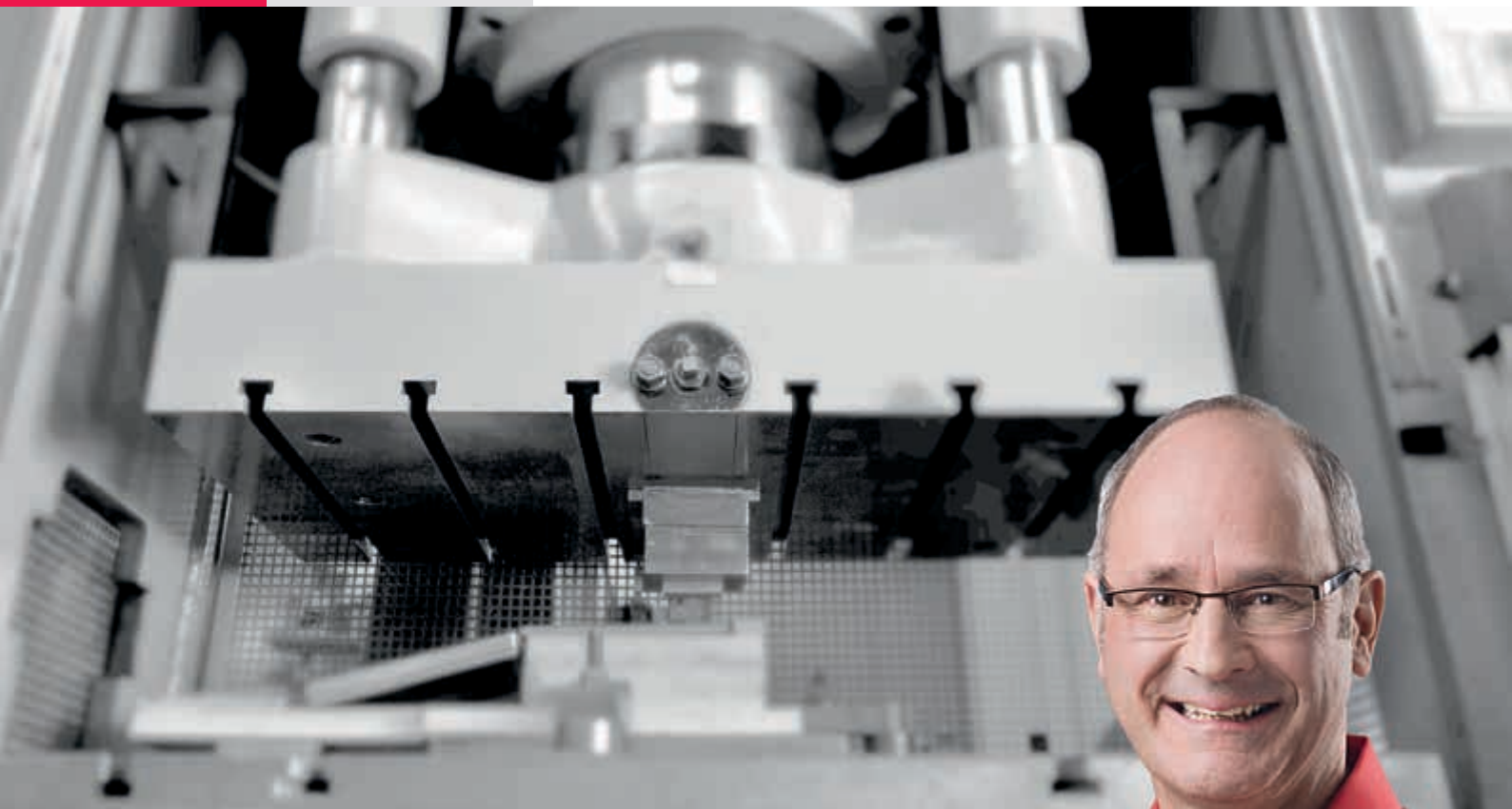


SMART  
**SENSOR**  
BUSINESS



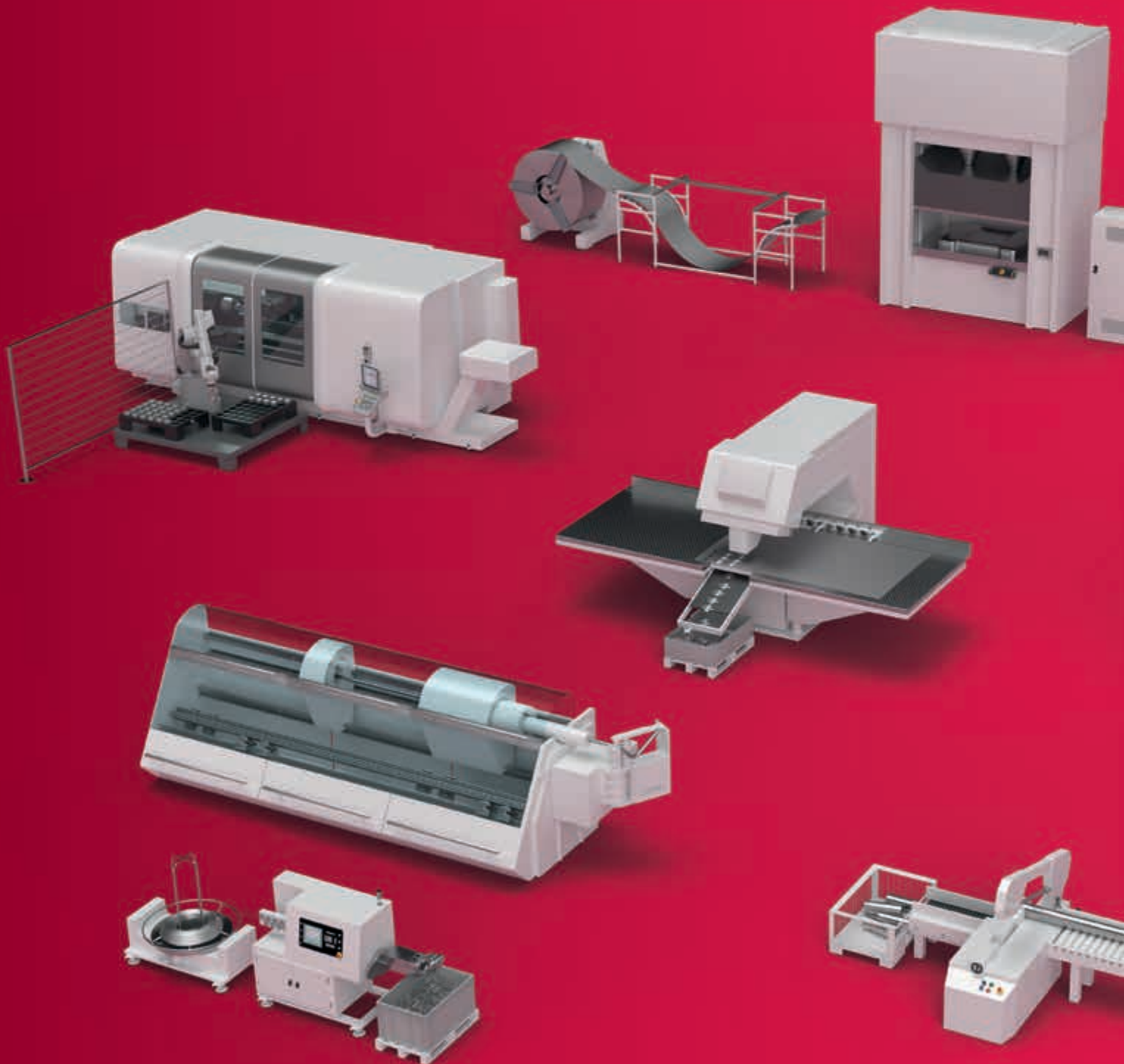
 **Leuze electronic**

the **sensor** people



Sensor solutions for  
**MACHINE  
TOOLS**

# WE ARE YOUR **SENSOR** **SYSTEM PARTNER** FOR **MACHINE TOOLS**



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SMART  
**SENSOR**  
BUSINESS

SMART IS  
TO THINK **EASY**  
TO SHARE **EXPERIENCE**  
TO BE **CLOSE**  
TO CREATE THE **FUTURE**

More than 50 years of experience made Leuze electronic a real expert in innovative and efficient sensor solutions for industrial automation. With our wide sales- and service-network, our competent consulting and reliable customer service, we are always close to you — worldwide.



[www.smart-sensor-business.com](http://www.smart-sensor-business.com)

Felix Beintner,  
Order Management  
International

**EASY**

Technology must serve people. Complex and technically sophisticated products should be as **easy** and intuitive to use as possible by our customers. This is both an aspiration and a development maxim—to the benefit of our customers.

**EXPERI-  
ENCE**

More than 50 years of **experience** and close relationship with our customers have made us true experts in specific industries. This is how we develop individual sensor solutions for and with our customers.

