

rotork[®]

Keeping the World Flowing
for Future Generations

Application Focus:
Smart Water Grids
Enabling Flow Automation

Smart Water Grids

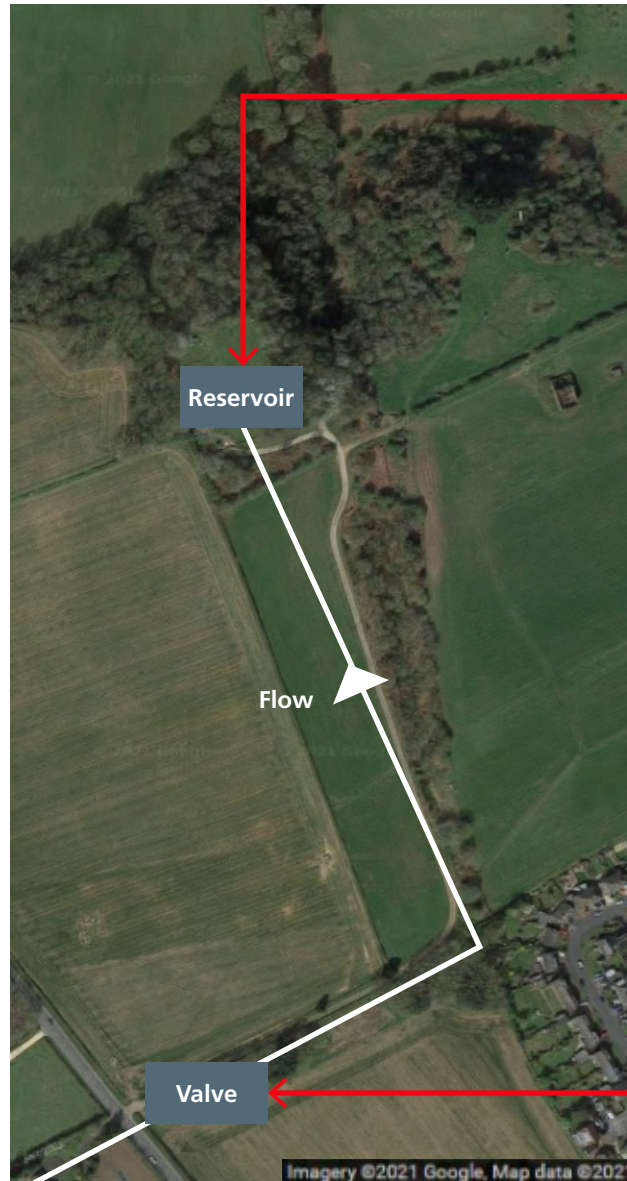
The public water and sanitation network in the UK is essential to our way of life and must be safe, robust and resilient. While many monitoring systems have been installed across the network to help detect leaks and improve quality, some installations still require manual intervention.

A water reservoir in the UK serves a population of around 30,000 homes. The reservoir is fed by a primary and a reserve inlet, both of which are controlled by valves.

During the warmer months of the year, it is often necessary for the reserve valve to be adjusted to control the level of water in the reservoir. Until this technology trial was commissioned, it was only possible to operate the reserve valve manually. This involved two engineers visiting the site, testing and accessing an underground chamber and operating the valve by hand. This manual operation was expensive and presented health and safety risks in addition to operational risks; the operator asked Rotork for assistance with remote automation of the valve to negate these concerns.

Challenge

- Remote automation of a inlet valve to a water reservoir
- Live flow feedback
- No power or communication lines on site
- Collaborative project between Rotork and a UK water utility



Solution

Rotork has developed a solution to enable any network valve to be operated and monitored without access to external wired power or control infrastructure. Once deployed, control of the remote automation system enables optimisation and rapid response to dynamic changes in the network.

Leveraging 60 years of developing and supplying valve actuators into harsh environments across the globe, the new solution uses secure and reliable 4G/5G communications and sustainable energy harvesting.

The system has been successfully trialled over eight months, eliminating the need for on-site manual intervention. The system has averted a potential loss of supply to 30,000 homes and businesses and allowed flow into a reservoir to be optimised.

A summary of the valve activity automation is as follows:

- **Initial installation**
September 2020
- **Actuator commissioned to valve**
October 2020
- **Flow signal integration**
Early December 2020
- **Recalibration to maximise flow**
Early February 2021

Customer Testimonial

"We feel the trial has been a huge success. The actuator has done everything it's been asked and more. Having remote visibility of the valve position, flow and the control function has meant we have been able to control the valve and flows remotely without any site visit required. This has enabled us to control the network in a much more controlled way than ever before.

The fact we are talking about a site which was just a valve with a handwheel in a chamber before the trial, to what control we have now is a massive step forward. We also have some data to enable us to manage our system better."



Smart Water Grids

The site uses a mixture of proprietary components and Rotork products to solve a real problem, providing a high level of value to our customer. The system provides numerous benefits to the customer through the elements listed below, focusing on safety, sustainability and with a commitment to improving the water network performance. Solar energy is collected by a set of photovoltaic cells and is stored in batteries located sub-surface. The low-power control and communications system located on the surface enables the actuator to be controlled remotely to operate the valve at any time, day or night.

