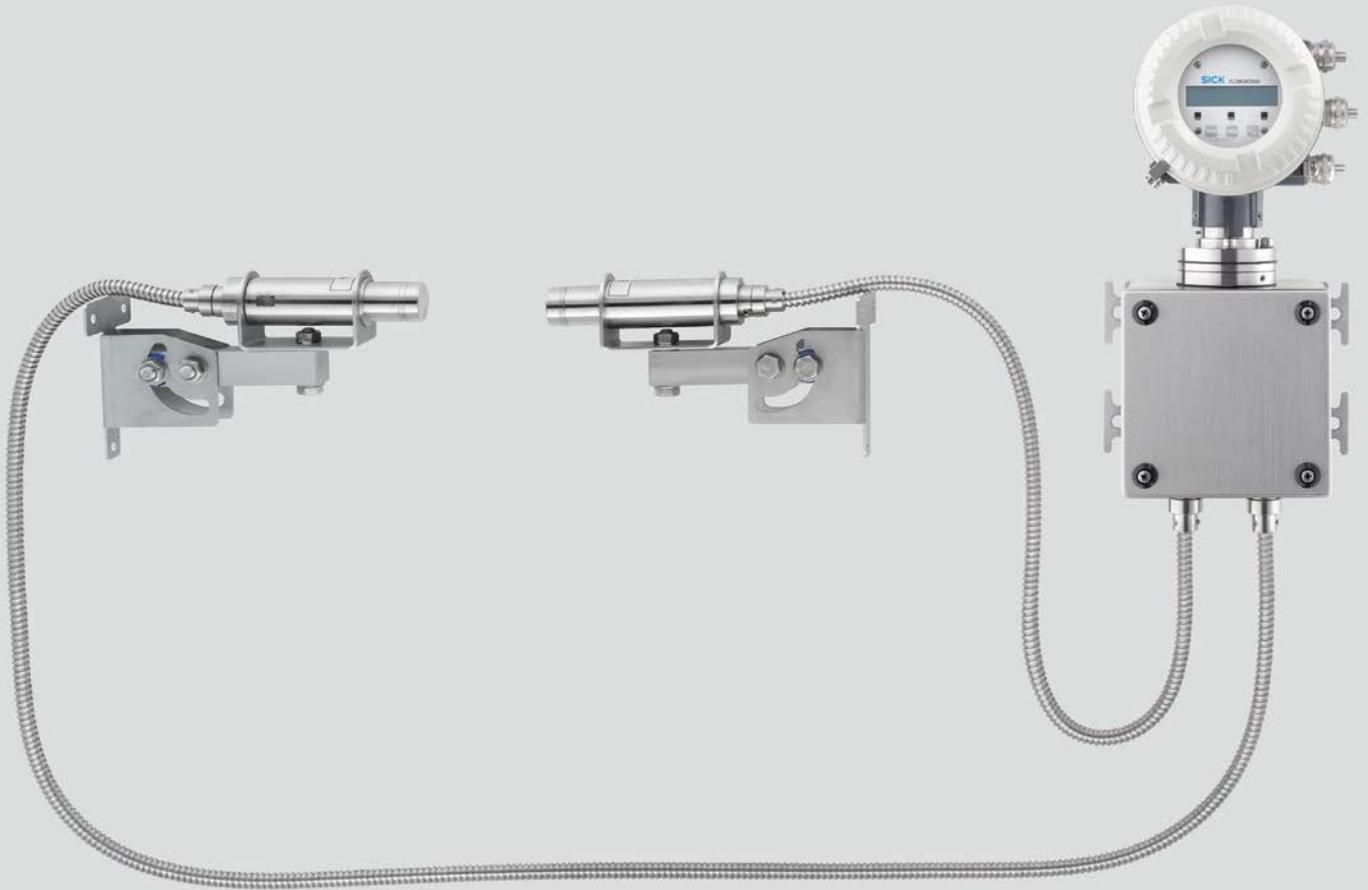


FLAWSIC60 Ultrasonic air velocity meter

Continuous air flow measurement
for mining applications

Continuous air flow measurement in mining – safe and reliable



It's often the little things that matter – take fresh air, for example, it is of crucial importance in mining. Therefore, sufficient ventilation must be ensured at all times. For this, the supply and exhaust air flows are measured regularly, which is often manually intensive and time consuming by anemometer. The FLOWSIC60 from SICK, one of Germany's leading sensor manufacturers, performs this task automatically. The ultrasonic measurement principle operates wear-free and continuously measures air velocity across the entire tunnel cross section. It offers maximum reliability in harsh environments and saves time. Due to its intrinsically safe design, the FLOWSIC60 is also well suited for other applications in potentially explosive atmospheres.

