wenglor
the innovative family

Smart **Sensor and
Image Processing Solutions**
in 1D, 2D and 3D

Who We Are

Production and development sites are located in Germany (Tettnang, Munich) and Romania (Sibiu).

State-of-the-art production lines for sensors, image processing products and components are certified according to international standards.

wenglor – the innovative family

One of the most successful medium-sized companies for smart sensor and image processing technologies. Product and system solutions with multiple patents are used in countless automated industrial applications around the world.

Our goal has always been and remains to increase the productivity of our customers with intelligent products. Continuous growth, outstanding, innovative premium products and excellent corporate management qualify wenglor as a technology leader and top-class employer among medium-sized companies in many categories.

Where We Come From

95% of all sales generated by internally developed products

>10% of annual sales is invested in research and development

10% training quota

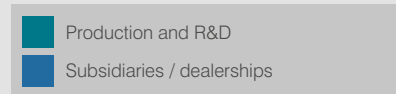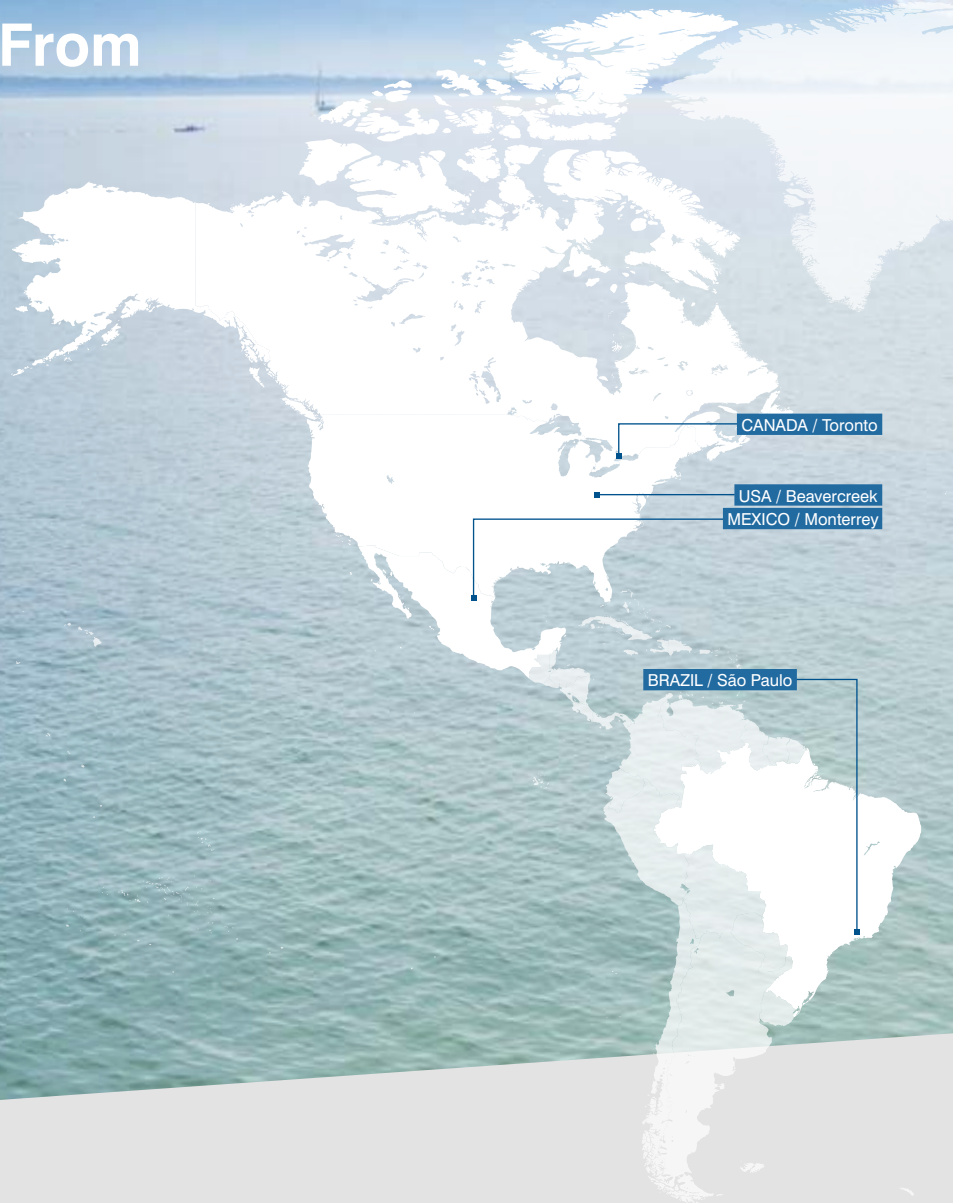Online product selector
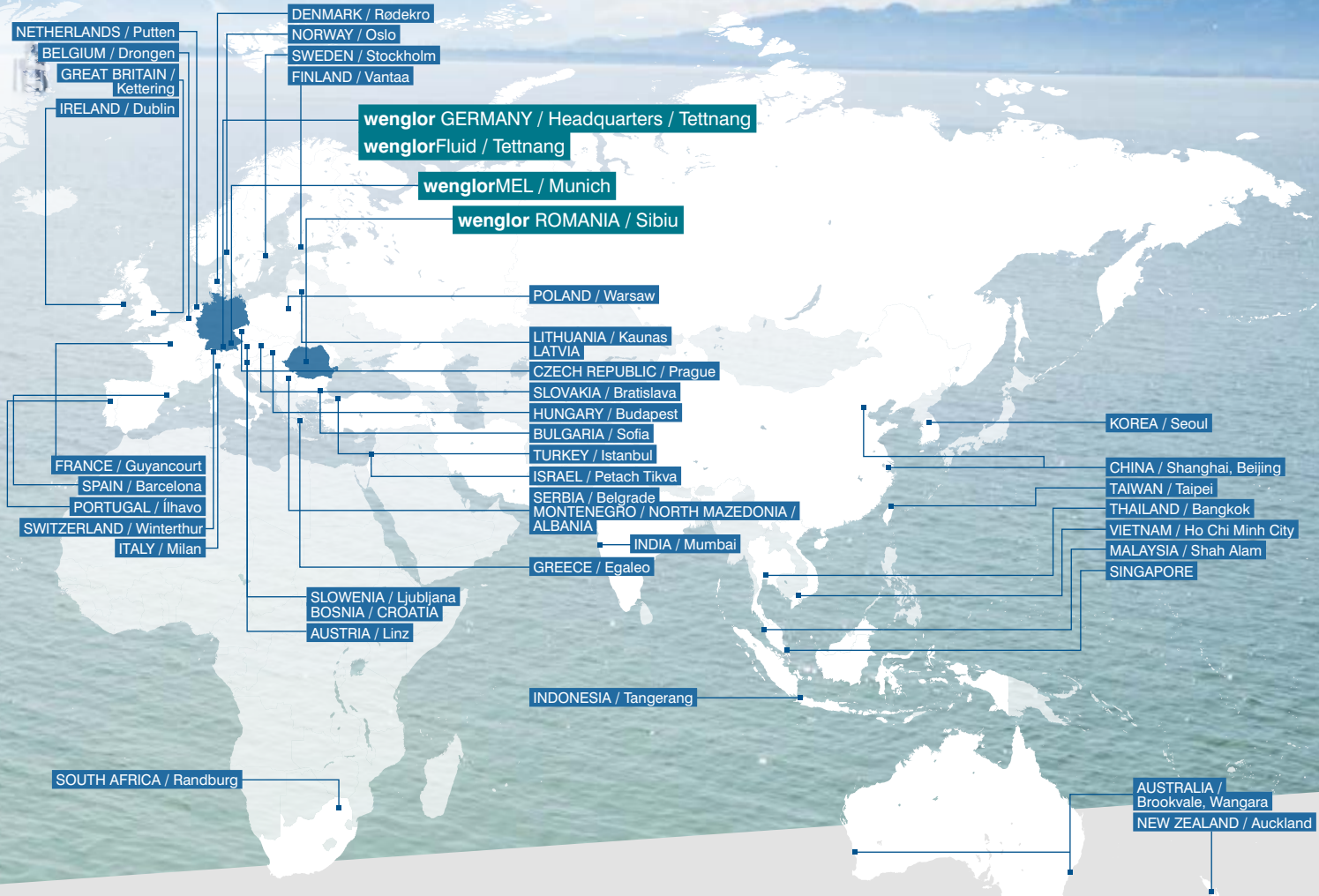just a few clicks to the desired product