**PROXIM-  
ITY**

Think global, act local — this characterizes the sensor people. **Customer proximity** means not only being there for our customers 24/7, providing them with competent advice, and supporting them with an extensive range of services, but also responding to their individual desires and needs worldwide.

**FUTURE**

Sensors are the basis for all automation and for Industry 4.0 or IIoT. Together with our customers and strategic partners, we are working on **future-oriented technologies** in order to make data and information available worldwide.

# SMART IS TO CREATE **FUTURE**

Intelligent sensors provide the basis for Industry 4.0 / IIoT. We have a very clear idea how the future should look, and we develop innovative sensor concepts for it.

Together with international technology partners such as Microsoft and the OPC Foundation, we design the technological standards of tomorrow and optimally prepare our products for the challenges of Industry 4.0 / IIoT. Our sensors already transmit their data via OPC UA to all levels of the automation pyramid or directly to the cloud, for example our BCL300i bar code readers.

There, the data can be used for further analysis and services provided by the Microsoft Azure Cloud services. Integrated interfaces such as IO-Link, PROFINET, EtherNet-IP, and EtherCAT are further driving forward the networking of sensors, and they make extensive machine data accessible and available globally through integration in the cloud.

Management level – ERP

Process control level – MES/SCADA

Control level – PLC


Field level

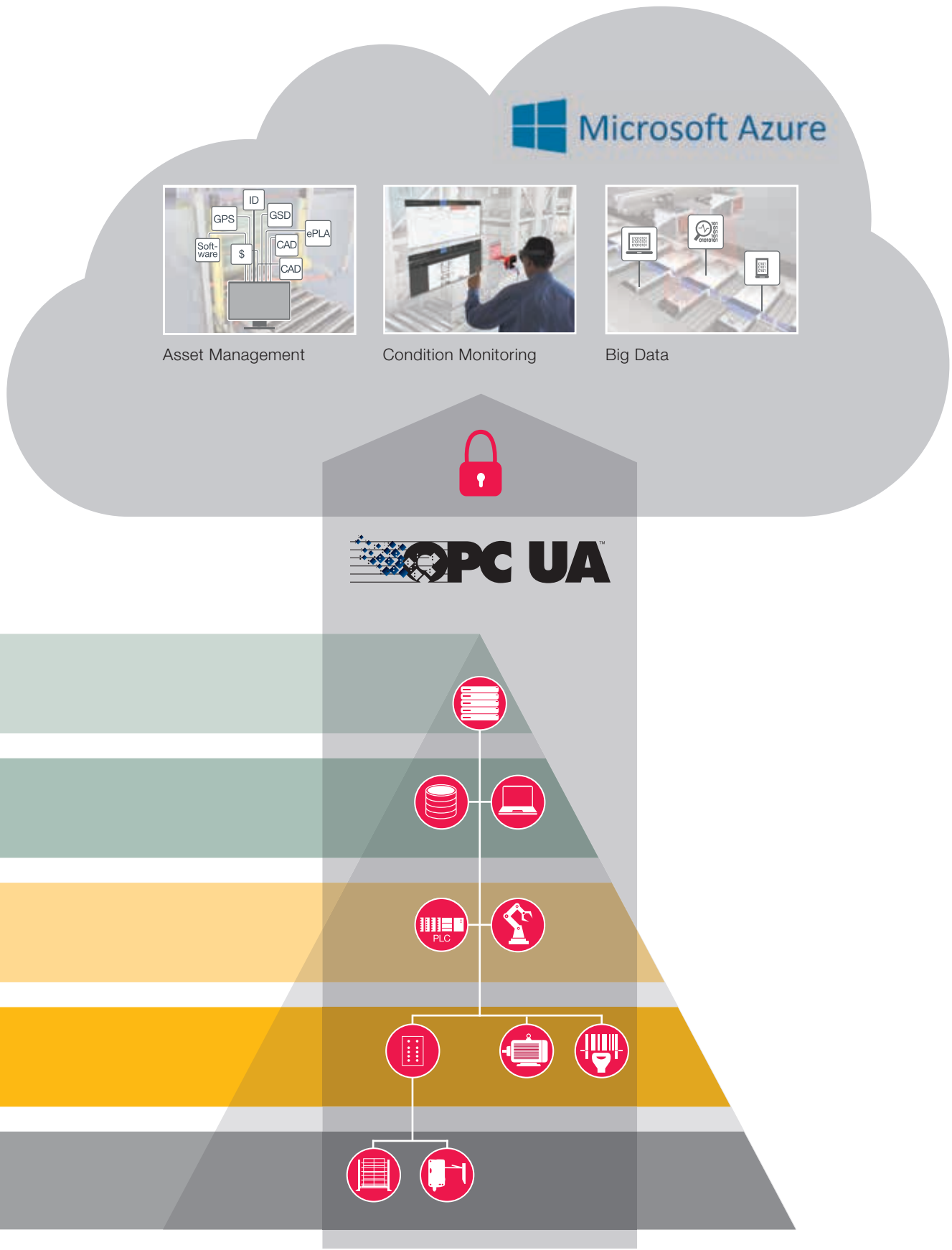


**EtherNet/IP™**  
conformance tested

**EtherCAT®**

Sensor / Actuator

 **IO-Link**





## AUTOMATED METALWORKING OF THE FUTURE

Today, machine tools and their integrated sensors require accuracy and reliability more than ever. As a result of increasing digitization, however, networking and, thus, the sensors integrated in the systems, are becoming more and more important.

*“For a while now, sensors are not only a matter of process control – important today is the ability to use them to link processes together.”*

As part of Industry 4.0 and with the increasing level of automation in industrial production, the traceability of work pieces and the processing steps will become increasingly important.

Without intelligent and smart sensors, that is not possible. With such sensors, processes become transparent and data can be made available globally through modern cloud solutions for maintenance or monitoring tasks. Whether optical distance sensors, measuring light curtains, or the DCR 200i camera-based bar code reader – many of our products already offer interfaces for intelligent fieldbus systems, such as IO-Link or Ethernet, making them 4.0-ready.

Jörg Beintner,  
Industry Manager Machine Tools





## Efficiency and safety at work

With our extensive product range for safety at work, we help to optimize cooperation between man and machine. To do this, we develop sensor solutions such as the RSL 400 safety laser scanner, which provides reliable protection and facilitates process efficiency.



## We know your needs

Our team of industry specialists has been working very closely with the machine tools industry for years. We know the unique requirements inside and out. As a result, we are able to offer the right solutions, such as our high-resolution CSR light curtain for the reliable detection of small parts.



## Maximum machine and system availability

The quality of our work is measured, above all, by reliable system availability – even under extreme conditions. To accomplish this, we develop e.g. products using a standard component based on ASIC technology, guaranteeing maximum reliability.



## Industry 4.0 – we are a pioneer

We are actively working on the technologies of the future to put tomorrow's industrial automation solutions on track. We cooperate closely with leading international development partners and are involved in trend-setting committees, working groups, and associations.