Maximum reliability

The FLOWSIC60 measures air velocity using ultrasonic technology. It operates without mechanically moving parts and is largely resistant to contamination. Air velocity is measured across the entire tunnel cross section. This ensures maximum reliability even in challenging ambient conditions.

Simple operation

Only a few settings are made from the operator display after mounting the device. The FLOWSIC60 then operates automatically and without interruption. In addition to the measured value, various diagnostic values can be displayed.

Rugged components

Conditions underground are rough – the FLOWSIC60 is made to handle them. The rugged stainless steel components are connected to each other by metal-reinforced sensor cables. In addition, all components are protected against the ingress of dirt and moisture. Reliability is increased and maintenance kept to a minimum.

Convenient application

Space-saving installation on both sides of the tunnel ensures flexibility and keeps installation costs low. Once mounted, the FLOWSIC60 continuously measures air velocity in the tunnel and makes measurement results available as an analog signal. Both the direction of flow and measurement malfunctions are detected and signaled.

Low maintenance costs

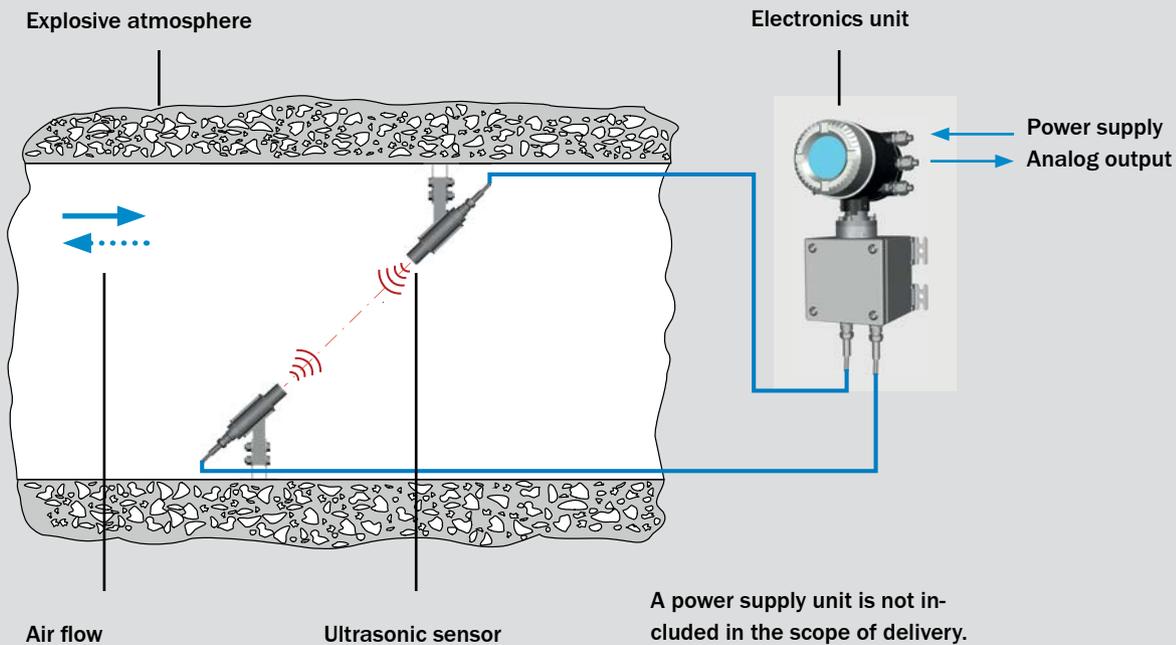
The ultrasonic measurement principle of the FLOWSIC60 is nearly maintenance and wear-free. Additionally, integrated self-diagnostics continuously monitors the status of the FLOWSIC60 and warns against incorrect measurements before they occur. Maintenance can be carried out at long intervals or based on the status of the device.

