

# DELIVERING UNDER PRESSURE

By Chris Duke,  
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## Coal mine application demonstrates the advantages of electro-hydraulic valve actuation

**P**ressure is at the heart of mining operations. Millions of years of pressure produce the precious minerals or fossil fuels that mines excavate for. Plus, today's economic pressures put mine operators in the bind of high expectations with little room for error. Each piece of a mining operation is integral to the success of the whole, and the more information operators can have, the easier they can make the right decision.



The Rotork Skilmatic Pro electro-hydraulic valve actuator installed on the Water Cart Fill Point. Solar panels seen in the background provide the renewable energy source to operate the actuator.

### SI/EH PRO IMPROVED MONITORING AND CONTROL

- Datalogger—recording events, trends and alarms
- Rotork Bluetooth® upload between SI/EH actuators InSight2 software
- Semi-automatic position limit calibration
- Partial stroke—activated remotely or locally with the Rotork Bluetooth® Setting Tool Pro
- Optional ESD manual reset—to restrict the actuator from operating until locally reset when the process is in a safe condition
- Independent deadband and hysteresis—improved position control for analogue modulating applications
- Valve flow characterisation—for modulating control with various valves characteristics such as linear, equal percentage, or quick opening trim
- Optional over pressure and under pressure hysteresis adjustment
- Manual override detection
- Position maintained—in any position for digital control and network options
- CPT output can be configured to provide a 4-20 mA output signal for valve position or actuator hydraulic pressure
- Independent alarm output relays—selectable alarm and monitoring function
- Temperature sensor—monitoring the internal temperature of the actuator

### About The Author

Chris Duke is a lead service technician for Rotork Controls Inc. For over fifty years, engineers have relied upon Rotork for innovative, dependable solutions to manage the flow of liquids, gases, and powders. For more information, visit [www.rotork.com](http://www.rotork.com).

Installing a reliable valve actuator provides benefits throughout a pipework system. In the following example, Rotork's Skilmatic Pro electro-hydraulic valve actuator was called upon to not only withstand the physical pressure of the job at hand, but also the coal mine operation's expectations for consistent performance. Thankfully, holding up under pressure is what Rotork valve actuators are designed to do best.

### HIGH CAPACITY, HIGH REWARDS

Mount Thorley Warkworth (MTW) is an integrated operation of two adjacent open cast mines in the Hunter Valley region of New South Wales, Australia, supplying international and domestic markets with semi-soft coking coal and thermal coal.

Rotork has supplied valve actuators for the pipework delivering water to the north and south coal processing (washing) plants from a new 528 million gallon (2 giga-liter) dam source. This project has included an actuator for a pipeline supplying water to a new Water Cart Fill Point for routine dust suppression operations. Each water cart fill is made up of 132 tons (120 tonnes) of water, delivered at a pressure high enough to overcome a 33 foot (10 meter) rise in the height of the pipework at the point of delivery.

### DEMANDING SPECIFICATIONS

The specification for the actuator to operate the isolation valve on the Water Cart Fill Point was very demanding, calling for a solar powered, 24VDC SIL-rated electric fail safe actuator, capable of closing a 19.7 inch (500 millimeter) butterfly valve in ten seconds. Rotork has been able to satisfy all these criteria with a standard Skilmatic Pro electro-hydraulic product solution.

These self-contained electrically powered actuators—comprising integrated control module, hydraulic manifold and a power unit consisting of a motor, hydraulic pump and reservoir—offer flexibility and customisation to suit specific applications. Utilising an integral spring mechanism to provide the most reliable means of positioning valves to a pre-determined safe position, they have been specifically designed for use in critical fail safe applications.

### GETTING AHEAD OF MAINTENANCE

Skilmatic Pro actuators combine the simplicity of electrical operation with the precision of hydraulic control and the reliability of mechanical fail-safe action. With the recent incorporation of a new intelligent control and monitoring system, the actuators provide an ideal solution for two position, safety shutdown or precise modulating control applications.

The benefits of reliable valve actuation are combined with advanced HMI, monitoring, data logging, diagnostic, and communication technologies utilizing Rotork's non-intrusive Bluetooth® Setting Tool. The Pro options include the ability to provide a valve signature profile as an integral part of commissioning data. Using the Setting Tool, the actuator configuration, valve operating profiles, and data logger files can be transferred from the field and to a standard PC for storage and analysis as part of predictive maintenance routines.

## SI PRO AND EH PRO ENHANCED FEATURES

- Larger clearer dual display with 32 character text
- Valve torque / thrust signature and profile measured and recorded in the form of actuator hydraulic back pressure.
- Status & monitoring diagnostics.
- Improved data download and transfer speed via Bluetooth
- Compatible with Rotork InSight2 software
- Compatible with Rotork network communication cards –Pakscan, Profibus®, Foundation Fieldbus®, Devicenet®, and Modbus.

### FROM EXTREME TO ROUTINE

Tools like the Skilmatic Pro electro-hydraulic valve actuator are just the beginning in the next generation of solutions that will help pump systems designers and engineers build the reliable pipeworks of the future. As more information is logged, recorded, and used, the limits of today's systems will increasingly recede into the distance—what seems a high pressure task today may well become routine business tomorrow. ■