

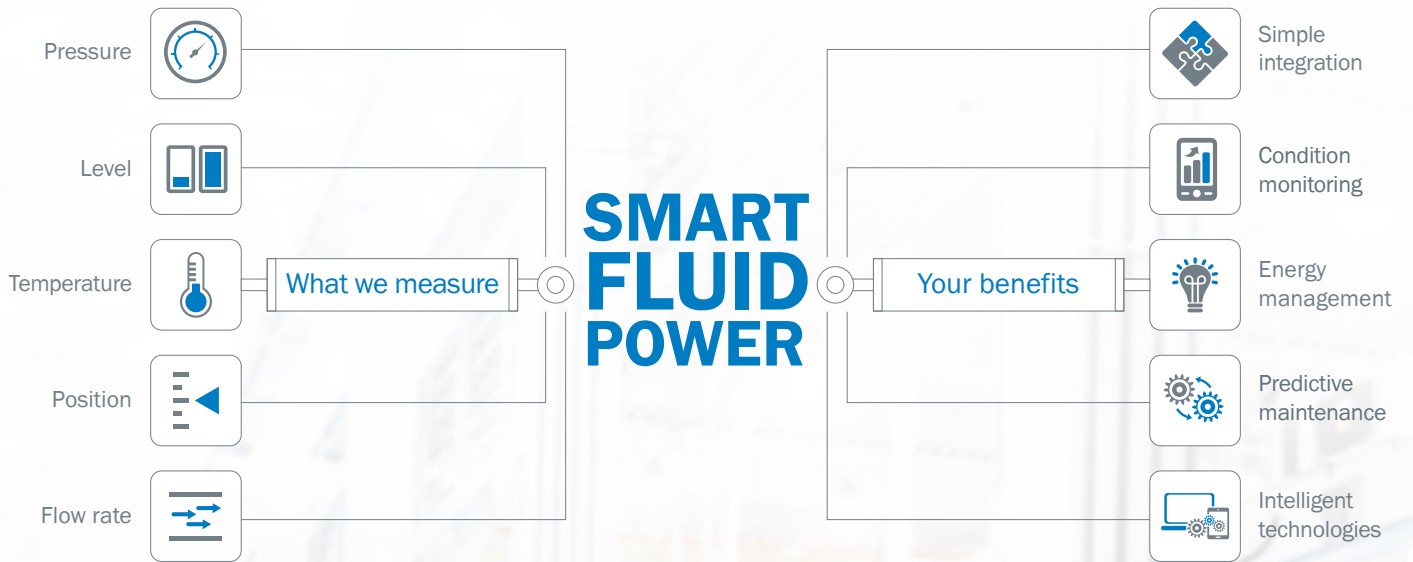


SMART FLUID POWER

SICK SENSORS MAKE THE DIFFERENCE

Fluid Power

SICK
Sensor Intelligence.



SMART FLUID POWER

SICK SENSORS MAKE THE DIFFERENCE

In many industries, pneumatic and hydraulic systems are used in addition to the widespread servomotors. When it comes to drive systems, SICK is always right in the middle of things with its intelligent sensors. Fluid Power sensors from SICK perform measurement tasks in pneumatic and hydraulic systems – intelligently, flexibly and reliably. The fluid power technology proven in practice is characterized above all by high power density combined with compact designs and guarantees perfect handling and fast sensor integration. In addition, the modern sensors are playing a growing role in energy management by increasing the energy efficiency of the applications.

As a leading sensor manufacturer, SICK is already focusing its attention on the requirements of tomorrow. The intelligence integrated in the sensors already makes it possible for SICK customers to take advantage of the entire spectrum of the possibilities offered by Industry 4.0, from condition monitoring through to predictive maintenance.

A machine vision therefore becomes reality. However, it is not just the hardware that makes the crucial difference. As well as having the right products for individual applications, SICK also has extensive specialist know-how in the field of fluid power and is applying it worldwide. This rich pool of experience provides the basis for customized solutions in a very wide range of industries.

Fluid power from SICK – we can measure all of these things



Pressure



Level



Temperature



Position



Flow rate





Condition monitoring and predictive maintenance

KNOW TODAY WHAT WILL HAPPEN TOMORROW

For a long time, condition monitoring and predictive maintenance were just a future vision. However, the growing digitalization of production as well as increasingly powerful methods of data evaluation now more and more permit the leap from pure monitoring to empirically based forecasting of measured values.