Intrinsically safe system

The design of the FLOWSIC60 is intrinsically safe and approved according to IECEx with the equipment protection level (EPL) "Ma" for use in potentially explosive atmospheres. It meets the strictest international explosion protection requirements for use in mining and helps provide maximum safety.

Product overview

The FLOWSIC60 consists of three components. The two ultrasonic sensors are mounted on opposite sides of the tunnel and connected by a pre-assembled sensor cable to the electronics unit. The electronics unit operates the FLOWSIC60 and uses the analog output to make the current air velocity in the tunnel available.



Continuous air flow measurement for mining applications



Product description

The FLOWSIC60 ultrasonic measuring device uses ultrasonic signals to continuously measure air velocity in tunnels and shafts. The rugged measuring device consists of high-quality stainless steel components and is ideal for use in harsh environments. Once installed, the FLOWSIC60 continuously and automatically measures air velocity across the entire tunnel cross section and displays the

measurement result via the analog output, making integration in monitoring systems simple. Because safety underground is top priority, the FLOWSIC60 is intrinsically safe and certified for use in mining according to IECEx. Low Maintenance, wear-free operation and integrated self-monitoring offer a high degree of safety and convenience for air flow measurement in explosion proof areas.

At a glance

- Continuous air flow measurement
- Intrinsically safe with IECEx approval for zone 0 (EPL Ma)
- Ultrasonic technology with no moving parts
- Representative measurement across the entire tunnel cross section
- For tunnel diameters from 0.5 m to 8.5 m
- Stainless steel components and cable protective tubing for a long service life in harsh environments
- Integrated self-diagnostics
- Analog output with error current output

Your benefits

- Safe operation by intrinsically safe measuring system
- Automatic air flow measurement
- Reliable results by measurement across the entire tunnel cross section
- Long service life due to the use of durable stainless steel components and the wear-free measurement principle
- Low operating costs due to minimal maintenance work and integrated self-diagnostics
- Reduced installation and commissioning effort due to flexible mounting positions and simple electrical installation
- Low maintenance and long service intervals due to no moving parts and high tolerance to contamination
- Easy connection to monitoring and control systems via analog measurement signal



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→ www.mysick.com/en/FLAWSIC60

For more information, just enter the link and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Fields of application

- Air flow measurement in explosion proof areas
- Measurement of the supply and exhaust air in mines
- Ventilation monitoring and control in mining shafts and tunnels

Detailed technical data

System

Measured variables	Air velocity
Measurement principle	Ultrasonic propagation time delay measurement
Measurement medium	Air (atmospheric conditions)
Measuring ranges	
Air velocity	-10 to 10 m/s
Measurement uncertainty	At 0.1 to 0.5 m/s: ± 0.1 m/s At 0.5 to 10 m/s: ± 2 %
Ambient temperature	-40 °C to +60 °C
Storage temperature	-40 °C to +70 °C
Ambient humidity	≤ 95 % Relative humidity; non-condensing
Ex-approvals	
IECEX	Ex ia [ia] I Ma Ex ia [ia] IIA T4 Ga
Electrical safety	CE, IECEX
Enclosure rating	IP 66 / IP 67
Signal outputs	1 analog output, passive, 4...20 mA, < 250 Ω , galvanically isolated 1 status output, passive, galvanically isolated, acc. to NAMUR (EN 50227)
Dimensions (W x H x D)	Details, see dimensional drawings
Weight	Transmitter/receiver unit: approx. 4 kg Control unit SPU: approx. 6 kg
Mounting	Universal wall/ceiling bracket Mounting components included Sensor cable length: 15 m
Electrical connection	
Voltage	13.5 to 24 V DC Intrinsically safe supply
Power consumption	≤ 1 W
Scope of delivery	The scope of delivery depends on application and customer specifications