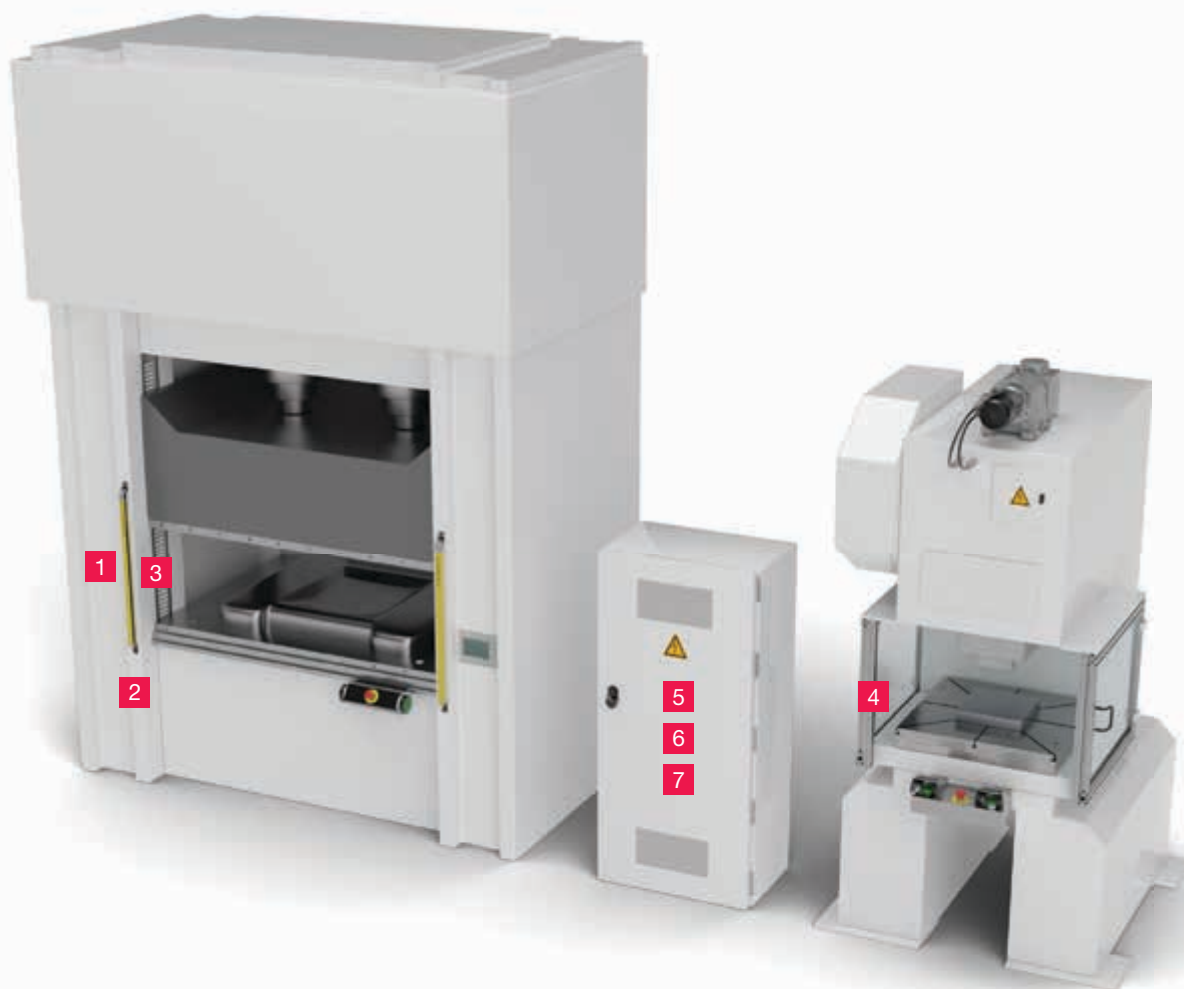
# SENSOR SOLUTIONS FOR HYDRAULIC AND ECCENTRIC PRESSES

Safe procedures: sensors and controller monitor the process movements and protect the operator.

Hydraulic and eccentric presses are used for the entire spectrum of metal forming. When forming sheet metal plates with manually operated presses, it is important to reliably protect the operator against injuries. In addition to operation that is optimized for safety at work, e.g., through mandatory two-handed operation, the safety devices must be designed so that they cannot be circumvented. To meet the require-

ments specified by EN 692/693, the sequence of press movements for mechanical and hydraulic presses must be monitored by a safety control.

Our sensor and control solutions can be intelligently incorporated into the machines' processes, reliably secure them, and render them tamper-proof.



**1 Point of operation guarding**  
MLC 500

**2 Point of operation guarding with protection**  
against reaching under MLC 500 Host / Guest

**3 Point of operation guarding**  
MLC 500 V-model

**4 Monitoring of the closing state of doors**  
S and MC/RD series

**5 Integration of safety sensors**  
MSI 400

**6 Monitoring the press procedure**  
MSI 400 F50 models

**7 Programming the control**  
MSI.designer

## Point of operation guarding



### Safety light curtain MLC 500

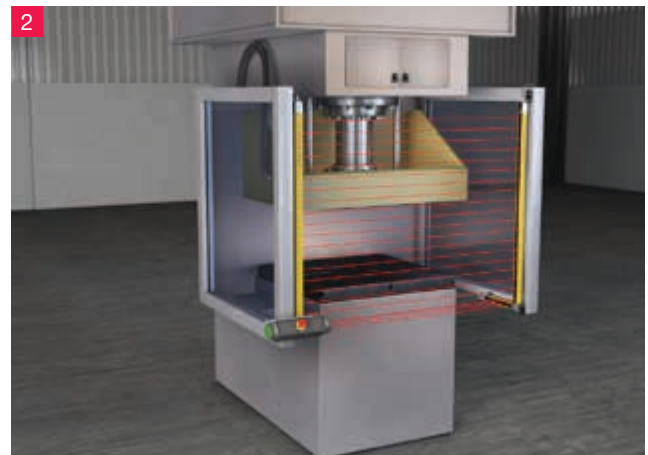
- Reliable and immune to interference
- Wide range of models for custom solutions
- Optimum integration in the process sequence through easily selectable operating modes (blanking modes), e.g., for feeding in sheet metal plates or in the case of protruding machine parts
- Sturdy mounting brackets, optionally available with damping elements
- Optional AS-i interface

## Guarding the point of operation with protection against reaching under



### Cascadable safety light curtain MLC 500 Host / Guest

- Gapless safety at the Host / Guest transition for protection against reaching under with no dead zone
- Simple and economical electrical installation since only one connection to the control is necessary
- Simple alignment through parallel display of Host and Guest status
- Optional AS-i interface



## Point of operation guarding



### Safety light curtain Extra shock and vibration resistant **MLC 500 V model**

- Extra shock- and vibration-resistant models for mounting directly on the press for extreme loads
- This makes them ideally suited for use on mechanical presses where strong accelerations or vibrations occur

## Monitoring of the closing state of doors



### Safety switch Safety proximity sensors **S and MC/RD series**

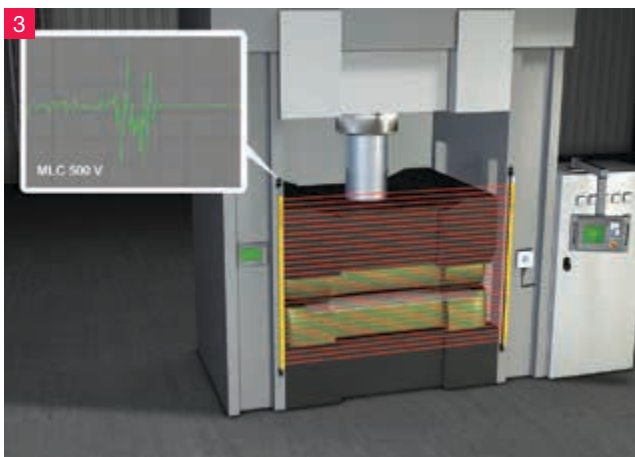
- For integration in control circuits up to category 4 in accordance with EN ISO 13849-1

#### Safety switches

- Monitoring of the closing state of swinging doors or sliding gates
- Models available with various actuators

#### Safety proximity sensors

- Monitoring of the closing state of doors or hoods
- Extremely sturdy, high-strength plastic housing for use in harsh, easily contaminated or damp environments



## Integration of safety sensors



### Programmable safety control MSI 400

- Compact, flexible and expandable safety control
- 24 I/Os and optional Ethernet interface with a width of just 45 mm
- 4 A wear-free switching power, e.g., for direct actuation of valves
- Simple program handing though removable program memory in SD-card format
- Force mode for detailed function tests

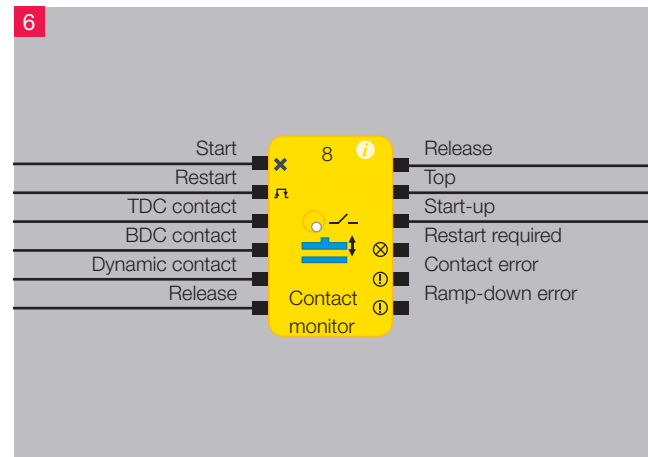
## Monitoring of the press procedure



### Programmable safety control specially designed for press applications MSI 400 F50-models

#### Additional functions

- Simple programming and configuration by means of special function blocks for monitoring the press procedure, e.g., via a cam switch gear
- Fulfills requirements in accordance with EN 692 (mechanical presses) and EN 693 (hydraulic presses)
- Monitoring of shaft break sensors or speed sensors and safety valves
- Control of different operating modes such as single stroke, automatic, cyclic, setup mode



## Programming the control

---



### Programming tool for the MSI 400 safety control **MSI.designer**

- Simple logic programming with more than 40 certified function modules
- Simulation and logic analysis for testing the safety function from a PC
- Professional report function saves time during machine documentation
- Online diagnosis for a fast state overview, remote maintenance also possible
- Freely arrangeable views with dockable windows, e.g., for the parallel display of logic pages on another screen
- License-free, suitable for all common Windows operating systems