Sensors from SICK play a key role here by supplying data. They do not just impress with their accuracy and reliability. Thanks to their IO-Link capability, simple and efficient access to measurement data is also guaranteed. This is rounded off by corresponding integration products, which process and provide data for Industry 4.0.



Flexibility and simple integration

USING PARTS QUICKLY AND WISELY

Extremely clever and installed in next to no time. The intelligence of the sensors is also shown by their flexible handling. Sensor integration across all common interfaces such as the IO-Link interface is no problem at all, and plug and play is naturally standard for fluid power sensors from SICK.

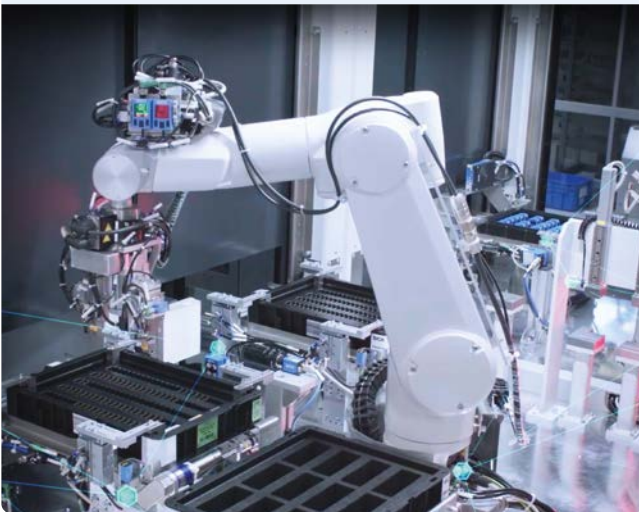
This makes sensor replacement and maintenance very straightforward. And retrofitting intelligent sensors from SICK is therefore also very simple.



Technology from experience

MORE THAN PRECISE DATA ACQUISITION

SICK has a wealth of experience in acquisition of measured values and data using intelligent sensors. Over the course of decades, the sensor manufacturer has not just perfected data acquisition, but has also driven forward intelligent further processing and data use. Sensors from SICK can do more than just measure – they make the difference.

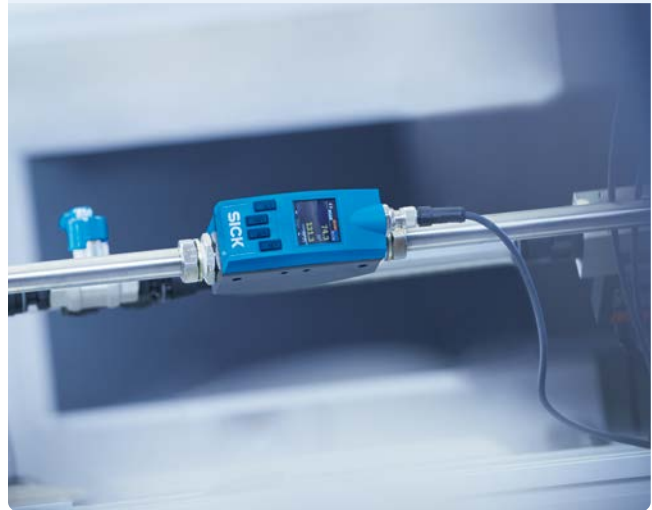


Energy management

USE INSTEAD OF WASTE

Targeted use and controlled management of energy. Fluid power sensors from SICK also make this possible. They measure precisely and therefore also detect deviations from setpoint values.

These deviations can be interpreted correctly by means of software and used for predictive maintenance. This avoids unplanned machine and plant downtimes and energy management is more efficient as a result.