Worldwide technical support

99% product availability

Same-day order shipping

CANADA / Toronto

USA / Beavercreek
MEXICO / Monterrey

BRAZIL / São Paulo

Production and R&D
Subsidiaries / dealerships

NETHERLANDS / Putten
BELGIUM / Drongen
GREAT BRITAIN / Kettering
IRELAND / Dublin

DENMARK / Rødekro
NORWAY / Oslo
SWEDEN / Stockholm
FINLAND / Vantaa

wenglor GERMANY / Headquarters / Tettnang
wenglorFluid / Tettnang

wenglorMEL / Munich

wenglor ROMANIA / Sibiu

POLAND / Warsaw

LITHUANIA / Kaunas
LATVIA
CZECH REPUBLIC / Prague
SLOVAKIA / Bratislava
HUNGARY / Budapest
BULGARIA / Sofia
TURKEY / Istanbul
ISRAEL / Petach Tikva
SERBIA / Belgrade
MONTENEGRO / NORTH MAZEDONIA / ALBANIA
INDIA / Mumbai
GREECE / Egaleo

KOREA / Seoul

CHINA / Shanghai, Beijing
TAIWAN / Taipei
THAILAND / Bangkok
VIETNAM / Ho Chi Minh City
MALAYSIA / Shah Alam
SINGAPORE

FRANCE / Guyancourt
SPAIN / Barcelona
PORTUGAL / Ílhavo
SWITZERLAND / Winterthur
ITALY / Milan

SLOWENIA / Ljubljana
BOSNIA / CROATIA
AUSTRIA / Linz

INDONESIA / Tangerang

SOUTH AFRICA / Randburg

AUSTRALIA / Brookvale, Wangara
NEW ZEALAND / Auckland

From Lake Constance to All Over the World

The innovative family business was founded in 1983 by Dieter Baur in Tettnang on Lake Constance in the German state of Baden-Württemberg, and now employs around 950 employees. Industrial hardware and software solutions are developed and produced at a total of five locations throughout Europe. wenglor products are distributed worldwide through a total of 31 subsidiaries in 48 countries. Under the leadership of Fabian and Rafael Baur, wenglor has grown into a global player in the fields of sensors and image processing and has become an indispensable part of the world of automation.