Safe and Secure

- Eliminate health and safety risks
- Remote operation below ground in a confined space
- Remove out of hours work
- Single remote operator or fully automated
- Secure and encrypted communications

Sustainable

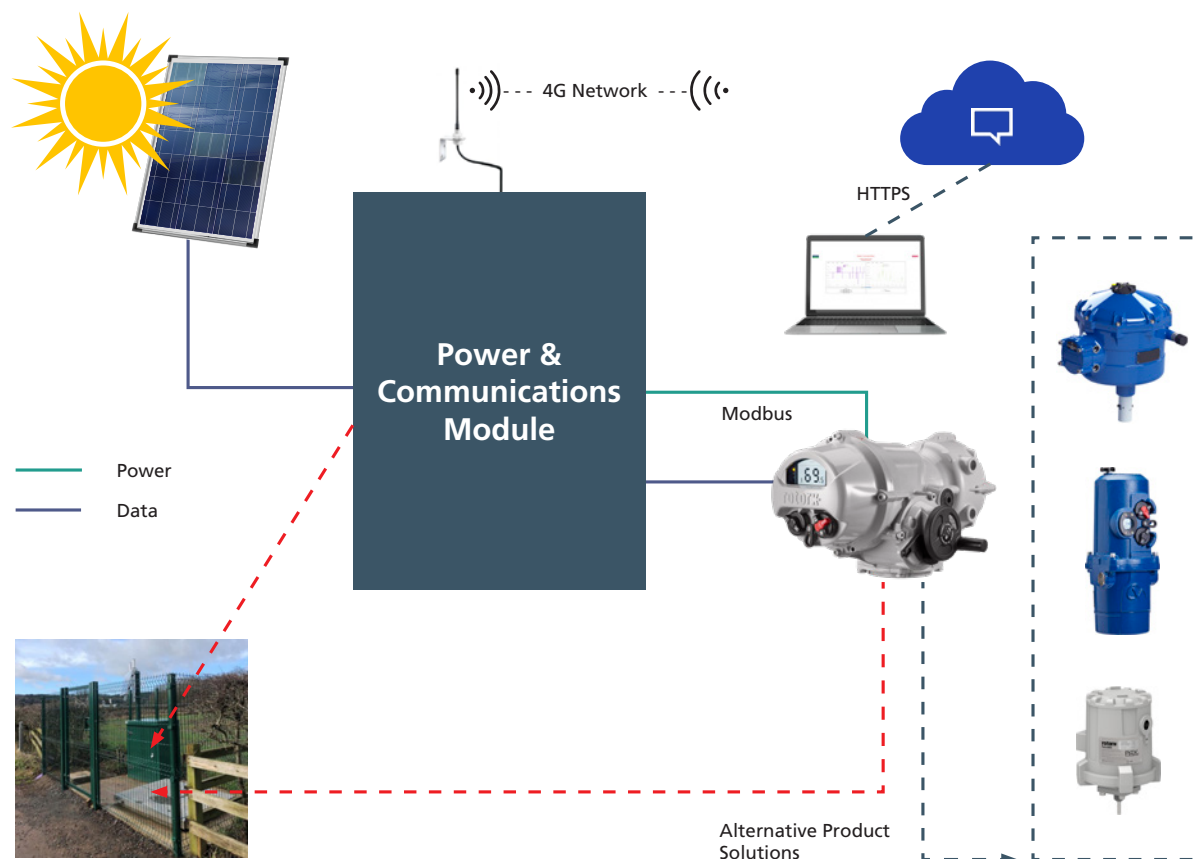
- Self-contained and powered from renewable source
- No direct running costs

Optimised

- Optimise flows throughout the network
- Control with feedback

Resilient

- Automated re-zoning, either planned or unplanned
- Water quality risk reduction
- Reduce risk of pressure spikes and leaks
- Optimise network flows and pressure



IQT Range Intelligent Part-Turn Electric Actuators



Heavy-duty valve control and diagnostics

Reliability and Performance

- Robust and reliable isolation duty
- Data logger monitoring of valve performance, preventing unwanted shutdowns
- Interlocking capability to prevent unwanted operation
- SIL capability to EN61508
- Can be configured for different types of valves

CVA/CMA Ranges Part-turn and Linear Control Valve Actuators



High precision control valve operation

Accuracy and Repeatable Performance

- Reliable high definition linear, quarter-turn and rotary valve operation
- Precise actuation of control valves involved in the pressure and flow control process
- Compact and powerful, with a 0.1% resolution capability
- Maintains tight process specifications
- Reduces measurement uncertainty
- Internal fail-safe super-capacitors on some models

PAX Range Linear Actuator and Motorised Regulators



Flexible and low voltage

Compact and Robust

- IP rating Type 4X/Type 6P/IP66/IP68 (7 metres for 72 hours)
- FM, CSA and ATEX explosionproof
- Wide ambient temperature range
- Low power consumption: less than 1 watt during standby, which is ideal for installations in isolated locations
- Optional isolated 4-20 mA position feedback
- Overall stroke and alarm limits are defined by end user



A full listing of our worldwide sales and service network is available on our website

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