been supplied to the contractor Al-Khodari & Sons for installation at a tank farm facility.

The new motorised valve is a part of an upgrade project on the site's waste water system, which, being within the hazardous area environment of an oil installation, demands the use of an explosionproof and fireproofed actuator. The IQ70 with factory-fitted K-Mass intumescent coating is designed to remain operable in a fire temperature in excess of 1000 °C for

more than 30 minutes. The actuator was witness tested, inspected and approved by engineers from the customer prior to shipment from Rotork's UK manufacturing plant.

Saudi National Valves (SNV) is the valve making division of the Saudi Mechanical Industries Company, an organisation with more than 20 years experience in the manufacturing of mechanically engineered products and components. SNV manufactures ball, gate, globe and check valves in a wide variety of materials, ranging from carbon steel to exotic alloys.



CONTRACT NEWS

Rotork pipeline valve actuators in Kurdistan economic improvement project

Rotork Fluid Systems has supplied heavy duty GO Range gas-over-oil valve actuators for a new strategic gas pipeline bringing economic benefits to the Kurdistan region of Iraq.

The 180km pipeline, supplying natural gas to the Arbil and Sulaimaniya power plants, is the first phase of the \$650 million Kurdistan Gas Project, a joint venture between Dana Gas – the Middle East’s first private sector natural gas company – and Crescent Petroleum. The joint venture has formed a strategic alliance with the Kurdistan Regional Government to generate 1250MW of power that will save Iraq about \$2.5 billion of annual import costs.

Majid Jafar, Executive Director of Crescent Petroleum, recently explained: “This is the first project of its kind in Iraq and will provide important economic and social benefits for the Kurdistan



Work in progress on a Rotork GO Range actuator and valve package en-route to Kurdistan.

“This is the first project of its kind in Iraq and will provide important economic and social benefits for the Kurdistan region and all of Iraq.”

region and all of Iraq.” Ahmad Al Arbeed, the Upstream Executive Director for Dana Gas, added that they now aim to build on these achievements in the Kurdistan region and across Iraq, with a strategic focus on maximising economic benefit and addressing local needs.

Rotork GO range valve actuators use pipeline gas as the power source to pressurise the hydraulic operating system, which can be configured to meet virtually any valve duty requirement. They are especially suitable for valve applications in the remote locations associated with cross-country pipelines.

The actuators for the Kurdistan Gas Project are operating ten ANSI Class 900 Econosto ball valves in sizes up to 24 inches. Actuator site assembly and function testing were carried out with the assistance of Rotork trained and certified technicians from Omas Ltd, Rotork’s agent in Turkey.

Sub-sea critical duty valve actuator order for Mediterranean gas field



SSIV System.

Rotork Fluid Systems is supplying specialised hydraulic actuation equipment for critical Sub Sea Isolation Valve (SSIV) duty on a new pipeline in the Petrobel North Port Said gas field, off the Mediterranean coast of Egypt.

The Rotork model GSH 161 quarter-turn scotch yoke actuator will operate a sub-sea ball valve manufactured by Breda Energia Spa on the 18 inch pipeline at a depth of 25 metres, in an ambient temperature of 26 °C in the vicinity of the Petrobel Darfeel platform. The new pipeline will export Pliocene gas from topside facilities in the Semman field to the Darfeel platform, from where it will be transported onshore through an existing pipeline to the El Gamil processing plant. The SSIV, which will shut off the supply of gas from Semman in the event of an emergency on the Darfeel platform, is being installed in line

with Petrobel’s policy of maximising safety levels at all existing and new platforms and facilities.

Rotork Fluid Systems has been manufacturing sub-sea valve actuators since 1992, successfully fulfilling installations at depths down to 2500 metres. Rotork engineers work closely with contractors and end users to meet specific duty demands, encompassing rotary and linear actuator designs with ROV or diver operated facilities, approved to stringent international standards. For this contract negotiations with Breda were conducted by staff at Rotork Fluid Systems’ Lucca factory and Rotork’s agent in Egypt.

Rotork engineers work closely with contractors and end users to meet specific duty demands

Rotork Site Services has successfully completed an unusual retrofit and upgrade project on the historical Peterborough Lift Lock, the main tourist attraction on the Trent Severn Waterway in southern Ontario, Canada.

Built in 1904, the Peterborough Lift Lock claims the world's highest hydraulic lift. The 65ft (19.8 metre) lift, which takes approximately two minutes, is in continuous use from May to October each year, serving the mainly recreational and tourist boaters who comprise the majority of today's waterway users.

As Regan Bull from Rotork's Mississauga Office explains, the lift operation is elegantly simple: "the lift relies on gravitational forces and the counterweighted actions of its basins. Two massive 7ft (2.13 metre) diameter rams rest upon a granite bedrock footing and support steel-girded basins weighing 1,300 tons each. Each basin is capable of carrying a craft up to 40 metres long.

Historic waterway lift lock "pushes the boat out" with IQ valve control upgrade

"Once the uppermost basin reaches its top elevation it uses a series of hydraulics to add more water, so that the additional volume offsets the weight of the lower basin, pushing it up as the upper basin descends. At the base of each ram are two 12 inch (300mm) Class 600 gate valves which control the first lift of the day and isolate the rams when they are in their extended position."