SENSOR SOLUTIONS FOR PNEUMATICS

ACTUATOR ENGINEERING

1. Sensors for T-slot cylinders

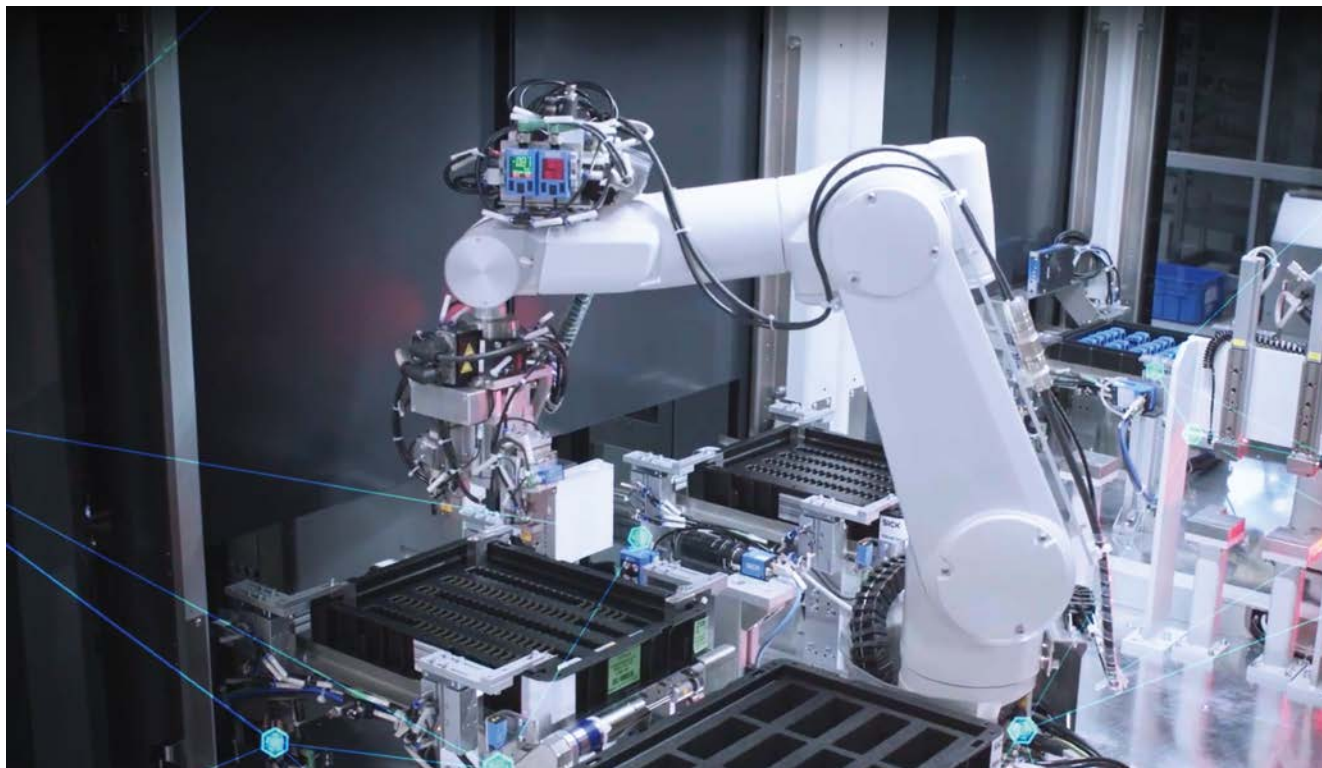
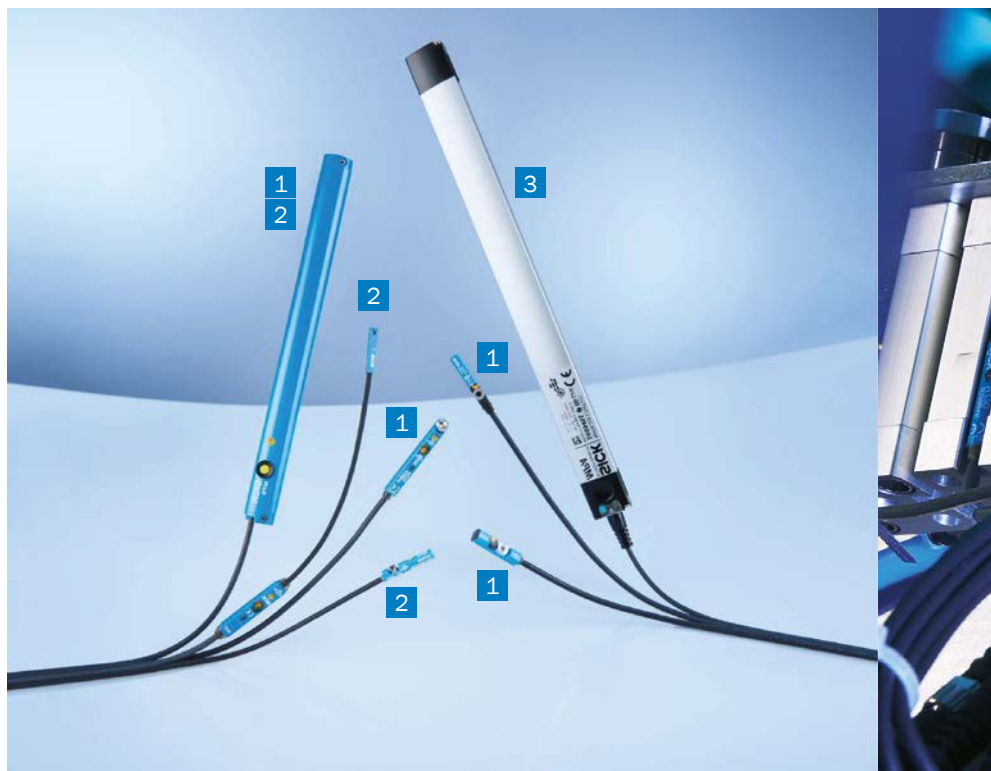
Magnetic cylinder sensors with two individually adjustable switching points