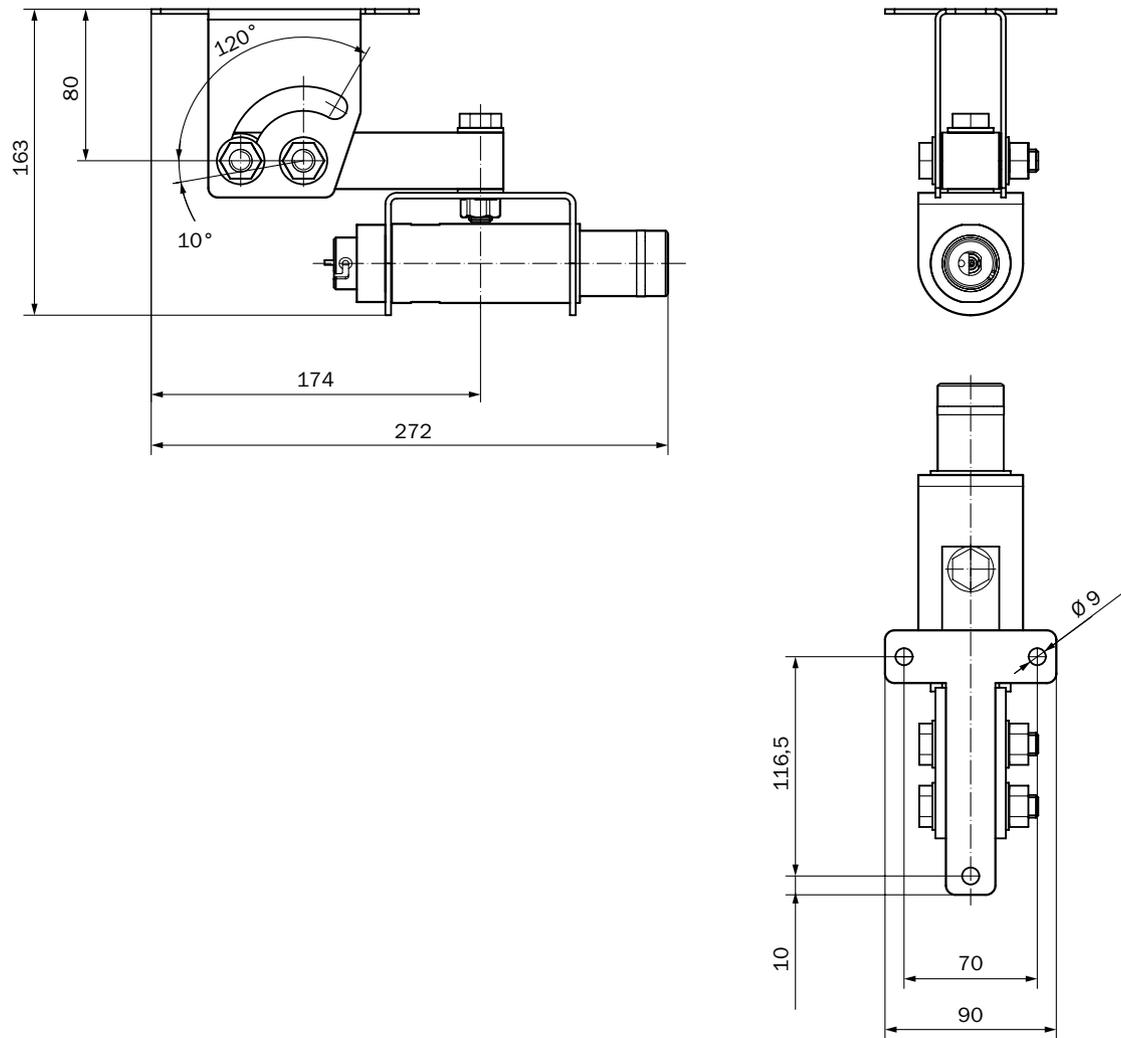
Ordering information

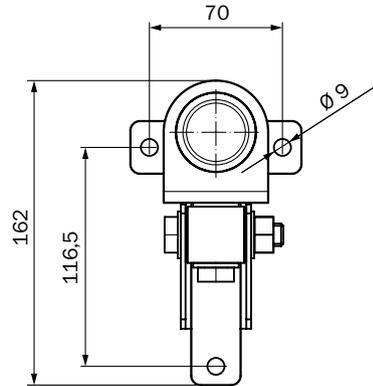
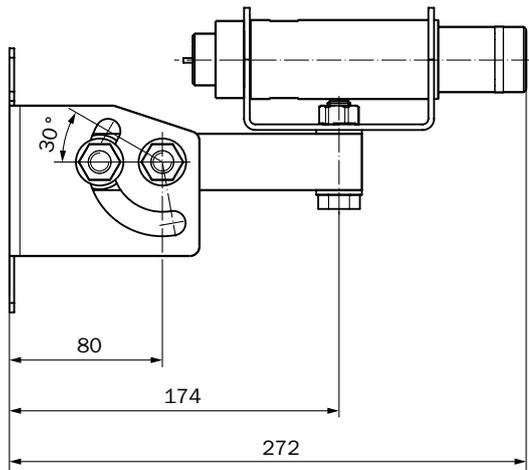
Our regional sales organization will help you to select the optimal device configuration.