7



# SENSOR SOLUTIONS FOR PUNCHING MACHINES AND LASER-CUTTING MACHINES

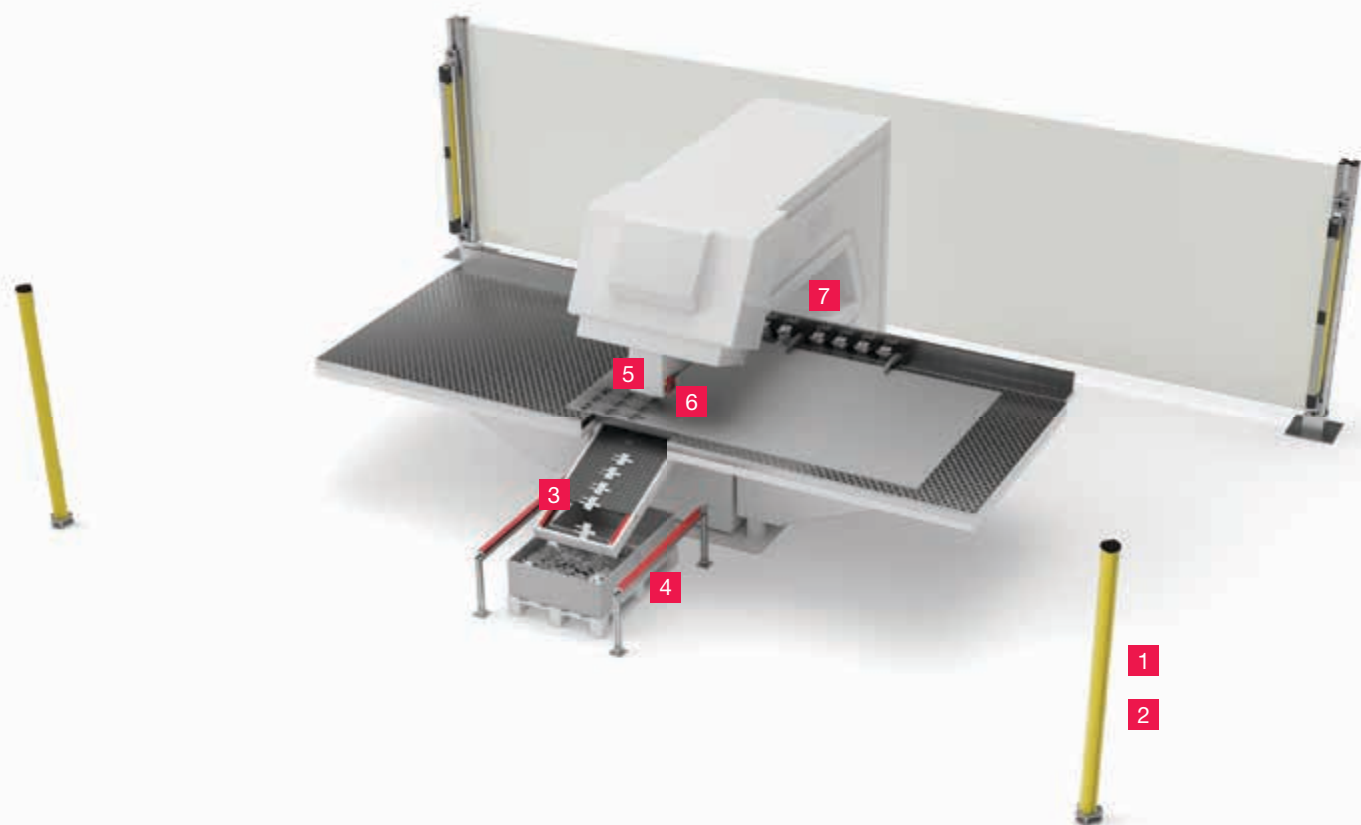
All under control: intelligent sensors keep the machine environment safe and monitor the manufacturing process.

Punching machines and laser-cutting machines separate very quickly and precisely smaller parts from large sheet metal plates. When processing sheet metal plates with punch presses or with laser cutting, safety at work plays an important role, as work is performed with high pressure and high-energy laser beams. In addition, the sensor system used must be able to detect very small

stamping parts to ensure a fault-free production process.

Our sensor solutions reliably and flexibly safeguard endangered areas and minimize the influence on the workflows. Moreover, sensors check for tool availability, prevent collisions, and monitor the ejection.





**1 Access guarding, one side**  
MLD 500

**2 Access guarding, multiple sides**  
MLD 500

**3 Ejection monitoring**  
CSR

**4 Monitoring of container filling levels**  
CSR/CSL

**5 Presence control of the tool in the  
punching head**  
LV and KF

**6 Collision avoidance of metal sheet with  
machine**  
ODSL 9/HT46C

**7 Visual monitoring of the rear  
machine compartment**  
LCAM 408i

### Access guarding, one side



#### Multiple light beam safety device MLD 500

- Economical, easy-to-install transceiver models with range of 8 m
- Device exchange by means of Plug & Play via M12 connection technology
- Optional AS-i interface

### Access guarding, multiple sides



#### Multiple light beam safety device with deflecting mirror MLD 500

- Large operating ranges offer efficient solutions for safe-guarding long paths of up to 70m, even around corners with multiple mirror columns
- Integrated laser alignment aid for time-saving and economic alignment
- Simple configuration by means of wiring
- Device exchange by means of Plug & Play via M12 connection technology
- Integrated indicator light for status display, even over long distances
- Optional AS-i interface



## Ejection monitoring



### Switching light curtain CSR

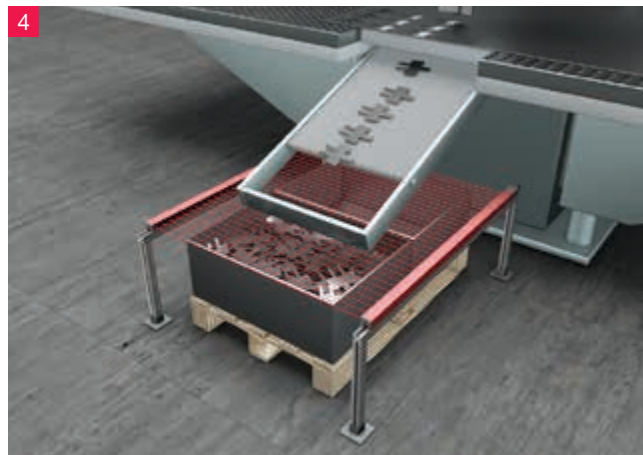
- Detection of the smallest parts with diameters from 1 mm
- Reliable detection of quickly falling parts
- Adaptation to various part sizes via IO-Link interface
- Fast installation through simple alignment
- Robust metal housing

## Monitoring of container filling levels



### Measuring / switching light curtain CML/CSL

- Clear recognition of the fill level through various resolutions
- Integrated PROFIBUS, PROFINET, CANopen, RS485, or I/O-Link interface for adapting to different materials
- Fast installation through simple alignment
- Robust metal housing



## Presence control of the tool in the punching head



### Fiber optic sensors LV and KF

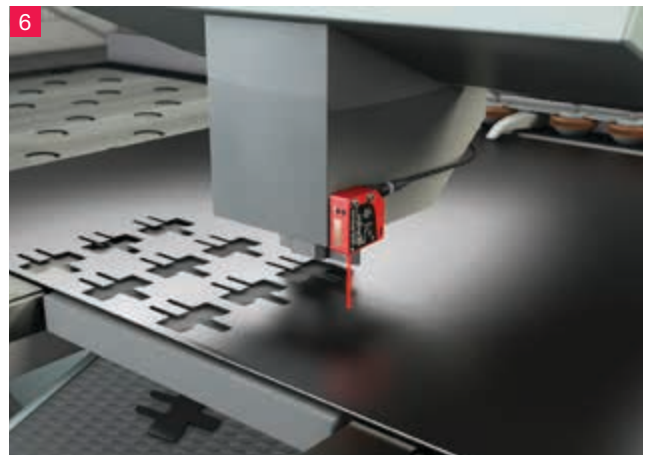
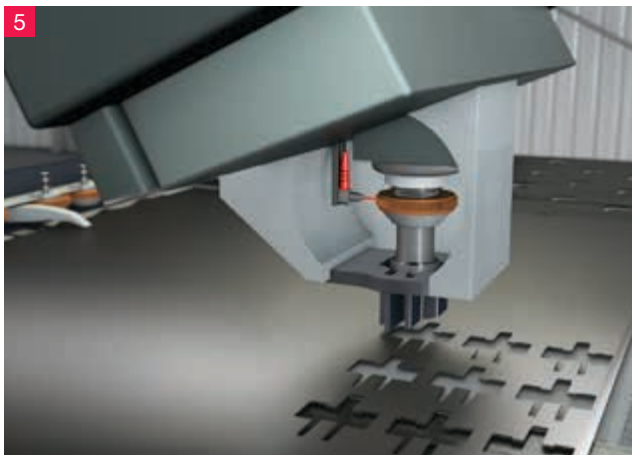
- A variety of fiber optics with various light-spot geometries for a wide range of applications
- Glass and plastic fiber optic cables available
- Fiber optic opening requires very little installation space on the punching head due to recessed evaluation unit
- Simple alignment with visible red light
- IO-Link and high-speed amplifier

## Collision avoidance of metal sheet with machine



### Optical sensors ODSL 9/HT 46C

- Reliable detection of various surfaces, from glossy to dark
- Simple and exact alignment through small light spot
- Maximum insensitivity to ambient light
- High switching frequency