2. Sensors for C-slot cylinders

Intelligent magnetic cylinder sensors for the C-slot

3. Position sensors

Quick mounting, precise switching, high temperature resistance





COMPRESSED AIR GENERATION

4. PAC50 pressure sensor

Turns pressure into colors

5. FTMg flow sensor

Flow sensor with leakage detection

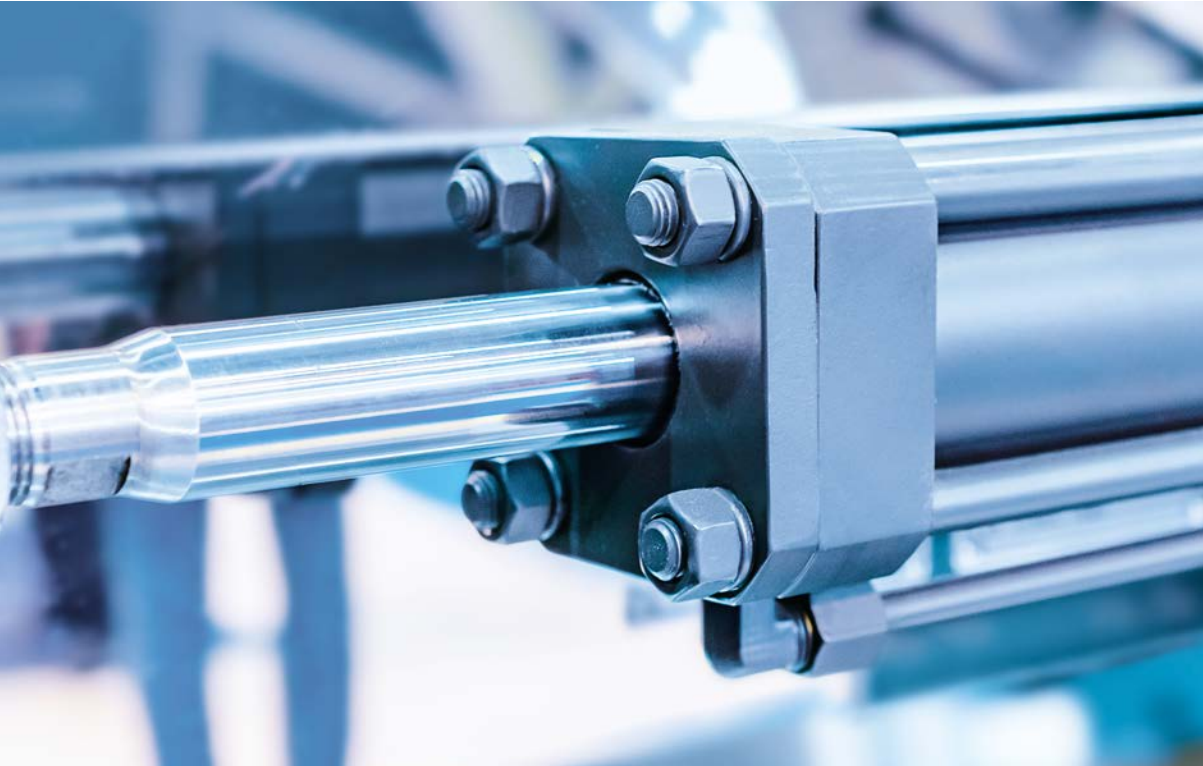
SENSOR SOLUTIONS FOR HYDRAULICS

ACTUATOR ENGINEERING

1. IMP inductive proximity sensors

High-pressure-resistant sensors
for hydraulic applications





PRESSURE GENERATION

2. Pressure sensors

Universal pressure measurement for liquids and gases

3. Temperature sensors

Universal temperature measurement for liquids and gases

4. Level sensors

Intelligent solutions for level and point level measurement

FOCUS ON FLUID POWER

MECHANICAL ENGINEERING AND OTHER INDUSTRIES: SMART FLUID POWER SOLUTIONS KEEP SYSTEMS RUNNING

Due to their great flexibility and efficiency, hydraulic and pneumatic systems will become increasingly important in the future in mechanical engineering, the consumer goods sector and the electronics, solar and automotive industries. The list of possible and already realized applications is long.