Regan continues: "Amidst the ice and snow of March 2009 staff from Parks Canada and Rotork Site Services moved in and the retrofit was swiftly completed. With the ice now gone the busy boating season is underway again and, with the help of Rotork Site Services, Peterborough Lift Lock is ready to continue its distinguished history for years to come."



Retrofit work in progress on one of the valves, deep in the bowels of the structure.



The tourist's view of the Peterborough Lift Lock.

"After more than 30 years continuous service the two Rotork 'A' range 40A Syncropak actuators that controlled these valves were in need of refurbishment, but the decision was made to use this opportunity to upgrade to the latest IQ Pro control and diagnostic technologies"...

For the industrial archaeologists

The Peterborough Lift Lock was engineered by Richard Birdsall Rogers, who drew his inspiration from several lifts in Belgium, France and England which used a similar design, albeit on a smaller scale. It was the first lock to have been built out of concrete and, when completed in 1904, was the largest structure ever to have been built using unreinforced concrete.

The Trent Severn Waterway was originally a commercial trade route helping to join up the Great Lakes of Ontario and Huron. Crossing some of the prettiest parts of Central Ontario's cottage country, the canal is 386 km long and features 44 locks in total as well as the only marine railway still in operation in North America.

Rotork wins Control magazine's 2009 Readers' Choice Award

Control magazine has announced that Rotork Controls is the winner of the prestigious 2009 Readers' Choice Award for electric valve actuators.

The award represents the expressed brand preferences of more than 1000 process automation professionals taken from the magazine's readership as well as subscribers to the Control Global.com website. The majority

of respondents are based in the USA, whilst Europe and Asia are also represented. "Rotork would like to thank those surveyed for recognising our ongoing work with the innovative IQ intelligent electric actuator, and for their enthusiastic response to our recently launched CVA electric control valve actuator. Over the years, Rotork's continuous dedication to quality in the areas of design,

manufacture, engineering, sales and service has helped to enhance the company's image amongst engineers throughout the world." Control magazine is exclusively dedicated to the global process automation market with a readership encompassing engineering, operations and management professionals.

The magazine's Readers' Choice Awards programme has been running for seventeen years and seeks user preferences in a total of more than a hundred process automation technology categories.



ALTERNATIVE MARKETS

Rotork and the Amsterdam Internet Exchange Centre

Internet Exchange Centres, anonymous-looking buildings filled with mystifying electronic wizardry which enables internet service providers, systems integrators and other web based traffic-exchange enterprises to enhance and optimise the performance of their networks, are not well known as principal markets for valve actuators.

Yet, even in the rarified atmospheres of these internet temples, actuators have their parts to play, as Hans van Berkel, Sales Manager for Rotork in the Netherlands, has discovered.

Air conditioning plays a vital role in maintaining a consistent ambient environment for the equipment used in these centres. Traditionally, air conditioning systems have used cooling towers, chillers and fans, and these can be expensive to run and maintain. They also necessitate the use of chemical dosing regimes within their water circuits to control the build-up of sediments and eliminate the risk of harmful bugs including legionella. Overall, these types of traditional systems are often viewed as environmentally unfriendly and energy intensive.

However, when Equinix, a leading global name in the internet industry, were recently building their new Amsterdam Internet Exchange, they were able to take advantage of an innovative centralised air conditioning project provided by the Dutch energy and power company NUON. Instead of cooling towers on individual buildings, the NUON system uses water drawn from a naturally occurring 30 metre deep pond to deliver cooling water to several large office buildings, including the Equinix complex.

The water is circulated and returned to the pond, which – as well as providing a copious alternative water supply to the mains - acts as a naturally occurring cooling tower. In addition, the water from the pond does not require chemical dosing. The system saves a huge amount of chemical, water and energy costs and, as Hans observes: "is similar in concept to a district heating system, except that it provides district cooling." Since 2006, Rotork has been supplying IQTM electric modulating intelligent actuators to operate Samson segmented ball control valves on the NUON district cooling project.

The actuators are incorporated on skid-mounted modules which are installed in various areas of the cooling water pipework network to regulate the flows. More recently, Rotork has also been involved in providing a customised solution to a critical valve operating function within the Equinix building itself.

The problem involved two cooling water circuits which must be kept entirely separate from each other at all times. In one area of the plant, there was a danger that the two circuits would cross-contaminate if two three-way divertor valves were operated in a particular configuration. Rotork therefore put forward a solution using one actuator to operate both valves, with customised linkage designed to ensure that the valves could never be in the positions that would create the cross-contamination configuration. "We approached our specialist company in the UK, Rotork Valvekits, and the sturdy linkage design proposed by them, which included a separate bearing to support the secondary valve shaft, housed within a rigid semi-enclosed box mounting platform, won the confidence of the customer, enabling Rotork to provide a one-stop-shop solution for the application" Hans explains.



IQTM actuated valve modules for the district cooling plant.



ROM actuator with customised Valvekits linkage.

The two Bray valves were fitted with the tandem adaptation and a ROM electric actuator in Rotork's Hoogvliet workshops, where full functional testing was performed before the package was despatched to site.

