Case Study

Electric actuators used in solar-powered automation project

Industry: Oil & Gas - Oilfields
Client: US oilfield water management company
Product: IQ, Site Services

Summary

The water gathering system in an oilfield water management plant was in need of improvements for enhanced control and efficiency. Rotork provided individual solar panels with control stations and Rotork IQ3 actuators in order to meet these requirements.

Overview

A major US oilfield water management company requested help to develop solar-powered control stations for some of its water gathering pipelines in West Texas and New Mexico. Water, a by-product of oil and gas production, requires careful management. Often known as 'produced water', the product is the largest volume waste stream associated with upstream petroleum operations.

At most oil shale fields produced water from wells is gathered via a pipeline infrastructure to transfer it to temporary storage at either a disposal well location or a central treatment facility.

Challenge

In order to improve its water gathering operation, the customer worked with automation equipment supplier Wolseley Industrial Group to investigate automated valve technology to control the flow in the high-pressure pipelines.

The customer had specific requirements for the valve application including the need to control system pressure to and from the well sites, shutdown lines in the event of a leak or other failure, and to eliminate high maintenance devices such as air compressors and other rotating equipment.

Solution

With a lack of available gas and electricity in the isolated locations, the use of solar power to control pipeline flow was seen as the most effective alternative. It soon became clear that electricity would have to be generated at each control station installed along the water gathering pipelines, so Rotork was contacted to provide IQ3 intelligent electric multi-turn actuators and solar panels to power them.

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The customer wanted valves and actuators every five miles in areas which were off the grid, so a solution combining individual solar panels with control stations and Rotork IQ3 actuators was devised by Wolseley Industrial Group. Each control station includes an IQ3 actuator to control either a 12 or 16 inch ball valve and each assembly is fitted with solar panels to power either a 24, 48 or 120 VDC motor.

IQ3 Product Features

- Continuous position tracking at all times, even without power
- On power loss, graphical interface, remote indication and datalogger are maintained and accessible
- Oil bath lubrication provides extended life and the ability to mount in any orientation
- Water ingress protection, not reliant on terminal cover or cable gland sealing – double-sealed to IP66/68 20 m for 10 days
- Increased protection by using independent torque and position sensing
- Remote operation, configuration and commissioning up to 100 m from actuator, with Remote Hand Station
- Safe, motor-independent, handwheel operation available at all times
- Detailed trend analysis and diagnostic data available for asset management
- Field upgradeable and configurable control & indication options, using the *Bluetooth*® enabled setting tool
- Real time valve and actuator performance information viewable on screen
- Rapid and secure commissioning & configuration even without power, via non-intrusive and intrinsically safe Rotork *Bluetooth*® Setting Tool Pro
- Certified for safety applications (SIL2/3)
- Easy installation and maintenance using detachable thrust bases
- Explosionproof to international standards
- Backed by Rotork global support