CURTISS WRIGHT Controls Industrial

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MEDIA RELEASE

PENNY + GILES POTENTIOMETER HELPS XYLEM GO WITH THE FLOW

Christchurch, UK – TBC, 2012 – Penny + Giles – a business group of Curtiss-Wright Controls and designer and manufacturer of position sensors, solenoids, and joystick controllers – has supplied its ICS100 linear potentiometers to provide positional feedback for Xylem Flow Control's range of electro-hydraulic actuators, which provide a solution for the operation of choke and control valves used in the oil and gas industry; and for water & wastewater transport & treatment applications.

Xylem has worked closely with Penny + Giles for over twenty years since specifying the company's HLP100: predecessor of the current ICS100 potentiometer fitted to Xylem's range of electro-hydraulic actuators.

Explaining the background to the long-running application, Xylem engineer John Smallshaw says: "We specialise in the design and manufacture of electro-hydraulic actuation for control valves for both onshore oil and gas pipelines and pumping stations and offshore topside choke pressure and flow control applications, where there is either Zone 0 (constant hazard) or Zone 1 (occasional hazard) risk from explosive petrochemical gas.

"A typical application is to provide an actuator control system to meet the operating parameters of the specified size of valve based on the working stroke, the fail action and operating thrusts for opening and closing the valve against process operating conditions. The process valve must be capable of handling the specified pressure or volume of oil or gas determined by the valve manufacturer, and the actuator is sized to meet the operating conditions for that particular application. It is our decision to select the position feedback device that will provide optimum accuracy and performance for the system." he says.

As an example, for Zone 0 applications Xylem would almost always use a potentiometer or an alternative intrinsically-safe certified device. The potentiometer is invariably the easiest and most cost-effective device to apply, however the selection of the feedback device may be determined by the hydraulic operating fluid as the position feedback device is of the 'in-cylinder' type and therefore immersed in hydraulic fluid.

The company prefers to work with mineral-based hydraulic fluids as they are generally suitable for use with potentiometers. For systems incorporating water-based fluids such as water glycol, special consideration has to be given to the selection of the feedback device or the method of mounting the potentiometer. It is possible to locate the potentiometer within a special oil chamber that is mechanically linked to the actuator but operating outside the hydraulic medium.

Xylem (Midland – ACS) uses Penny + Giles in-cylinder devices, which is why it is predominantly the ICS100 that is installed in the back of its hydraulic actuators.

Linear actuating devices are used on linear choke and plug valves rather than rotary units because potentiometers provide an intrinsically safe feedback signal from a relatively low power source. Equally important for safety reasons, unlike inductive feedback devices, potentiometers aren't capable of producing a current to generate a spark.

Typical applications include valve systems installed topside on oil and gas production platforms, helping to control the flow of media as it is being transferred up through the special risers that transport media from the well itself; and on to the pipelines that eventually transport it ashore for storage or processing. Automatic feedback from the potentiometer, delivered via a closed-loop system, allows pressure and flow to be monitored and analysed and the position of the valve adjusted as required.

A nominal 5 volt signal is supplied to the ICS100 potentiometer from the Xylem (ACS) positioner controller, which operates on an input signal from a control panel to tell what valve adjustments are needed to maintain the required flow or pressure – 4 milliamps signal is the closed position and the signals between 4 and 20 milliamps represent 0-100%. So if the valve receives a 12 milliamp signal it will recognise the change in voltage as its new 50% position, based on feedback from the Penny + Giles ICS100 potentiometer.

Plug and globe valves are normally modulating as they respond to changing process conditions caused by flow and pressure variations. However, the choke valves fitted topside of the wellhead to control the flow / pressure of media coming out of the well may remain in one position for extended periods and only change eventually as the oil or gas pressure in the well depletes in order to allow flow to be maintained.

Xylem has actuators operating within onshore oil and gas pipelines in Turkey, India and, most recently, a crude oil pipeline in Abu Dhabi. They are also used to control valves in pumping stations, where the oil and gas is compressed and re-charged to enable it to be transported through the pipeline. For these applications Penny + Giles ICS100 potentiometers are fitted to the actuators to provide the feedback that monitors pressure and flow control valves.

Using the proven benefits of hybrid-track technology and including a number of unique design features, the Penny + Giles ICS100 offers design engineers an affordable alternative for applications where non-contacting technologies may prove too expensive to use, or where they may be excluded from use due to the presence of an explosive gas environment.

The ICS100 range offers an excellent price/performance package and is designed specifically for actuators where the sensor is fitted inside the pressurised environment. The range is ideal for high volume applications and is available in 10mm increments to suit actuator strokes up to 1100mm. Bespoke versions with

stroke lengths to 1600mm can also be manufactured for special orders and applications.

It is suitable for use with mineral based fluids and can operate at temperatures from -30°C to +100°C and pressures to 500 bar. A choice of internal or external flange styles can be specified to suit the actuator configuration. The sensors are also supplied with a 3-core cable (in one metre and ten metre options) with ETFE insulated conductors and a polyurethane (PUR) jacket, which has been selected for its high mechanical strength and chemical resistance.

Summing up, John Smallshaw says the migration from the original HLP100 to the new, metric ICS was virtually seamless as Penny + Giles made the models interchangeable; so when he needs to replace HLPs or supply spares, even after all this time, it is natural to specify the ICS.

He adds: “In-cylinder potentiometers play a crucial role in our actuator business in terms of performance, reliability, safety and value, which is why we buy Penny + Giles. The ICS100 is very easy to specify and install, it is competitively priced and the company listens to our input and responds quickly to any issues we have.”

For further information call Penny + Giles on +44 (0)1202 409499, email sales@pennyandgiles.com or visit www.pennyandgiles.com.

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About Curtiss-Wright Controls Industrial, Penny + Giles
Penny + Giles is a global leader in the design and manufacture of specialist position sensors, solenoids and control hardware for industrial and defence markets. Headquartered in Christchurch, Dorset, United Kingdom, Penny + Giles is part of Curtiss-Wright Controls Avionics & Industrial, a business unit of Curtiss-Wright Controls, Inc. For more information visit www.pennyandgiles.com.

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About Curtiss-Wright Controls, Inc.
Headquartered in Charlotte, NC, Curtiss-Wright Controls is the Motion Control segment of Curtiss-Wright Corporation and a leading designer and manufacturer of advanced technologies for niche actuation and drive applications, integrated sensors and electronic subsystems internationally for the aerospace and defense markets. For more information, visit www.cwcontrols.com.

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