Hans concludes: "This was a good illustration of a job where Rotork companies in different countries and with different specialised skills can work together to produce the best engineered, most efficient and economical solutions to customers' valve operating requirements when off-the-shelf answers are not available."

Rotork Success in Major Desalination Projects

Rotork Site Services is busy retrofitting hundreds of new IQ Pro electric actuators at the world's largest desalination plant.

The plant is one of several in Saudi Arabia, a country that produces more potable water from the sea than any other. These plants also now produce 20% of Saudi Arabia's electricity supply.



Rotork actuators are also being installed at London's first desalination plant, currently under construction at Newham.

The Beckton Desalination Plant is the first large-

scale plant of its kind in mainland Britain. Water from the tidal stretch of the River Thames will be treated to guarantee a back up supply of drinking water for up to one million people a day.



Above: Artist's impression of Beckton Water Desalination plant.

Environmentally friendly district heating with local connections

Falun in central Sweden has been the home of Remote Control since the 1960s. In 2008 Remote Control became a part of Rotork and is now called Rotork Sweden AB.



The Falun plant uses the latest Metso Hybex boilers with BFB (Bubbling Fluidising Bed) technology.

A little while ago, in an effort to combat global warming, Falun was seeking an environmentally friendly way of generating electricity and providing district heating. The new plant which has now been built relies on the latest Metso Hybex boilers with BFB (Bubbling Fluidising Bed) technology to generate 18MW of electricity and 60MW of heat, utilising a locally produced, plentiful supply of biomass fuel consisting of bark, sawdust and wood chips. These types of boilers are especially suitable for burning low heat value, high moisture fuels, making them a popular choice for the combustion of demanding fuels such as biomass.

Continuing the local connection, Remote Control pneumatic actuators manufactured in Falun are used throughout the plant, which is centrally controlled by a Siemens PS7 process control system which supervises more than 1500 input/output functions. In addition to facilitating precise and efficient valve

control to optimise the performance and energy output of the boilers, the actuators also control specialised ancillary equipment which prevents harmful emissions and assists in the achievement of a carbon neutral energy generation solution. Some of these applications are described below.

Depending on the area of application and valve duties, the actuators provide isolating (on/off) or modulating (continuous movement) control. The isolating actuators are connected to a simple, low cost ASI-bus digital link for communication with the centralised control system whilst the modulating actuators use a separate Profibus-PA protocol network for this function. The use of two network protocols is explained by the fact that Profibus-PA (Profibus for Process Automation) has the ability to carry a high level of data. It is particularly well suited for environments where discrete and continuous processes are closely

linked, such as those involving swift and frequent adjustments to valve positions in response to data from flow and temperature sensors.

At Falun, for example, the supply to the boiler of combustion air and secondary air with re-circulated exhaust requires prompt and continuous adjustment to maintain efficient performance.

The actuators operating the DN500 dampers in this area are therefore equipped with Profibus-enabled PMV positioners which operate in response to a 4 – 20mA analogue signal. Nearby, actuators operating the dampers which control the flow of primary air to the boiler's Hybex beams in order to cool the external panels of the boiler (an isolating valve function) are equipped with simple IFM position indicators linked to the ASI-bus.

Similarly, eight actuators with IFM position indicators operating DN50 ball valves control the flow



of compressed air to the ash cones below the boilers in order to prevent a potential build-up caused by ash sticking in these areas, which could interrupt normal operations.

Remote Control actuators are also used on some areas of the circuits which carry the hot water around the district heating network. For example, in one area just outside the plant, a potential problem with noisy valves resulting from high differential pressures has been solved by installing a DN50 ball control valve on a bypass circuit around a DN150 butterfly valve. The actuator regulates the bypass flow through the ball valve in order to reduce the pressure drop across both valves from more than 5 Bar to less than 2 Bar, thus preventing any excessive valve noise.

Finally, the reduction in emissions of harmful nitrogen oxides is a key element in the environmental credentials of the Falun plant. Nitrogen oxides (NOx) are the primary causes of air pollution, smog and problems for asthma sufferers, as well the core ingredient of acid rain. In order to neutralise them at Falun, ammonia is stored in a liquid mixture, which is passed through pipework in contact with the hot emission gas pipework to heat it and separate the ammonia into a gas, which is further heated prior to direct injection into the emission flow.

Seven actuators on the ASI-bus loop operate DN15 and DN25 ball valves to perform this critical injection duty, whilst two further actuators operate DN80 and DN50 ball valves on the filling and return pipework on the site's ammonia storage tank.

Rotork launches marine version of market-leading electric valve actuator

A new version of the market-leading IQT intelligent electric actuator has been developed specifically to meet the extreme demands of shipboard marine applications.

Designated IQT-N, the actuator provides direct-drive operation of quarter-turn valves. Expressly designed for the modern ship environment, the IQT-N has been independently tested for shock tolerance to meet the requirements of most worldwide ship applications.

The overall size of the actuator has been reduced in comparison to its non-marine counterpart to account for shipboard space constraints. The result is a low cost, reliable and lightweight 'fit and forget' valve control solution offering a multitude of options for the management of shipboard critical systems.

Available for three-phase, single-phase or DC power supplies the IQT-N embodies the same high

Cutaway illustration of the Rotork IQT-N electric valve actuator.

level of features as the standard IQT. Actuator setting and configuration is performed non-intrusively using a hand held setting tool and two-way infra-red link.