## Visual monitoring of the rear machine compartment

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### Industrial IP camera **LCAM 408i**

- Enables insight into inaccessible areas
- Simplified troubleshooting in case of failure as well as collision avoidance
- Robust metal housing with degrees of protection IP65 and IP67 and easy-to-clean glass pane
- High image quality and fast live image transfer via the 5-Megapixel color camera with gigabit-Ethernet interface

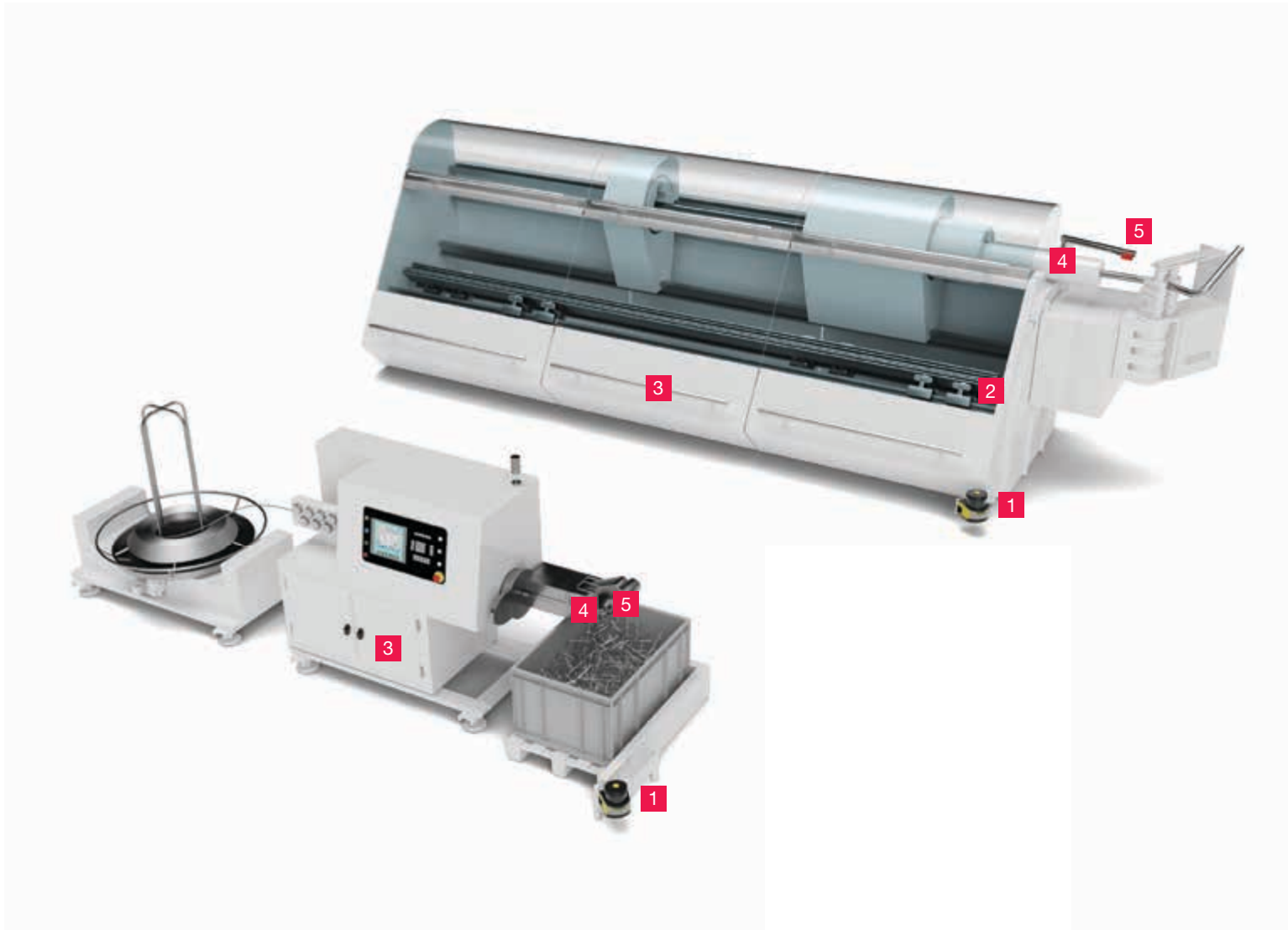


# SENSOR SOLUTIONS FOR TUBE AND WIRE BENDING MACHINES

Flexible safeguards: ensuring smooth processing of tubes and wires.

Tube and wire bending machines bend and cut round material. Because these machines process materials of various lengths, the area protection at the bending head of the machines must be adaptable to different dimensions. Also important is reliable presence control of the material – regardless of the surface characteristics.

Our easy-to-configure laser scanners facilitate fast configuration of different-sized protective fields and are very resistant to particles that may separate from the material during the machining process, for example. The optical sensors can reliably detect a wide range of surfaces as they operate largely reflection-independent.



**1 Safeguarding the bending area**  
RSL 400

**2 Monitoring the closing state of the protection hood**  
MC 300/RD 800

**3 Integration of safety sensors**  
MSI 400

**4 Presence control**  
IS series

**5 Presence control**  
46C series

## Safeguarding the bending area



Safety laser scanner  
**RSL 400**

- Staggered operating ranges from 3–8.25 m
- Monitoring of the front and side machine areas with just one device with 270° scanning angle
- Very resistant to particles, e.g., that could form when cutting the wire
- Two autonomous protective functions
- Simple installation through removable, intelligent connection unit with configuration memory

## Monitoring the closing state of the protection hood



Safety proximity sensors - magnetically coded / with transponder  
**MC 300/RD 800**

- For integration in control circuits up to category 4 in accordance with EN ISO 13849-1
- Magnetically coded versions with extremely sturdy, high-strength plastic housing for use in harsh, easily contaminated or damp environments
- Versions with transponders offer a high level of protection against tampering
- Standard and teachable models available

## Integration of safety sensors



Programmable safety control  
**MSI 400**

- Compact, flexible and expandable safety control
- 24 I/Os and optional Ethernet interface with a width of just 45 mm
- Lower costs and faster installation than when using multiple safety relays
- Simple logic programming with more than 40 certified function modules
- Simulation, professional report function and online diagnosis provide support during configuration





## Presence control

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### Inductive switches IS series

- Offers scanning ranges up to 40 mm
- Wide range of cylindrical and cubic designs
- Robust, full-metal versions available, also resistant to aggressive lubricants

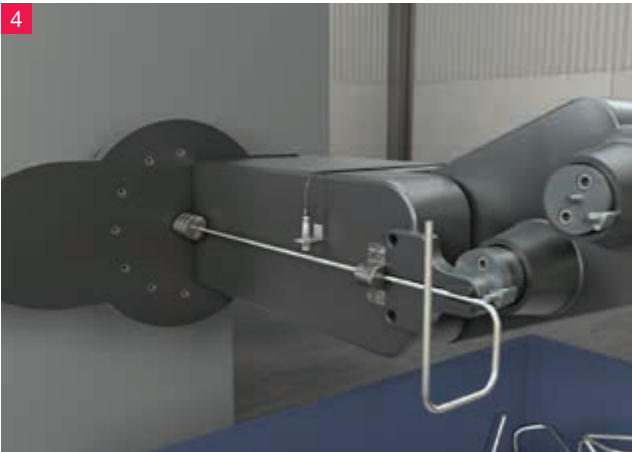
## Presence control

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### Optical sensors 46C series

- Offers scanning ranges up to 3,000 mm
- Reliable detection of various surfaces and materials with high function reserve
- Easy mounting and alignment
- Very extensive series with various operating principles



# SENSOR SOLUTIONS FOR MACHINING CENTERS

High throughput for sure: monitoring increases stable metalworking process and reduces downtime.

In machining centers, objects of various materials are machined, turned, and drilled. The prerequisite for processing work pieces in complex machining centers with a high degree of precision is having the right tool available for each work step. In addition to checking whether the tool is present and identifying it, the drill or milling cutter must also be monitored for tool breakage.

Our camera-based code reader clearly detect whether the right tool is used for the given processing step and our focused laser photoelectric sensors can – thanks to their very small light spot – reliably check whether even the smallest drills or milling cutters are intact.