Intelligent sensors from SICK improve plant and machine availability. Whether in automated part handling, injection molding machines, hydraulic presses or CNC machines – fluid power sensors already check important function parameters as part of condition monitoring. The sensors provide an even more sustainable solution for predictive maintenance, which results from condition monitoring. And that is already possible now thanks to SICK.

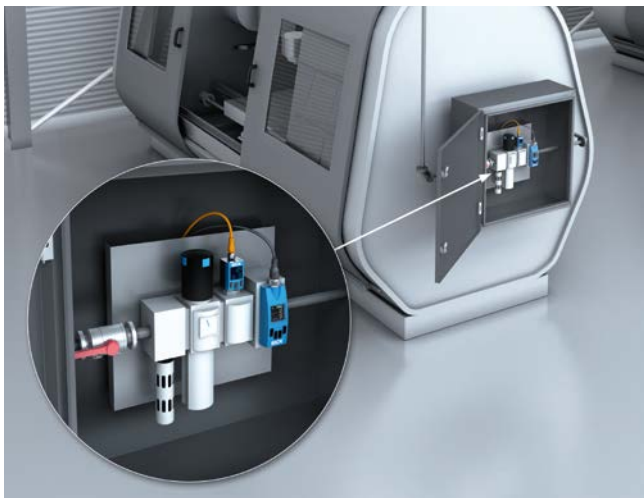


CENTRAL COMPRESSED AIR SUPPLY



Monitoring of pressure, flow, temperature and energy flows

The FTMg flow sensor can be used to monitor not only flow, pressure and temperature but also the energy flows toward and inside the machines. This provides transparency in terms of supply and costs, which reveals areas with energy saving potential and is therefore ideal for energy management in line with DIN EN 50001. In contrast, the PBT pressure sensor permanently monitors the compressed air supply to ensure that it has the correct working pressure.



Integrated measurement of pressure and flow in the service unit

Proper compressed air preparation is the key to the operational safety and service life of pneumatic components and controllers. The PAC50 pressure sensor integrated into the service unit and the FTMg flow sensor help detect the working pressure as well as consumption and leaks.