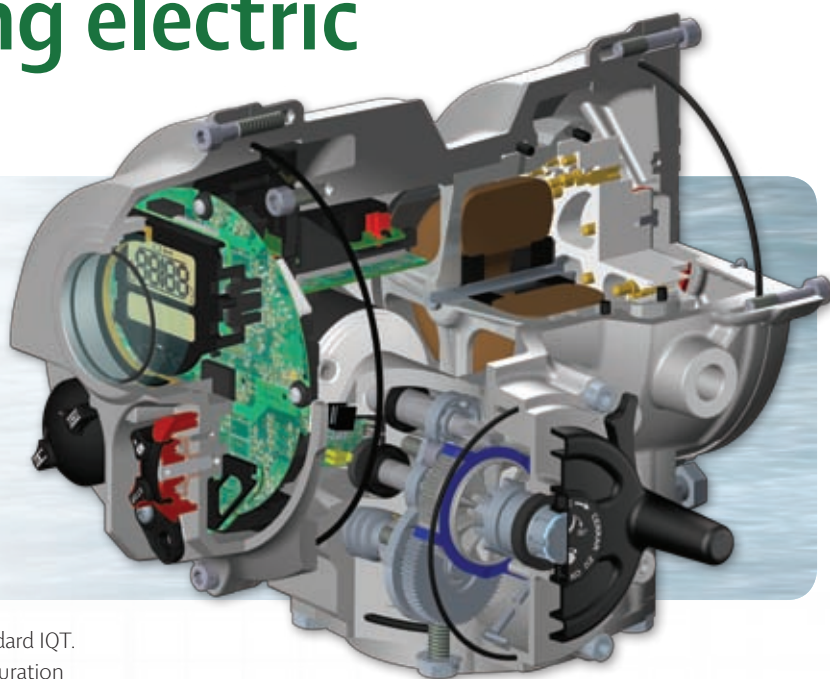
The integral data logger keeps an historical record of operating activity, including valve operating torque curves, which can be downloaded and analysed on a PC using Rotork IQ-Insight software to plan for maintenance or diagnose potential operating issues.

The same software enables all set-up and configuration information to be reviewed, re-configured and then uploaded back into the actuator.

Specifiable for isolating or modulating valve duty, the IQT-N features a robust construction with IP68 dust tight, watertight and temporarily submersible (7 metres depth for 72 hours) protection.

In addition to quarter-turn valves and dampers, special versions are also available for full-turn and multipoint applications.

Other options include a failsafe battery back-up system and fire protection exceeding ANSI/API607 and UL1709 (1093 °C/2000 °F for 30 minutes).



Rotork introduces compact electric actuator solution for marine valve applications

The new Rotork ROMpak range of electric actuators has been introduced to offer the marine industry a lightweight, economical and compact solution for the operation of quarter-turn valves and dampers, with a comprehensive choice of control, instrumentation and diagnostic options.

These options now enable shipboard valve functions to be set-up, controlled and monitored with the same degree of efficiency, accuracy and flexibility as the most up-to-date process systems.

The ROMpak actuators retain all the mechanical benefits of the popular original Rotork ROM design, including self-locking gears, manual override, externally adjustable mechanical stops, a wide range of mains power options and an IP67

watertight enclosure. The ROMpak actuator adds a self-contained control package with local controls and status indication relays and the option of Rotork Folomatic positional control, current position transmitter, integral data logger, non-intrusive configuration with a Bluetooth wireless interface and digital bus network connectivity.

Network connectivity, which includes Rotork's dedicated Pakscan and the Profibus, Modbus and Foundation

Fieldbus open protocols, is also configured by Bluetooth, as is the recovery of historical operating data from the data logger for valve diagnostics and maintenance planning.

The three actuator sizes in the ROMpak range provide operating torques from 35 to 650 Nm and are suitable for ambient temperatures of -5 to +60 °C.



ROMpak Model ROM2 valve actuator.

The first orders for ROMpak actuators include applications on new ships being built for an Eastern European country. In addition to new installations, the actuators are easy to retrofit on existing valves and Rotork's specialist Site Services organisation is available on a worldwide basis to offer advice on or to implement this activity.

Critical valve partial stroke testing using SVM

With many years experience as a leading manufacturer of heavy duty fluid power valve actuators for the international oil and gas industries, Rotork has first-hand knowledge of the importance of in-line valve testing to predict or prevent unplanned interruptions to production processes and the associated cost implications inherent in such interruptions.

What is SVM?

In critical valve duties including ESD (Emergency Shutdown), BDV (Blow Down), HIPPS (High Integrity Pressure Protection System) and SSIV (Sub Sea Isolation Valves) these breakdown cost implications are greatly magnified. It is therefore in most of these areas that the greatest attention has been paid to valve monitoring and partial stroke testing techniques.

Partial stroke testing is a technique that allows the operator to perform a diagnostic test on a valve without the need for a plant or process shut down. The majority of faults associated with isolating valves relate to the valve being in one position during long periods of inactivity. The operator can therefore verify operation by moving the valve by only a small percentage of its full travel.

