



## **Digital, double-digital and analogue: innovative sensor solutions for position detection in pneumatic cylinders**

**Waldkirch, Innovation No. 9, 2009 – When the accurate and reproducible detection of piston positions in pneumatic cylinders is necessary, SICK's portfolio of magnetic cylinder sensors offers the right solution – with the MZT8, MZ2Q and MPS series for numerous automation requirements and a wide variety of installation conditions. This has been made possible by, among other things, new ASIC platforms, innovative production processes and special sensor design concepts.**

The target markets of magnetic cylinder sensors include the pneumatics industry, producers of material handling systems, the electronics industry, the packaging industry, as well as general and special machine constructors. Initially, the particular automation task is of decisive importance in selecting the most suitable sensor solution: is just a single switching point, e.g. a final position, to be detected; is a sensor required for two switching points – the final position and an advance signal; or should a piston position be detected along the entire stroke path, i.e. measured and signalled?

### **MZT8: one switching point, short housing, consistent high precision**

The MZT8 from SICK is used to detect one switching point and, at just 24 mm, is one of the most space-saving magnetic cylinder sensors on the market. This has been made possible by an ASIC chip technology, specially developed by SICK, that is also respon



sible for the sensor's great precision. Thus scattering of the switching point is just +/- 5%, sensational compared to the usual +/-25%. Whereby the series offers homogeneous switching properties for each individual device. The mounting of the MZT8 in the cylinder slot also contributes towards the high level of accuracy: the fixing screw cannot be lost (i.e. it cannot fall out during fixing of the sensor in the cylinder slot) and is also located close to the cable input – ensuring secure fixing of the sensor due to optimum strain relief. The sensor's resistance under harsh operating conditions is also optimum: the materials are resistant to, among other things, cutting fluids and coolants; and the housing is completely watertight thanks to a new production process – reliably protecting the electronics from humidity.

**MZ2Q: two freely adjustable switching points, IO Link and available for C-slots**

The magnetic cylinder sensor, which can be completely submerged in all common housing slots and thus offers protected fixing, provides two freely adjustable switching points in a single device, e.g. for greater functional reliability with rapid piston movements, a redundant end-position detection in miniature cylinders, or the precise detection of different gripper positions. The advantages of the two-in-one sensor concept: occupancy of a single slot, less mounting effort, and reduced wiring on the pneumatic cylinder. Moreover, the switching points are easy to teach-in, so the sensor is rapidly ready for operation.

The MZ2Q series also includes two device versions for special automation and installation demands: the MZ2Q IO Link is easily integrated into a machine's fieldbus environment. Thanks to the IO Link communication interface, teaching-in and monitoring of the



switching points can now be remotely carried out automatically via fieldbus, e.g. from the machine controller. For this purpose, the sensor has an individual ID number that makes it addressable during communication. The MZ2Q is the world's first teachable magnetic cylinder sensor with IO link technology for cylinders with T- and C-slots. The device has an extremely compact design: the electronics are no longer in the housing, but integrated in the connection cable, while the actual sensor housing is fixed in the slot – saving space and providing protection.

**MPS: linear measurement, analogue evaluation, precise switching**

The MPS Magnetic Position Sensor for linear measurements represents a solution for analogue piston position detection on pneumatic cylinders, combining flexibility with ease-of-use and maximum precision. The series is suitable for travel speeds of up to 3 m/s and covers measurement ranges of 32 mm, 64 mm, 96 mm or 128 mm, depending on the automation task. The housing shape of the MPS is designed in such a way as to enable rapid drop-in mounting from above in all common T-slots and fixing with just two screws – in order to ensure that mounting on the pneumatic cylinder is as simple as possible whilst offering secure installation. The two circuit boards within the IP67-protected sensor housing accommodate, among other things, Hall sensors for non-contact position detection, the controller and the teach-in element. The zero and end points, i.e. the actual measurement range, can be taught-in via the Teach button regardless of the actual piston position. The intermediate piston positions are transmitted as analogue signals, available as a 4 - 20 mA current output and as a 0 - 10 V voltage signal. Analogue path measurement offers two advantages for practical operation: the T-slots on the cylinder do not need to be occupied with numerous sensors for individual



switching points and the teach-in function replaces mechanical sensor adjustment – considerably simplifying changes in processes or products.

The MZT8, MZ2Q and MPS – perfect for precise position detection on pneumatic cylinders!



For decades, SICK has been one of the world's most innovative companies in the sensor sector. The latest technological knowledge and processes are implemented in innovative products and system solutions. They position SICK as a technology and market leader in the customer segments of factory, logistics and process automation.

More than 50 innovations in sensor and control solutions are planned for 2009. SICK will launch a new product each week as part of its "SICK Innovation Marathon 2009". All innovations – from No. 1 to No. 52 – are more than just products: they solve tasks intelligently, efficiently and precisely. And create unbeatable customer advantages.