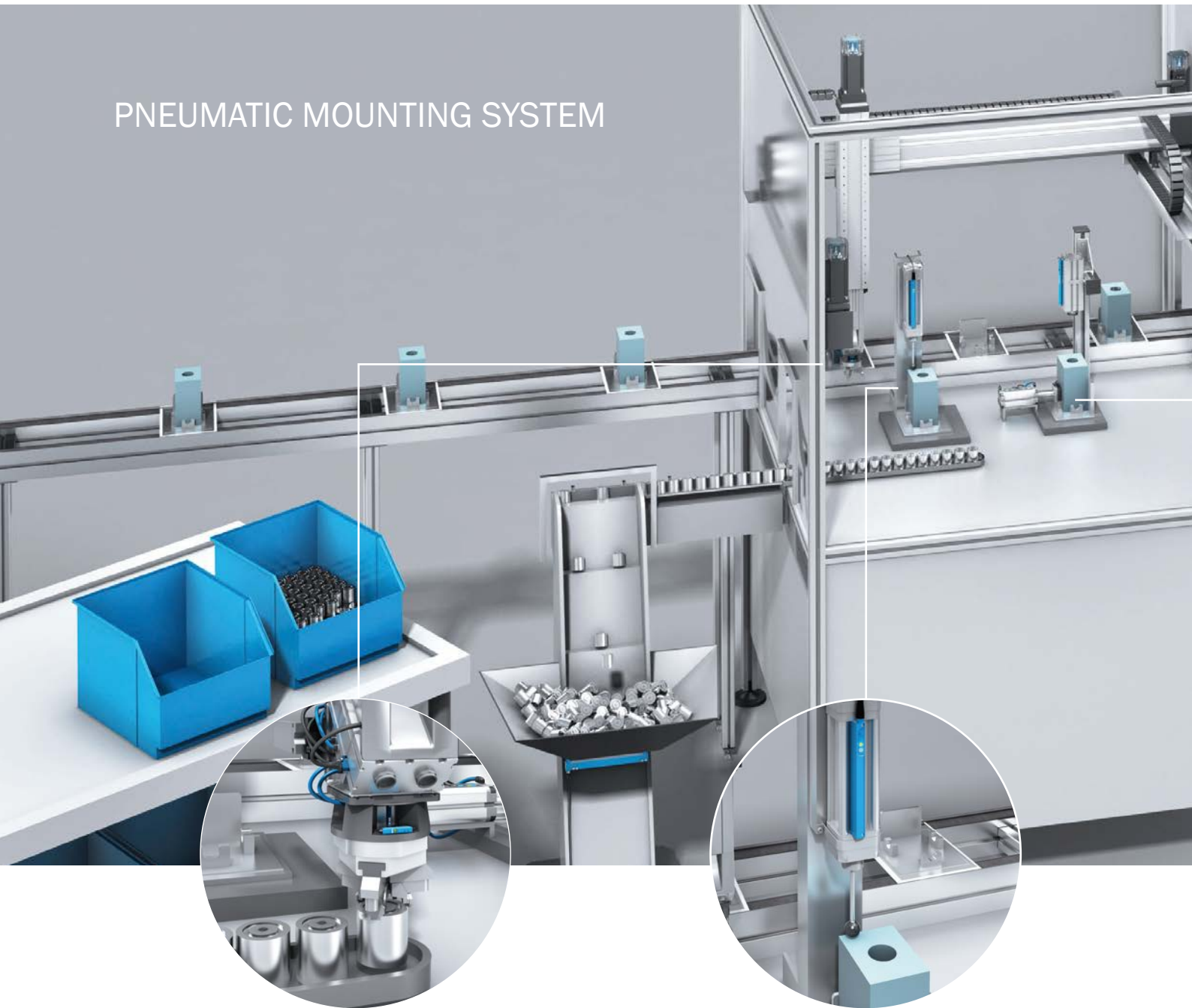
SMALL PRESSES

Monitoring of the pressure in the cylinder

On pneumatic or hydraulic presses, the press force is determined using a pressure sensor on the cylinder. The PBS pressure switch monitors the value using freely adjustable switching thresholds and ensures the quality of the workpieces in the pressing procedure.