Years of experience in the field has led to the development of the Rotork SVM (Smart Valve Monitoring) partial stroke critical valve testing system. The patented SVM technology performs real time partial stroke testing of the complete valve installation, enabling the user to assess not only whether the valve will open or close as required, but also the performance of all the final elements in the valve loop. The technology has proved to be of great benefit in locations as disparate as Sakhalin Island and Saudi Arabia.

A "universal" solution

In any given plant there is always a diverse range of valves, actuators and control systems. One of the issues associated with partial stroke testing is therefore the need to test equipment from multiple manufacturers in a variety of configurations. The testing systems supplied by valve and actuator manufacturers tend to be specific to their own equipment, often dictating the requirement for several different test systems and protocols within a single plant, resulting in increased costs for procurement, installation, commissioning and user training.

The Rotork SVM system uses a different approach, consisting of a control unit that connects to the power supply of the actuator solenoid valve, and a pressure transmitter to provide feedback for the analysis of valve performance. There is no direct interaction with either the valve or the actuator

The system can be either mounted in a hazardous area near the valve or remotely in a safe area, such as the control room.

and the installation can have no possible effect on the normal operation of the valve. According to Rotork, this design feature is unique among partial stroke testing techniques, enabling the system to be used on all valve types and virtually any fluid power valve actuator – quarter-turn or linear, pneumatic or hydraulic, spring-return or double-acting.

The system can be either mounted in a hazardous area near the valve or remotely in a safe area, such as the control room. This flexibility is facilitated by the fact that the SVM does not mount directly on the actuator, valve or associated controls. Furthermore, any changes to the configuration of these components will not affect the manner in which tests are conducted. In a typical test sequence, the SVM will de-energise the solenoid valve and monitor the pressure transmitter for a fixed time, set during the SVM commissioning process and relating to the percentage of valve test movement required. Once the required time is reached the solenoid valve is re-energised and the valve will return to its original position.

Application – SSIV

Fig 1. - Historically, Sub Sea Isolation Valves (SSIV) have not utilised partial stroke testing because the benefit provided by the limited scope of available testing techniques was not sufficient to offset the installation costs associated with the shut down and diving required to attach control and monitoring equipment directly to the actuator and valve. This is a major potential problem for operators because the failure of an SSIV presents a significant maintenance task. Ideally, operators should be able to diagnose potential failures well in advance to allow for more strategically planned preventative maintenance routines.

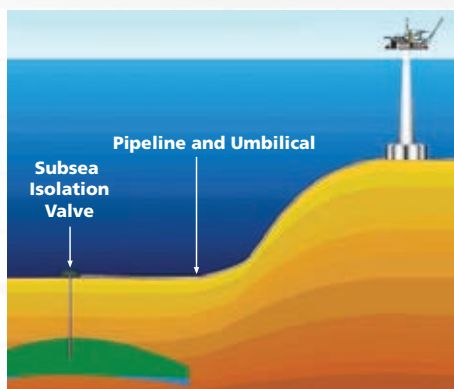


Fig 1. - Typical SSIV installation configuration.

Fig 2. - In a typical SSIV installation, all the hydraulic and control signals from the platform are routed through the umbilical, as shown in Figure 1. The SVM system connects only to the hydraulic instrument supply and solenoid operating supply with nothing fitted to either the valve or the actuator. This ensures that all test equipment can be located topside, enabling easy installation on existing SSIVs. The use of SVM on SSIVs is further facilitated by the fact that most SSIV actuators are hydraulically operated. Since hydraulic fluid is non-compressible, there is no loss of resolution of data when monitoring is performed topside, as represented in Figure 2.

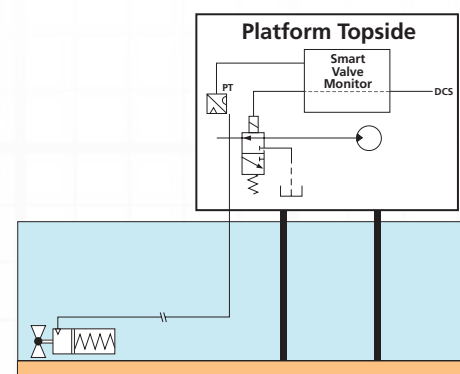


Fig 2. - Typical SSIV with SVM system.

The graph in Figure 3 shows full and partial stroke curves for the SSIV. The re-opening cycle of the valve is also shown to give the operator increased diagnostic capabilities. In this case, the valve is fully closed after 43 seconds and the partial stroke is conducted for 14 seconds, representing approximately 33% of the full stroke.

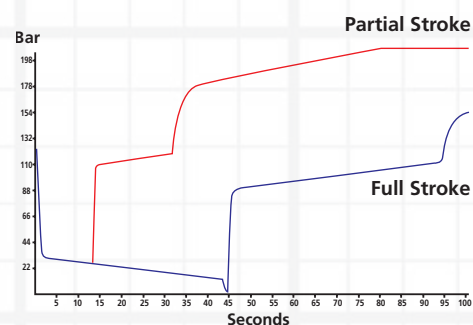


Fig 3. - Typical SSIV full and partial stroke curves.