**1 Presence control**

IS series

**2 Testing for tool breakage**

BKL 706

**3 Tool identification**

DCR 200i

**4 Visual monitoring of the machine compartment**

LCAM 408i

**5 Point of operation guarding**

MLCS 520

## Presence control



### Inductive switches IS series

- Offers scanning ranges up to 40 mm
- Wide range of cylindrical designs
- Robust, full-metal versions available, also resistant to aggressive lubricants

## Testing for tool breakage



### Laser photoelectric sensor BKL 706

- Laser photoelectric sensor for testing drills and milling cutters for diameters from 1 mm
- Fast alignment by means of visible light spot and level indicator (bar graph)
- Warning output for contamination display
- Pneumatic connection for cleaning the optics
- Compact metal housing with integrated mounting and alignment system



## Tool identification



**Stationary 2D-code reader**  
**DCR 200i**

- Identification of 1D- and 2D-codes
- Models with reading distances from 40–360 mm
- Integrated interfaces, such as Ethernet, RS232/422, PROFINET
- Browser-based, multi-language WebConfig tool for access via Ethernet as well as configuration and diagnosis

## Visual monitoring of the machine compartment



**Industrial IP camera**  
**LCAM 408i**

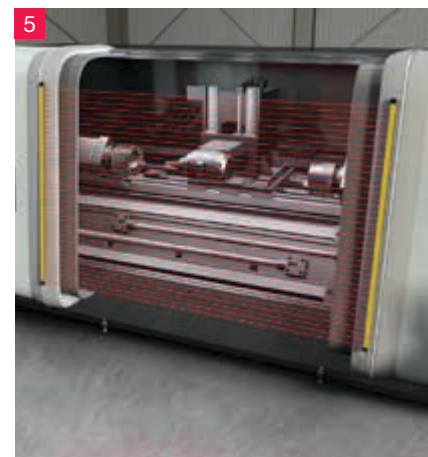
- Enables insight into hidden areas
- Simplified troubleshooting in case of failure as well as collision avoidance
- Robust metal housing with degrees of protection IP65 and IP67 and easy-to-clean glass pane
- High image quality and fast live image transfer by means of 5-megapixel color camera with Gigabit Ethernet interface
- Model with compressed air connection for blowing dirt particles and liquids from the front screen

## Point of operation guarding



**Safety light curtain**  
**MLCS 520**

- Especially slim design with dimensions of 15x32 mm for installation in constrained spaces
- Can also be optimally adapted in height as there are no dead zones at the ends and thanks to finely graduated length selection in 30 mm grid
- Configuration by means of wiring for fast and easy installation as well as replacement should servicing be necessary

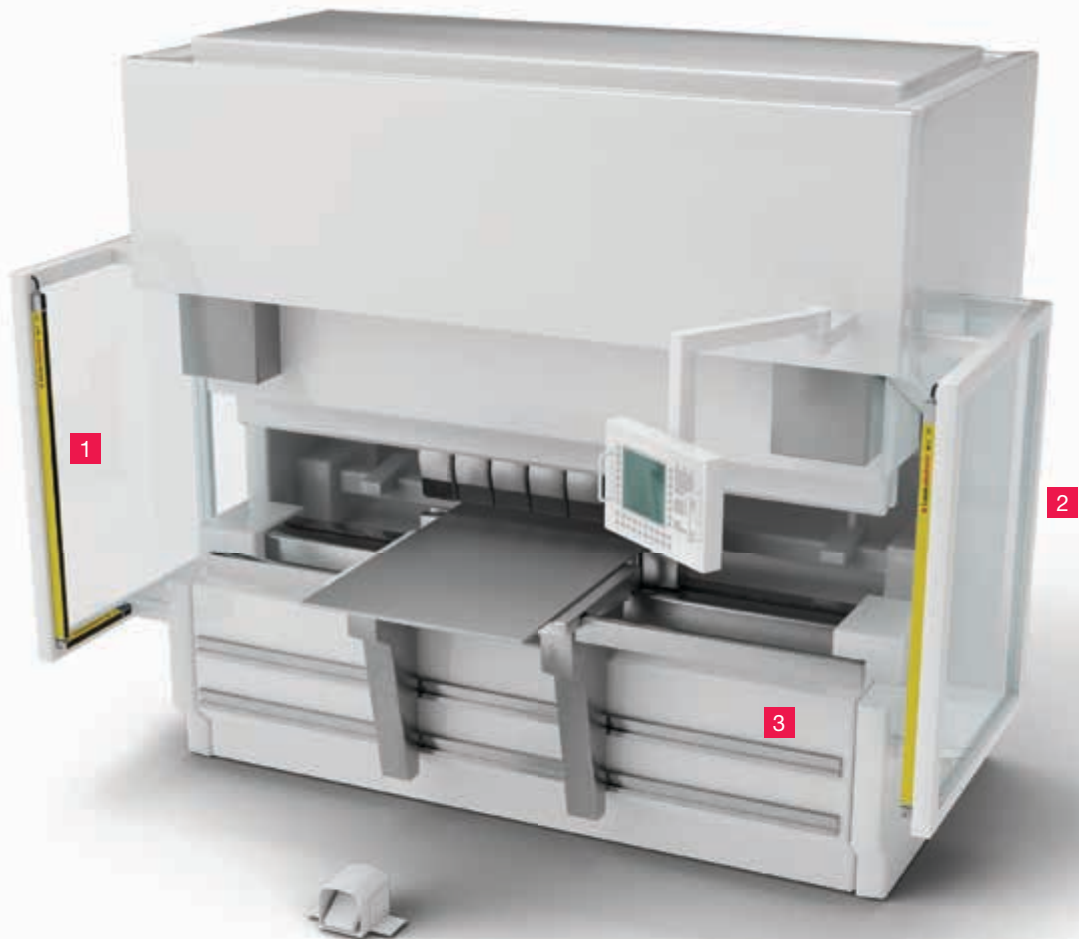


# SENSOR SOLUTIONS FOR HYDRAULIC PRESS BRAKES

No two ways about it: reliable machine safety and efficient handling.

In hydraulic press brakes, bending presses or bending machines, a wide range of sheet metal parts are produced through bending. The extreme forces that are necessary at times and the large dimensions of the produced parts require various safety measures.

With our robust safety light curtains, we are able to safeguard dangerous areas as needed. The large variety of light curtains available ensures that tailor-made solutions can be provided for the most varied of requirements. Modern and highly flexible blanking functions make it possible to adapt to different work pieces and make them safe, yet efficient to use.



**1 Point of operation guarding / protection against reaching under**  
MLC 500

**2 Access guarding at rear of machine**  
MLC 500 / MLD 500

**3 Integration of safety sensors**  
MSI series

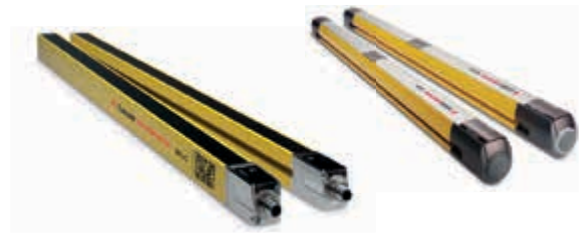
**Point of operation guarding/  
protection against reaching under**



**Cascadable safety light curtain  
MLC 500**

- Optimum integration in the process sequence through selectable operating modes (blanking modes), e.g., for feeding in sheet metal plates or in the case of protruding machine parts
- Configuration by means of wiring for fast and easy installation as well as replacement should servicing be necessary
- Custom solutions through wide range of variants and cascadable versions
- Optional AS-i interface

**Access guarding  
at rear of machine**

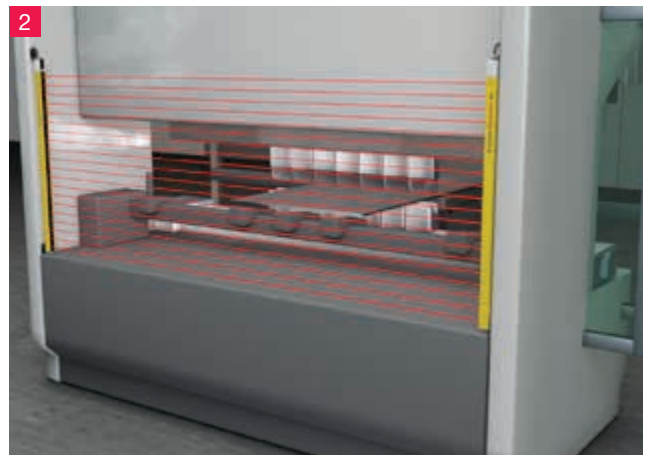


**Safety light curtain/  
multiple light beam safety device  
MLC 500/MLD 500**

- Reliable, robust design
- Time-saving installation through simple alignment and configuration by means of wiring
- Optional AS-i interface

**MLD 500**

- Efficient solutions for short distances of up to 8 m by means of transceiver (transmitter/receiver in one housing)





## Integration of safety sensors

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### Safety relay MSI series

- For connecting E-Stop, safety light curtains and door switches
- Extensive product range for custom solutions, e.g., with 2 normally open contacts, 3 normally open contacts or 2 sensor inputs
- With either pluggable screw terminals or with spring-cage terminals

3



# SENSOR SOLUTIONS FOR METAL SAWING MACHINES

Maximum machine throughput: switching sensors provide reliable material detection in rough environments.

Metal sawing machines cut through tubes or solid material by machining. To prevent unplanned downtimes, ongoing checks must be performed during the cutting process to ensure that sufficient production material is available. This is not always easy, especially for round material, which is often highly reflective. In setup mode, it must also be ensured that the saw cannot start up, so as to reliably protect the operator from serious injuries.