Dimensional drawings

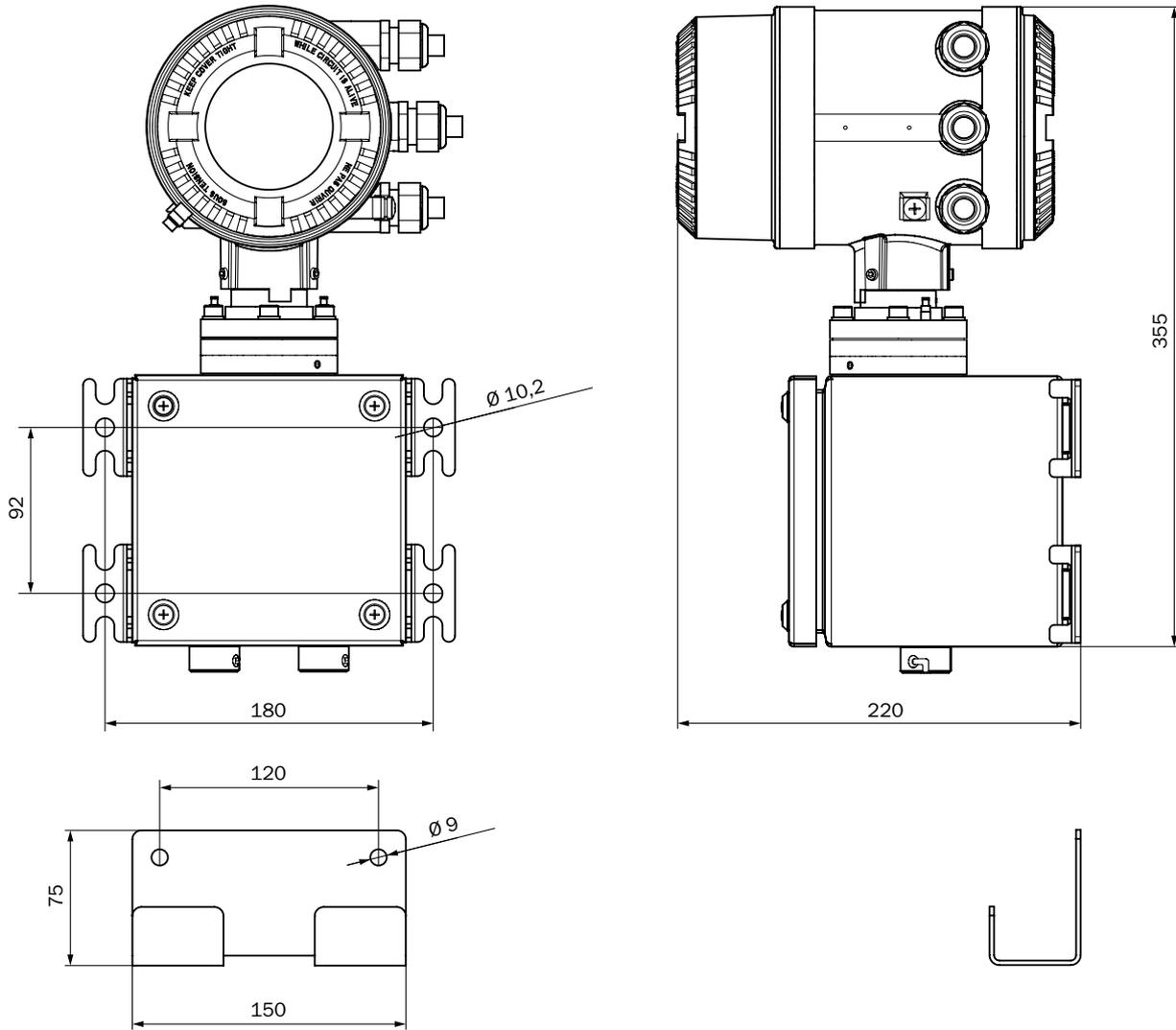
Dimensions in mm

Sender/receiver unit: Ceiling mount



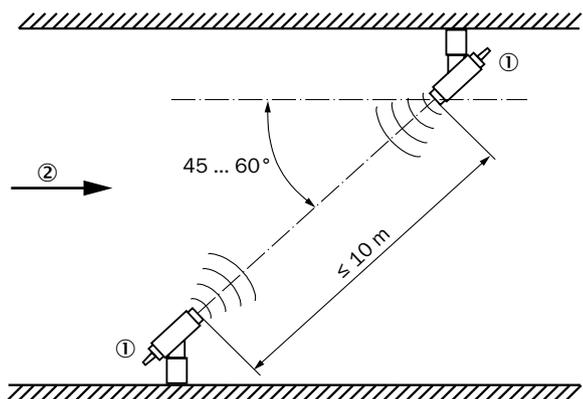
Sender/receiver unit: Wall mount

Control unit SPU



Installation instructions

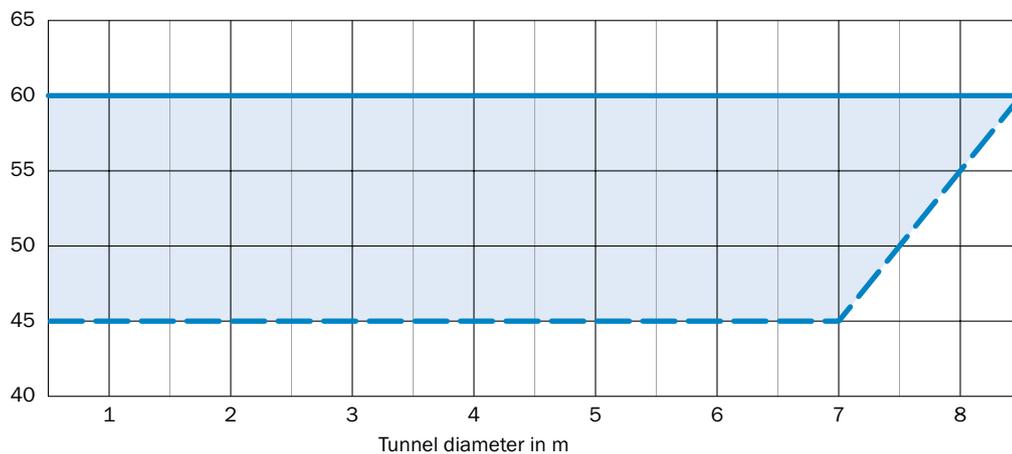
Path layout



- ① Sender/receiver unit
- ② Direction of the airflow

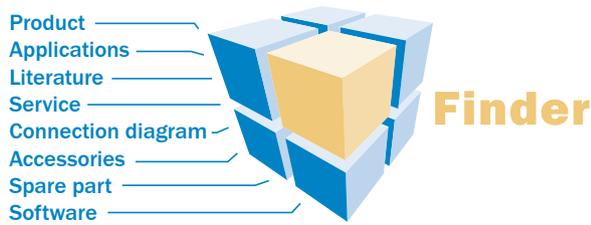
Approved installation angle

Installation angle in degrees



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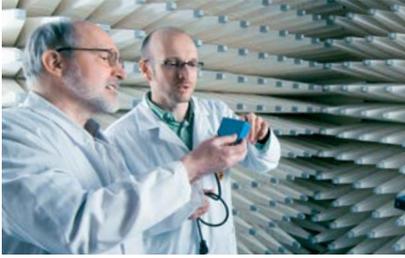
Uncovers new potential for machines and systems



Training & Education

Employee qualification for increased competitiveness

SICK at a glance



Leading technologies

With a staff of more than 6,000 and over 40 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.



Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids



Comprehensive services

- SICK LifeTime Services – for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under real-world conditions
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