Conclusion

With the Smart Valve Monitor, critical valves – including sub-sea valves – can now be partial stroke tested to provide key performance data essential for strategic planning and maintenance activities. The process is entirely transparent to normal valve operation and tests all the final valve elements as required by IEC 61508. In addition to facilitating strategic maintenance and extending the periods between shut down intervals, the process also assists with SIL compliance.

CONTRACT NEWS

Pakscan-enabled IQ intelligent electric actuators have been ordered for the aircraft hydrant refuelling plant at the new Doha International Airport, which is due to open in 2011.

Ashley Watkins, Rotork Middle East Regional Manager, explained: "Rotork's actuation technology will help to cut the 'turnaround time' (the period between the aircrafts' landing and take-off) at the airport. This will assist the proper regulation of airport traffic as the planes will not be kept waiting on the tarmac for refuelling."

Ashley was speaking as Mission Leader at a reception for a visiting British Trade Mission to Qatar, organised by the Energy Industries Council (EIC).

Ashley continued: "Rotork actuators will control fifty Double Block and Bleed valves and will facilitate swift refuelling of the aircraft on the airport apron pad itself. This means that it will not be necessary to use tankers for refuelling purposes, which will make a significant contribution towards maintaining strict security at the airport."

Actuators boost refuelling safety at new Doha Airport

"Rotork actuators will control fifty Double Block and Bleed valves"

The Pakscan digital control network will enable the actuators to be comprehensively monitored and controlled from centralised control areas. The system is designed specifically to cope with the long

distances between the control room and field units encountered with the majority of actuator installations, without any loss of communication performance or the need for repeaters on the network.



Artist's impression of the New Doha International Airport, currently under construction in Qatar.

Rotork is single-source actuator supplier for Far East petrochemical expansion project

Rotork has been awarded contracts with a value in excess of one million Euros for the supply of fluid power and electric valve actuators for a major petrochemical expansion project in the Far East.

The US\$ three billion Shell Houdini scheme involves modifications to existing facilities and the construction of new petrochemical production plants at two refinery sites that comprise the Shell Eastern Petrochemicals Complex in Singapore.

The majority of the Rotork orders are for heavy duty GP and LP range quarter-turn and linear pneumatic

actuators manufactured at the Rotork Fluid Systems plant in Lucca, Italy. In addition, Foundation Fieldbus-enabled Rotork IQ and IQT multi-turn and quarter-turn electric actuators have been ordered from Rotork Controls in the UK. The actuators are being supplied to valvemakers Metso Automation – through Rotork's agent in Finland, Fluid Control Oy – and Orton in Italy.

The Shell Eastern Petrochemicals Complex project includes modifications and additions to the Pulau Bukom refinery, a new monoethylene glycol (MEG) plant on Jurong Island and a new catalytic cracker on Bukom Island to supply the MEG plant. Engineering is being performed by main contractors Lummus and Foster Wheeler UK.



Rotork Fluid Systems Business Development Manager John Fowkes is pictured with two of the LP range linear pneumatic actuators built for the Houdini contract.

Solar power in Northern Canada

Rotork Fluid Systems at Calgary has supplied twenty Skilmatic EH electro-hydraulic failsafe actuators for remote gas pipeline applications in northern Alberta.



Requiring only a 24 VDC. power supply, these actuators are designed for low temperature service down to -40 °C and equipped with solar powered battery packs to facilitate reliable operation even in harsh, sub-zero temperature conditions.

The completed actuated valve packages, including the solar power and satellite communication systems, were fabricated by Rotork distributor Apex and supplied to energy company Encana for their Huron Energy project.

Rotork New Zealand opens for business

April 2009 witnessed the opening of a new Rotork office to look after customers in New Zealand.

Rotork New Zealand, a branch office of Rotork Australia, provides valve actuation markets in the country with direct access to a Rotork office for the first time in the company's history.

The new office is managed by David Croxford, a man with 27 years of Rotork experience in New Zealand. David started to work for Rotork distributor Moyes & Groves in 1982 and moved to Streat Controls when they took over the distributorship in 1996, acting as Rotork product manager with responsibility for sales throughout the country. He is seen here with one of the first actuators that he

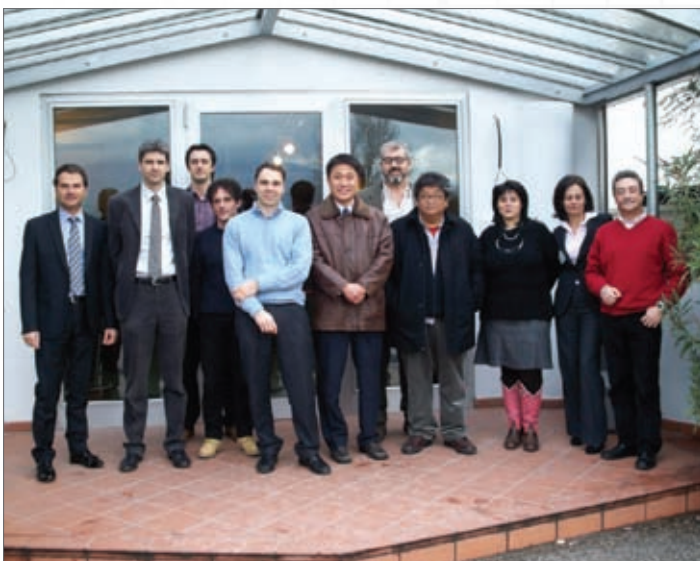
sold, a 7A Syncropak that is still going strong after more than 25 years.