Our switching sensors also reliably detect materials with different surface structures, thereby also enabling high feed and cutting speeds and, thus, high machine throughputs. Intelligently placed roller switches also ensure that the machine cannot start up during setup and maintenance.

## Position inspection of the saw blade



### Safety position switches S 300

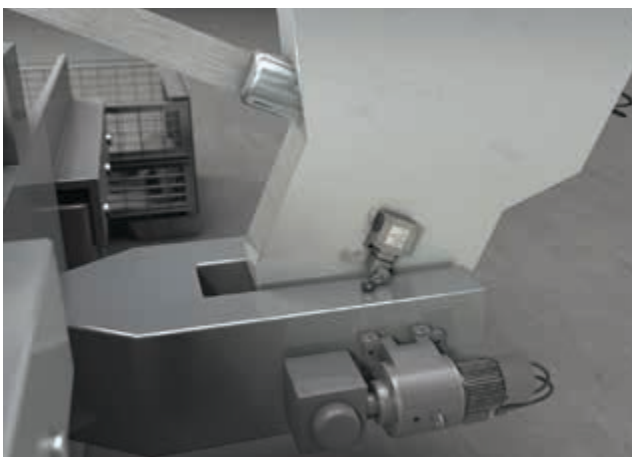
- Robust metal housing for use in rough environments
- For integration in control circuits up to category 4 in accordance with EN ISO 13849-1
- Models with long-lasting plunger and roller actuators

## Presence control



### Optical sensors 5 series / 8 series

- Easy alignment by means of bright light spot
- Sensitivity adjustment with potentiometer
- High function reserve enables reliable detection even with dark surfaces
- Extensive selection of accessories for various mounting options
- Models with long light spot available for the reliable detection of round material



# SENSOR SOLUTIONS FOR **SHEET FEEDERS**

Endless sheet metal: precise sensors ensure a smooth process.

Using sheet feeders, the sheet metal unwound from a coil is fed to a cutting machine or press. At the start of the unrolling process, the material must be quickly and unambiguously identified. During the unrolling process, the sheet metal must then be inspected for uniform unrolling to ensure precise further processing during cutting. At the end of a sheet metal coil, it must be

changed as quickly as possible, so that downtime can be kept to a minimum.

Our switching sensors reliably detect the end of the coil and, by means of loop and edge control, our measuring sensors enable a smooth process sequence when feeding in sheet metal.

## Detection of roll diameter



### Measuring ultrasonic sensors DMU

- Measurement range up to 6,000 mm
- Resolution from 1 mm
- Configurable analog output
- Robust, full-metal version with degrees of protection IP67 and IP68
- Optional integrated IO-Link interface

## Loop control



### Optical distance sensors ODS 10/ODS 96

- Large measurement range of 20 – 65,000 mm
- Precise laser measurement with various measurement procedures, resolution up to 0.1 mm
- Integrated interfaces, e.g., analog and IO-Link, as well as gateways for fieldbuses
- Models with various light-spot geometries enable optimum measurement on metallic surfaces or surfaces that have colored structure

## Edge control



### Measuring forked photoelectric sensor GS 754B

- CCD line sensor with 25 mm measurement range
- Reproducibility of min. 0.1 mm
- Integrated analog, digital and serial interface
- Exact determination of the edge of the sheet metal plate
- Configurable measurement range and measure mode



# SENSOR SOLUTIONS FOR ROBOT WORKING AREAS

Intelligent solutions: modern code readers identify the part type – laser scanners and light barriers safeguard the work area.

Industrial robots are often used for automated loading and unloading of machine tools. In so-called robot cells, numerous swivel and gripping movements are performed in a very short period of time. These zones must be reliably protected against access over a large area. Before the robot picks up a part, the part must be uniquely identified to ensure that the correct processing step is carried out.

Our laser scanners reliably monitor large danger zones around robot cells. Modern code readers are easy to configure and are characterized by a high reading performance. This ensures that the correct work piece is passed on to the next work step.



**1 Area protection**

RSL 400

**2 Access guarding**

MLD 500

**3 Identification of model, batch, serial**

number  
DCR 200i

**4 Presence control**

IS/LV and KF series

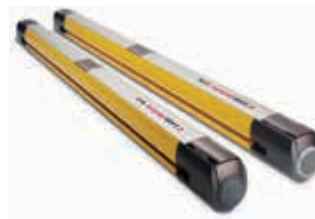
## Area protection



**Safety laser scanner**  
**RSL 400**

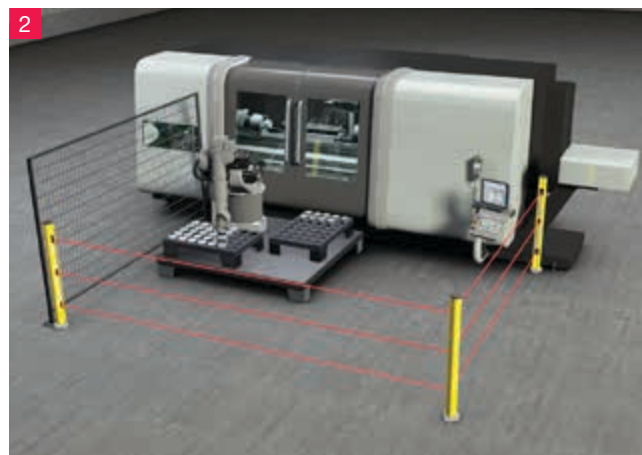
- Monitoring of the front and side machine areas with just one device with 270° scanning angle
- Staggered operating ranges from 3–8.25 m
- Two autonomous protective functions
- Fast alignment in just 5 steps using configuration software
- Simple installation through integrated level and removable, intelligent connection unit with configuration memory
- Convenient configuration via Ethernet or Bluetooth interface

## Access guarding



**Multiple light beam safety device**  
**MLD 500**

- Transmitter / receiver system with a range of up to 70 m, even around corners with multiple mirror columns
- Transceiver system with operating range up to 8 m
- Integrated laser alignment aid for time-saving and economic alignment
- Simple configuration by means of wiring
- Device exchange by means of Plug & Play via M12 connection technology
- Integrated indicator light for status display, even over long distances
- Optional AS-i interface





Identification of model, batch, serial number



Stationary 2D-code reader DCR 200i

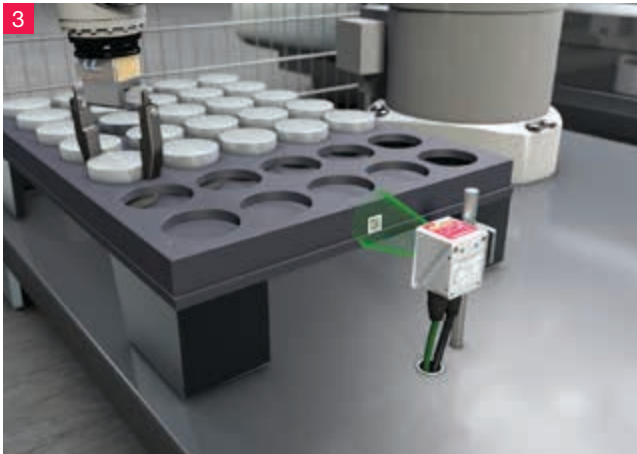
- Identification of 1D- and 2D-codes
- Models with reading distances from 40–360 mm
- Integrated interfaces, such as Ethernet, RS232/422, PROFINET
- Browser-based, multi-language WebConfig tool for access via Ethernet as well as configuration and diagnosis

Presence control



Inductive switches / fiber optic sensors IS / LV and KF series

- Inductive switches**
- Offer scanning ranges up to 40 mm
  - Wide range of cylindrical and cubic designs
- Fiber optic sensors**
- Fiber optic opening requires very little installation space due to recessed evaluation unit
  - A variety of fiber optics with various light-spot geometries for a wide range of applications



# ALL PRODUCTS FROM A SINGLE SOURCE

Full performance with the right accessories and attuned components.

In addition to device functionality and quality, optimally adapted accessories are necessary for the reliable and efficient use of sensors. No matter

if you need easy mounting and connecting or reliable signal provision – it takes the right accessories to unleash the full power.





### Cables

To facilitate the integration of our sensors, we offer a large variety of connection and interconnection cables with M8, M12, and M23 connectors – straight or angled, and with or without LED.



### Connection units

Today, sensors, safety switches and cameras are linked together via active or passive sensor distribution boxes with fieldbus interfaces from our product range to ensure more flexibility and transparency during installation.



### Power supply

A reliable and machine-independent power supply with 1- and 3-phase power supplies is an elementary part of an optimum and efficient sensor system. For this reason, we also offer load circuit monitoring modules to ensure a higher level of safeguarding against failure.

### Mounting accessories

We place great emphasis on our products being easy to mount and simple to align. For this reason, you will find specially-attuned mounting systems in our product range such as mounting brackets, rod holders or device columns.



