

In the oil and gas industries cost management is a priority. This is driving more innovative solutions that reduce operational costs and/or optimise output. A telling example is the use of solenoids as the final element in the control circuit for pneumatic on/off valves.

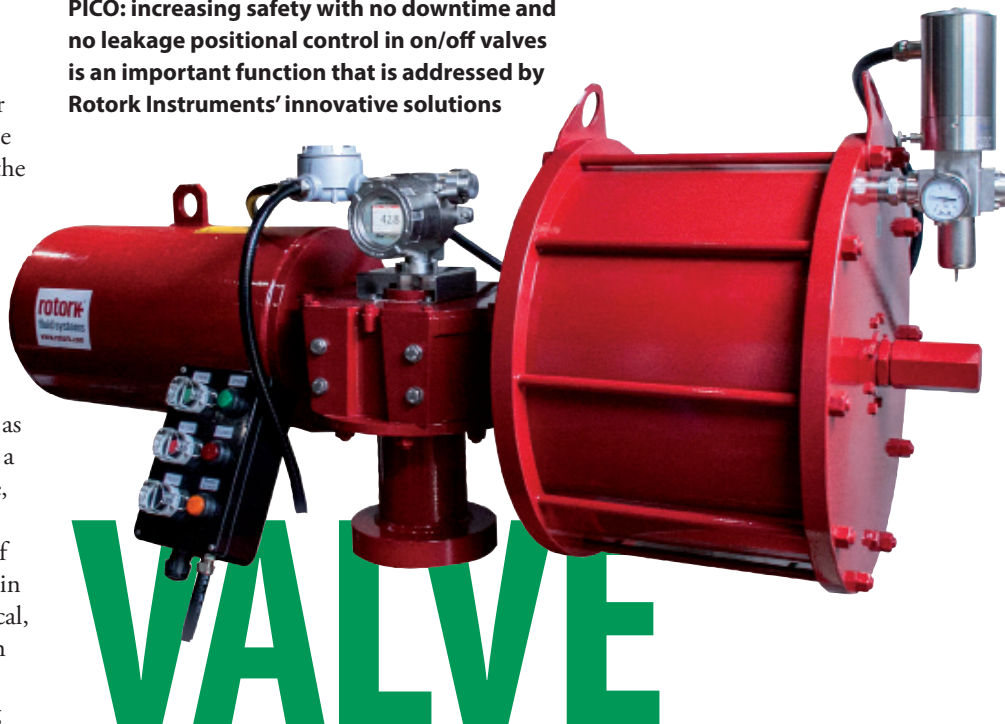
For emergency shutdown valves, partial stroke testing (PST) and sometimes full stroke testing (FST) is required to ensure the valve (system) works according to the site's safety standards. A PST is a critical procedure as end users do not want a failure to cause a shutdown of their operations. Therefore, the actuator needs to be moved with precision over a controlled percentage of the valve stroke. There are various ways in which PST can be performed: mechanical, electronic, electric and pneumatic. With the PICO control system Rotork has devised a complete solution, integrating ultra-fast, zero bleed solenoid valves, high flow capacity filter boosters and a dedicated electronic control. This solution enables the performance of PSTs on the fastest valves on the market without endangering continuity of production and without the compromises or risks of conventional systems.

The high flow capacity filter booster integral to the PICO system is a new solution, which incorporates the combined



Rotork Instruments' filter booster combines the functions of a filter regulator and volume booster, allowing up to 500% higher flow than some equivalents

PICO: increasing safety with no downtime and no leakage positional control in on/off valves is an important function that is addressed by Rotork Instruments' innovative solutions



VALVE INNOVATION

Andy Filkins reveals why innovation is the key to improved valve instrumentation

functions of a filter regulator and a volume booster. The patented design allows up to 500% higher flow than other market equivalents, whilst eliminating the need for an additional poppet or quick exhaust valve in applications where a fast shutdown is required. Basically, the filter booster simplifies the circuit and reduces overall costs. Combined in a total circuit, the modular design creates a greater flow capacity through an unrestricted common bore system which allows for considerable cost savings compared to a traditional tube and fitting alternative.

MODULATING CONTROL

Another major part of business for Rotork Instruments comes from process control applications where valve positioners are used to control the position of a modulating valve and to enable a fast response to the position of the valve from a command from the control system. Traditional systems use PID controllers and electric to pneumatic (I/P) converters. In these designs outlet air pressure from the I/P converter is regulated in proportion to an analogue electrical input signal and the highly accurate output pressure is maintained by an internal feedback sensor. Electro-pneumatic positioners incorporate the functions of the I/P converter, PID

controller and the pneumatic module into a single unit, making the system compact and reducing pneumatic connections between multiple components, thus reducing possible leak paths.

VALVE DIAGNOSTICS

Besides the traditional solutions, Rotork Instruments is also active in microprocessor-based digital valve positioners with internal logic capability. In basic terms, SMART digital positioners perform the same principle function as electro-pneumatic positioners, combined with automatic calibration and configuration, delivering considerable time savings, improved process control and reduced process variability. Another bonus is the ability to diagnose in-line valve performance via the distributed control system (DCS), PC software tools or handheld communicators. There are also cost reductions in loop commissioning, including installation and calibration, and the use of diagnostics to maintain loop performance levels.

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