David's new contact details are:

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Telephone (+64) 04 447 3312
david.croxford@rotork.co.nz



Rotork wins valve actuation contract for mega-topside FPSO



In the photograph, representatives from Daewoo Shipbuilding and Marine, Cameron Grove Italy and Total are seen with staff from Rotork following a Pazflor project contract meeting at the Rotork Fluid Systems factory in Lucca.

More than 500 heavy duty pneumatic valve actuators manufactured by Rotork Fluid Systems have been ordered for a new mega-topside FPSO (Floating Production, Storage and Offloading) vessel which will operate in offshore West Africa.

The Rotork CP and GP range scotch-yoke actuators have been ordered by Cameron Grove Italy for the operation of ball valves ranging in size from 2 inch up to 30 inch. They will be installed on the Pazflor FPSO, which will be located in Block 17 of the offshore Angola field, approximately 200 kilometres from the coast. The FPSO will be spread-moored in a depth of 762 metres on top of 25 subsea oil wells, 2 gas injection wells and 22 water injection wells.

The 32,200 ton topside weight vessel has been ordered by Total's Angolan subsidiary, Total E & P Angola (TEPA) from the Daewoo Shipbuilding & Marine Engineering Company.

With a processing capacity of 200,000 barrels per day of oil, 150 million cubic feet per day of gas and a storage capacity of about 1.9

million barrels of crude, the vessel has a 20 year design life and includes living quarters for 220 operational and maintenance staff. The first oil production is scheduled for 2011.

The Rotork actuators will be installed on the vessel's topside processing plant, for which the engineering, procurement and interface design contract has been awarded to KBR. Built at Rotork Fluid Systems' main factory at Lucca in Italy, all the actuators will be equipped with pneumatic control manifolds and certified to Ex II 2 G-EEEx-d IIC T6 for operation in hazardous areas.

The Pazflor order is the latest in a number of Rotork Fluid Systems' contract successes in the offshore Angolan oil industry, recently including actuators for the Kizomba A and B FPSOs which are operating in Angola's Block 15 for the Exxon Mobil Corporation.

COMPANY NEWS

New General Manager will build on power station success story at APS/Exeeco

Graham Rayner has been appointed General Manager for Actuation, Projects and Service (APS), Exeeco, Rotork's specialist valve actuation company serving the power generation industry.

Graham will now lead a dedicated team of engineers to further expand APS's scope and capacity for actuation installation, upgrade and maintenance projects in the power station environment.

He explains: "In the UK, a possible shortfall in generating capacity, environmental upgrades and the need to extend the life of existing stations, continues to feed an increasing demand for clean and efficient actuation solutions in the critical operating areas of many power stations. APS has over thirty



Graham is pictured (centre) at Drax Power Station in Yorkshire with his engineering team.

years specialist experience of not only providing these solutions but also maintaining and upgrading such assets in line with emerging new technologies.

"As a significant member of the Rotork Group of Companies, APS has access to an unrivalled range

of electric, electro-hydraulic, fluid power and specialised actuation solutions to meet isolating and modulating valve and damper duties in even the most inhospitable power station environments.

In the longer term, conventional and nuclear new build programmes

will provide further opportunities for APS's installation, commissioning and maintenance services."

Graham, 31, joined APS as an apprentice technician in 1994 and in recent years has been the Engineering Manager for the business.



Ball valves equipped with Remote Control RC200 range pneumatic actuators, packaged with solenoids, switchboxes and handwheels.

Rotork appoints UK distributor for Remote Control valve actuators

Rotork Fluid Systems has appointed Pegler & Loudon as exclusive UK stockist and distributor for the Remote Control product range of pneumatic valve actuators and accessories.

Remote Control is a well established Swedish-based manufacturer of these products, with a worldwide reputation for quality and service, which has been part of the Rotork Group of Companies since February 2008.

Pegler & Loudon is the valve and flow control specialist organisation within BSS Industrial, the distribution network serving the heating, plumbing, pipeline and mechanical services industries. Staffed by experienced engineers

and technicians, Pegler & Loudon offers a professional service to meet customer requirements for actuated valve process applications and other packages.

Based in Nottingham, the division has the full logistical support of more than fifty-seven BSS branches nationwide. Central to the Remote Control product offering is the RC200 pneumatic actuator series, with its intrinsic benefit of scotch-yoke torque technology, providing higher torque values at the valve end positions.

The design is smooth operating with a soft starting and finishing motion to protect and extend the valve's working life. Available in double-acting or spring-return configurations, these compact actuators are available with a

range of options including manual override and special materials including offshore corrosion protection.

Manufactured under strict ISO 9001 quality control standards, the actuators are CE marked in accordance with PED and ATEX.

The RC200 series also meets all international standards for the quick and easy fitting of actuators to valves and accessories such as solenoid valves, switches and position indicators.

Pegler & Loudon's contact details are:

Tel: 0115 973 9580

Fax: 0115 977 0783

Email: sales@peglerandloudon.com

Web: www.bssuk.co.uk

www.peglerandloudon.com

Rotork Fluid Systems Training Centre completes successful first year

At the beginning of 2008, Rotork Fluid Systems opened a new Training Centre at the head office in Lucca with the aim of offering enhanced support to customers and providing improved training programmes for the Rotork worldwide organisation.