PNEUMATIC MOUNTING SYSTEM

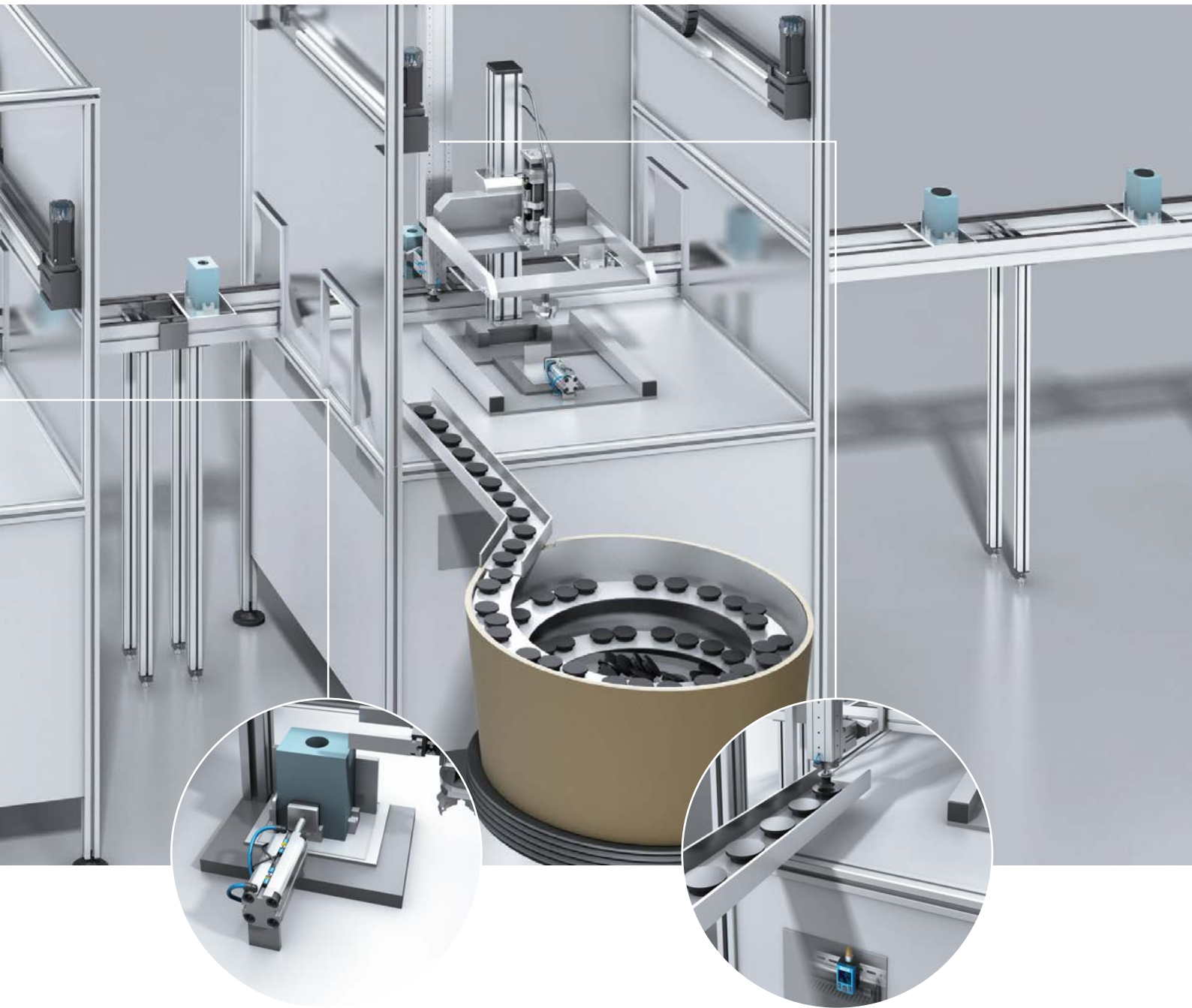


Gripper monitoring using the MZ2Q-C

The MZ2Q-C magnetic cylinder sensor is exceptionally well-suited for gripper monitoring. A pneumatic gripper grips component B from the workpiece chute and checks the component's diameter with the aid of the MZ2Q-C. Component B is then put in the press-fit position of component A. The MZ2Q-C features two adjustable switching points that can be programmed using its teach-in button: switching point 1 signals that the gripper is open and switching point 2 signals that the gripper has gripped component B at the correct diameter.

Height measurement of a component using the MPS-C

A test cylinder checks the height of component A by extending the piston right up to the component. The MPS-C position sensor detects the exact position of the piston and feeds this back via an analog signal. As soon as the predefined analog value has been reached, the pneumatic gripper grips component A and places it down on the press-fit station. With the MPS-C, you can choose between analog output (voltage or current) and IO-Link (advanced diagnostic options).



Monitoring of a clamping cylinder at the press-in station

A clamping cylinder can be used to clamp component A at the press-in station to ensure that the component is positioned correctly. Two MZA8 VIA magnetic cylinder sensors monitor the two end positions of the pneumatic clamping cylinder. The VIA variants have two LEDs. The yellow LED serves as an optical adjustment indicator and makes it easier to install the sensor and monitor its mounting position. The green LED indicates whether the sensor is in operation.

Monitoring of the vacuum pressure using the PAC50

A vacuum gripper grips part C from the parts chute of the bowl feeder and places it in the recess provided on part AB so that the ultrasonic welding operation can be performed in the next process step. The PAC50 electronic pressure switch monitors and controls this operation and indicates whether the gripper vacuum is in the target range by the color of the digits in the display.

OTHER SENSOR SOLUTIONS FOR PNEUMATICS



Monitoring of the pneumatic pressure

The system pressure must be monitored to ensure smooth top loader operation. The PAC50 electronic pressure switch is particularly well suited to this application. Thanks to its three large function buttons and large display, it is easy to use. The color of the digits on the pressure switch display indicates whether the system pressure is within the target range. The optional IO-Link interface of the PAC50 reduces downtimes when changing formats and the sensor.



→ www.sick.com/PAC50

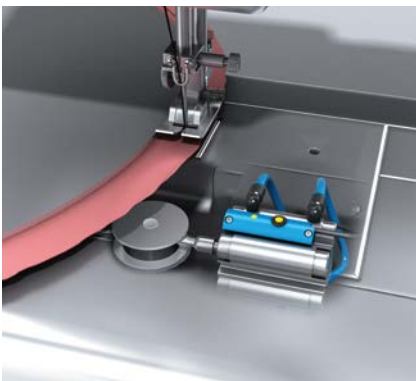


Compressed-air monitoring for the robot gripper

The robot gripper requires a continuous and steady supply of compressed air. The PAC50 pressure sensor monitors the pneumatics to ensure they have the correct working pressure. The large bi-color display shows whether the pressure is within the required range from a great distance. With the integrated IO-Link interface, all parameter and diagnostic data is available in a connected control unit which makes it easier to switch devices.