### Reflectors

Just how reliably retro-reflective photoelectric sensors can detect depends upon the selected reflector, among other things. That is why we offer various fitting solutions made of plastic, film, and glass for all conceivable conditions.



### Signal elements

For signaling in automated systems, we offer an extensive product range of single- and multi-colored transducers in order to ensure productivity and efficiency.



# ALWAYS THE **RIGHT SERVICE** FOR YOUR PROCESS

Legal security and efficient safety at work are successfully combined quickly and easily with our range of services.



For many people, complex planning or engineering tasks or the management of functional safety make the set of issues related to safety at work a closed book. In the area of legal security in particular, information gaps often exist. With our extensive, qualified offer on safety at work, you are on the safe side legally and can fulfill all legal guidelines easily.

We support your service department and, in the event of limited resources, make available the appropriately qualified team. We work with our experts to ensure the safety of your machines and systems. Your production and service team is free to perform its actual tasks. Our product range is accompanied by an extensive range of training courses tailored to your needs.

## Our service offerings include



Status check  
Safety technology  
(MSSC)



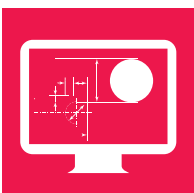
Status check CE  
(MCSC)



Risk analysis /  
assessment  
(MRAS)



Conformity assess-  
ment of machines  
(MCMS)



Development  
support for  
machine safety  
(MSEN)



Safety inspection  
(MSIN)

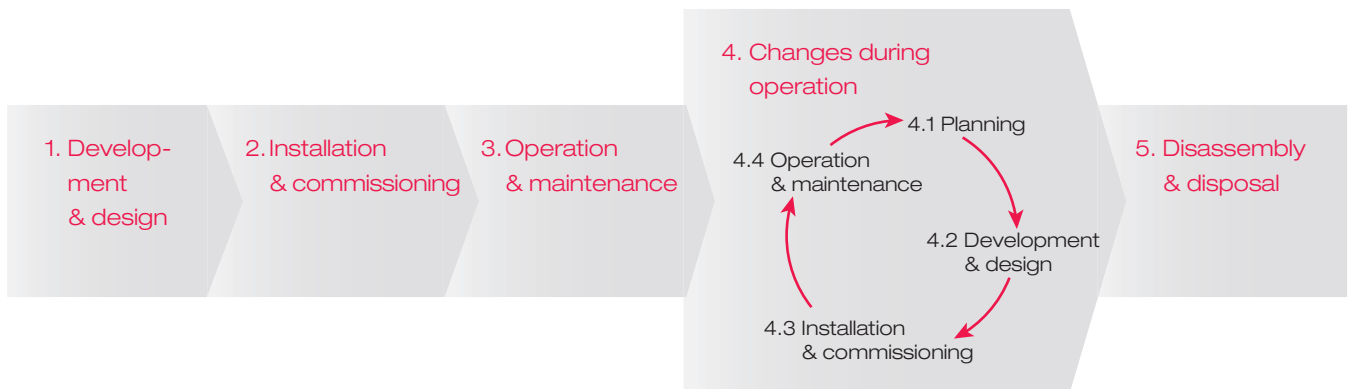


Functionality  
of protective  
devices (MSPT)



Validation and  
verification of  
safety functions  
(MSVV)

### Stages of a machine life cycle



### The right services at a glance

Services	1. Development & design	2. Installation & commissioning	3. Operation & maintenance	4.1 Planning	4.2 Development & design	4.3 Installation & commissioning	4.4 Operation & maintenance	5. Disassembly & disposal
Status check Safety technology		●	●				●	
Status check CE	●		●		●	●	●	
Risk analysis / assessment	●		●	●	●		●	●
Conformity assessment of machines	●			●	●			
Development support Machine safety	●				●			
Safety inspections		●	●			●	●	
Functionality of protective devices		●	●			●	●	●
Validation and verification of safety functions		●				●		

SMART  
**SENSOR**  
BUSINESS

# WE ARE THE **SENSOR PEOPLE**

For more than 50 years, we have been developing, producing, and marketing efficient sensor solutions for industrial automation.

## Leuze electronic at a glance

Foundation	1963
Company structure	GmbH & Co. KG, wholly family-owned
Executive management	Ulrich Balbach
Headquarters	Owen, Germany
Distribution companies	18
Production locations	5
Technological competence centers	3
Distributors	42
Employees	> 1,000

## Product range

Switching sensors  
Measuring sensors  
Products for safety at work  
Identification  
Data transmission systems  
Industrial image processing  
Accessories

## Industry expertise

Intralogistics  
Packaging industry  
Machine tools  
Automotive industry  
Medical technology

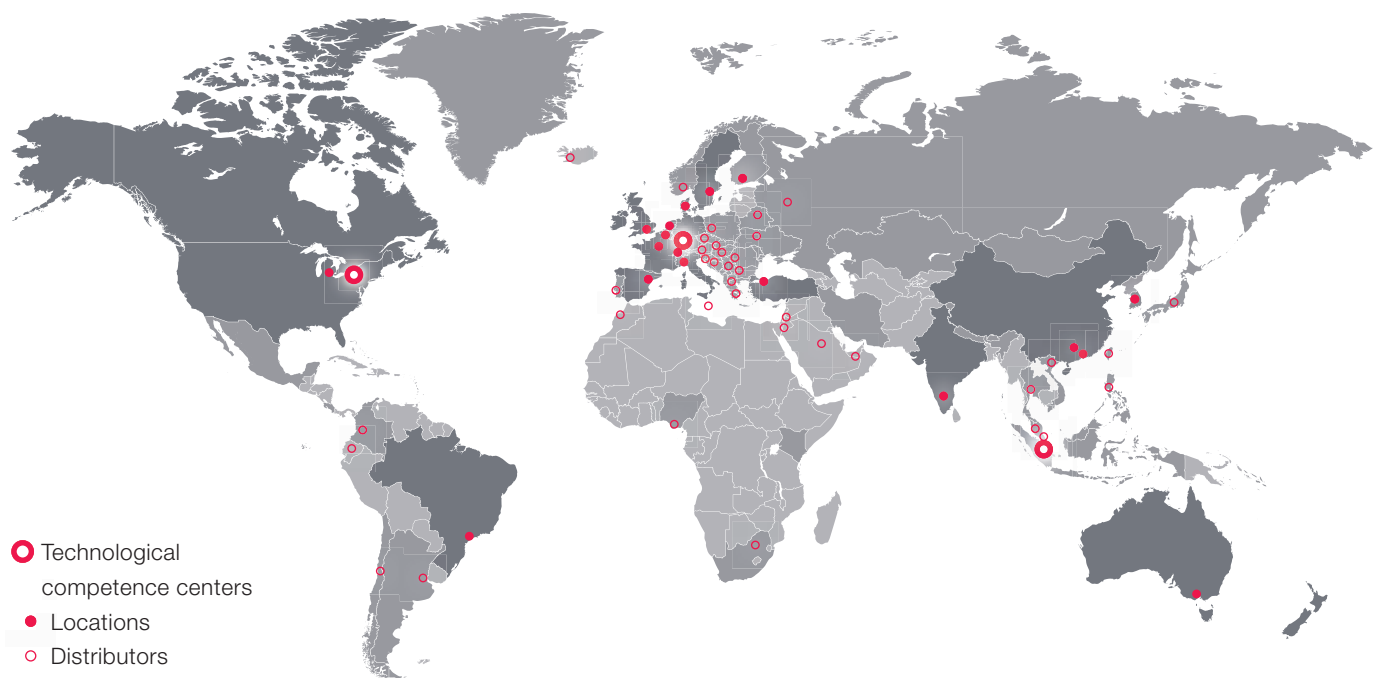


## Leuze electronic GmbH + Co. KG

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# ALWAYS CLOSE TO YOU

Short distances are important to us — both within and outside of our company. We therefore place great value on being personally, quickly, and close to you — worldwide. We produce our sensors on four continents, allowing us to offer you reliable product availability.



Australia/New Zealand | Belgium | Brazil | China | Denmark/Sweden | Germany | France | Great Britain | Hong Kong | India | Italy | the Netherlands | Switzerland | Singapore | Spain | South Korea | Turkey | USA/Canada

## **Switching Sensors**

Optical Sensors  
Ultrasonic Sensors  
Fiber Optic Sensors  
Inductive Switches  
Forked Sensors  
Light Curtains  
Special Sensors

## **Measuring Sensors**

Distance Sensors  
Sensors for Positioning  
3D Sensors  
Light Curtains  
Forked Sensors

## **Products for Safety at Work**

Optoelectronic Safety Sensors  
Safe Locking Devices, Switches and Proximity Sensors  
Safe Control Components  
Machine Safety Services

## **Identification**

Bar Code Identification  
2D-Code Identification  
RF Identification

## **Data Transmission / Control Components**

MA Modular Connection Units  
Data Transmission  
Safe Control Components  
Signaling Devices  
Connection Technology and Passive Distribution Boxes

## **Industrial Image Processing**

Light Section Sensors  
Smart Camera

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