The centre is led by Training Office Manager Sandro Necchi, who can draw upon over thirty years experience of the valve and actuation industry to assist him with the development of appropriate

training programmes. Sandro had worked in sales management for twenty years at a number of leading valvemakers before joining Rotork Fluid Systems as Sales Office Manager in 1995. He is supported by Training Officer Francesco Graziani, who has worked for Rotork Fluid Systems for seven years in the Assembly, Service and Quality departments.

Training programmes cover a number of disciplines. Product training is designed for customers as well as Rotork sales and management staff, with the aim of increasing knowledge and



Rotork staff at Lucca benefit from product training.



Staff from the Brazilian oil company Petrobras have attended training sessions on Rotork HPG pipeline valve actuators during 2008.

awareness of Rotork's range of fluid power valve actuators and control systems. Service Engineering training courses include actuator assembly and disassembly, manual overrides, trouble shooting, pneumatic control systems and associated equipment.

Global Quotation Programme training courses are based on the GQP, which is a specialised quotation tool for internal sales staff, designed to streamline, speed up and standardise the quotation process and methods for the worldwide network of Rotork Fluid Systems sales centres. In addition

to the above, further training sessions are custom-designed for specific user or Rotork staff requirements, drawing on the broad technical expertise and commercial experience of the training team.

After each session participants are given a Certificate of Attendance. Questionnaires and feedback are utilised to measure the effectiveness of the training and enhance the benefits of the programmes. Over one hundred participants completed training programmes in 2008 and, building on this success, the Training Centre will be further developed in 2009.

South East Water awards valve actuation framework agreement to Rotork

The framework will run for three years, with the option to extend for a total of five years, and covers Rotork's IQPro, IQTPro, AWT and Q ranges of multi-turn and quarter-turn electric valve actuators.

These products have been widely used for many years at treatment plants owned by South East Water and Mid Kent Water.

In December 2007 these two companies merged to create an enlarged South East Water, which

now supplies top quality drinking water to 2.1 million customers in Kent, Sussex, Surrey, Hampshire and Berkshire. Rotork's South East Water framework joins a growing list of similar agreements in the industry, where Rotork's intelligent actuation technologies, with network control options including Profibus, Modbus, DeviceNet and Pakscan, combine reliable, automated valve control with a low cost of ownership to facilitate the efficient operation of modern water and wastewater treatment processes.

Rotork's position as the leading supplier of electric valve actuation products to the UK's water industry has been further strengthened by the award of a framework agreement by South East Water.



(left to right) Malcolm Barber (South East Water Procurement Manager), Lee Allen (South East Water Procurement Specialist), Laurence Kettle (Rotork UK Sales Manager), Paul Hammond (South East Water MEICA Engineering Manager) and Gordon Croucher (Rotork Business Development Manager), photographed at the inaugural South East Water framework meeting.

CONTRACT NEWS

Rotork wins Giant Actuator order from Pluto

Rotork Fluid Systems is supplying nine huge pneumatic actuators to operate ISO Class 900 16 inch and 36 inch ball valves at an LNG production plant in Australia.

The GP350 model scotch-yoke actuators have been ordered from the Rotork Fluid Systems factory in Lucca, Italy. They will be installed on the onshore LNG production plant attached to the Pluto and Xena offshore gas fields, located in the Carnarvon Basin, north-west of Karratha in Western Australia.

A 36 inch trunkline will bring gas to shore from five subsea wells, where it will be dehydrated, treated and undergo liquefaction at a forecast production rate of 4.3 mtpa. Production is expected to start in late 2010. The engineering, procurement and construction



An example GP350 actuator outside the Rotork Fluid System factory in Lucca, Italy

management contractor on the project is a Foster Wheeler led joint venture.

The GP350 order is the latest of a number received by companies in the Rotork Group for the Pluto

offshore and onshore facilities, encompassing fluid power and electric valve actuators.

Rotork Group people news from around the world

PEOPLE NEWS

New General Manager for Rotork Singapore

Richard Hudd has been appointed General Manager for Rotork Singapore.



Richard Hudd, General Manager Singapore

Richard has held a number of Rotork sales positions including Sales Engineer at Bath, Sales and Service Engineer based in Libya, International Area Sales Manager for Rotork Controls and International Sales Manager for Rotork Fluid Systems in Lucca. At Singapore he takes over from Philip Seah, who has been General Manager since 2001 and has achieved noteworthy business growth during his stewardship. Philip has now been appointed Regional Sales Director for Rotork Fluid Systems in the Far East, an important area with significant opportunities for growth and increased market share.

General Manager for Operations joins Lucca

Flavio Batti has joined Rotork Fluid Systems to take up the new position of General Manager, Operations, at the Lucca factory.

He will now be responsible for implementing production and manufacturing strategies designed to increase efficiencies and reduce costs. Flavio brings an impressive track record of successful operational achievements to his new post. His wide experience has encompassed positions in operations with major companies in the automotive, electrical/electronic manufacturing and oil & energy industries.



Flavio Batti, Operations General Manager.

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