→ www.sick.com/PAC50

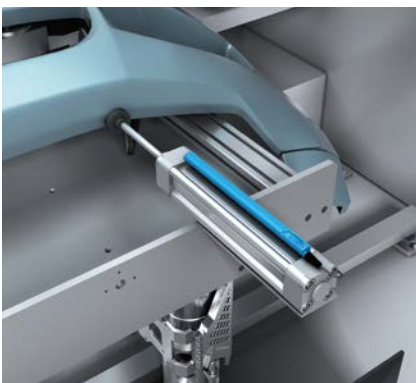


Thread quantity detection when sewing airbags

A pneumatic cylinder with an MPS-T position sensor detects how much thread is still on the spool when sewing airbags. The quantity of thread on the spool decreases during the sewing process and the movement of the cylinder piston pressing against the spool adjusts accordingly.



→ www.sick.com/MPS-T



Monitoring of the part position during ultrasonic welding of plastics

Before carrying out the ultrasonic welding operation, it is essential to ensure that the plastic parts to be welded are in the correct position. The MPS-C position sensor is located on the pneumatic cylinder that drives the positioning and centering piston. This piston presses the plastic parts into the correct position.



→ www.sick.com/MPS-C

OTHER SENSOR SOLUTIONS FOR HYDRAULICS



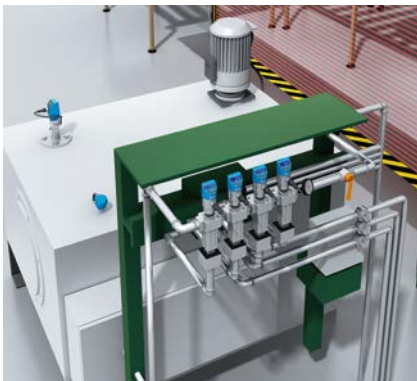
Pressure measurement in the hydraulic system

The PBS pressure switch monitors the preset system pressure of the hydraulic pump. It ensures economic pressure regulation of the hydraulic pump, thereby reducing wear. Pressure sensors from SICK offer long-term stability and operative safety with the welded metallic stainless steel membranes. The PBT pressure transmitter also measures the pressure that builds up in the machine hydraulic cylinder. This makes it possible to adjust the locking force of the tool.



→ www.sick.com/PBS

→ www.sick.com/PBT

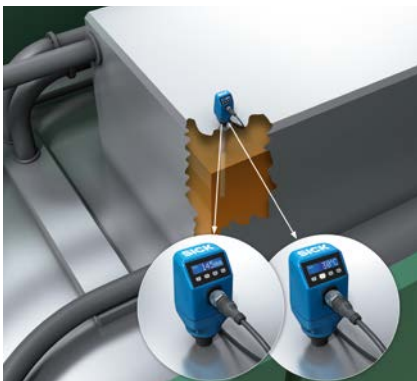


Temperature measurement in machine hydraulics

Reliable temperature measurement in machine hydraulics is crucial for machine stability. Increased temperatures over 60 °C cause the hydraulic fluid to age quicker, stressing seals. The TBS temperature sensor reliably monitors the temperature of the hydraulic oil in the hydraulic container, maintaining a consistent oil temperature and preventing overheating.



→ www.sick.com/TBS



Measuring temperature and level in hydraulic systems

The CFP Cubic capacitive level sensor monitors the oil level and temperature in the tank within the hydraulic system of the press, regardless of the container material and medium. Small blind zones on the probe end enable accurate measurement even if the level is very low. This ensures a safe and economic hydraulic supply. Alternatively, the LFP Cubic TDR level sensor can be used together with the TBT temperature sensor.



→ www.sick.com/LFP_Cubic

→ www.sick.com/CFP_Cubic



End position detection of a piston stroke in hydraulic cylinders

The IMP proximity sensor is used for end position detection of the piston stroke in hydraulic cylinders. The specially reinforced sensor housing also withstands pressure of up to 500 bar on the sensing face and can be easily integrated into the cylinder thanks to its small design. The IMP can also be used for position monitoring in hydraulic valves.



→ www.sick.com/IMP

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 9,700 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents, and preventing damage to the environment.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the customers need. In application centers in Europe, Asia, and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes SICK a reliable supplier and development partner.

Comprehensive services round out the offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

That is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Hong Kong, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com