What We Do

Photoelectronic
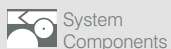Sensors

Ultrasonic
Sensors

Inductive
Sensors

Safety
Technology
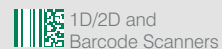
Fluid
Sensors

Industrial
Communication

System
Components

Software

2D/3D
Sensors

Image Processing
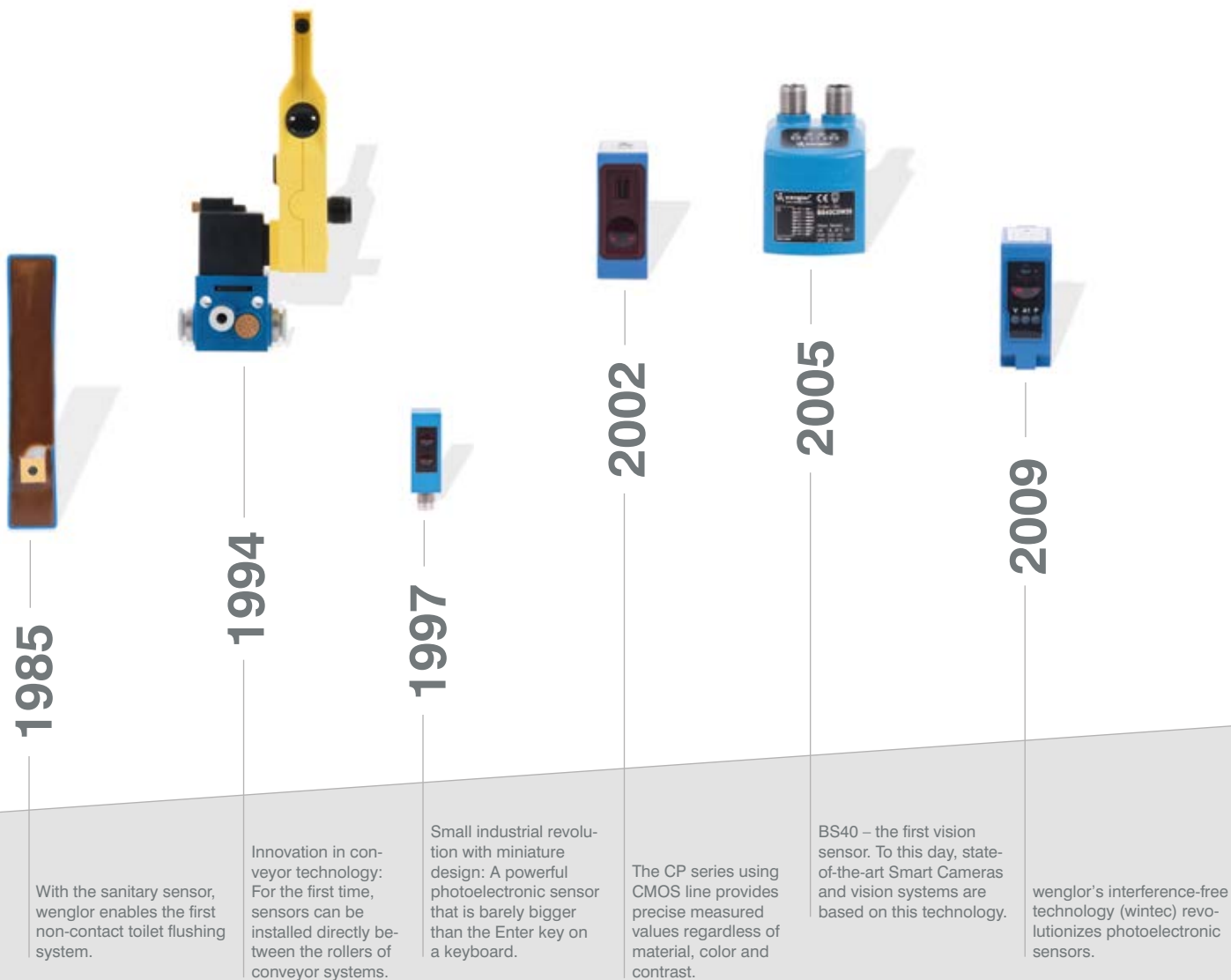and Smart Cameras

1D/2D and
Barcode Scanners

Shaping the Future with Innovative Technologies.

We develop intelligent sensor technologies, safety and 2D/3D image processing systems with state-of-the-art communication standards that already meet the requirements of Industry 4.0. Our range includes more than 6,300 available products with which we can detect, inspect and measure objects and communicate and evaluate the collected data via suitable interfaces. Intelligent wenglor sensors are not only capable of learning, but are even capable of thinking and acting autonomously. Our company thus plays a key role in making the industry fit for the future now.

What We Are Best Known For

1985

With the sanitary sensor, wenglor enables the first non-contact toilet flushing system.

1994

Innovation in conveyor technology: For the first time, sensors can be installed directly between the rollers of conveyor systems.

1997

Small industrial revolution with miniature design: A powerful photoelectronic sensor that is barely bigger than the Enter key on a keyboard.

2002

The CP series using CMOS line provides precise measured values regardless of material, color and contrast.

2005

BS40 – the first vision sensor. To this day, state-of-the-art Smart Cameras and vision systems are based on this technology.

2009

wenglor's interference-free technology (wintec) revolutionizes photoelectronic sensors.

2016

Innovation in the second and third dimensions: weCat3D sensors accurately measure objects to the exact micrometer using laser triangulation.

2017

PNG//smart sensors combine communication and performance. The range includes different light sources, housing designs and functional principles with the latest communication interfaces.

2018

Sensation in 3D: ShapeDrive 3D sensors work with the projection of stripe patterns and record them again with a camera. The result is a micrometer-accurate 3D point cloud.

2019

weFlux² sensors always combine two measurement results in one sensor: pressure and temperature or flow and temperature. The measured values are output via intelligent interfaces.

2020

The configurable all-in-one uniVision software enables the configuration of Smart Cameras, 2D vision systems and 2D/3D profile sensors.

Photoelectronic Sensors

Sensors in this category can detect or count objects without contact, measure distances and detect colors, gloss or luminescence using light. The additional connection of special fiber-optic cables permits their use in extreme conditions such as cold, heat, or limited space.

Our portfolio includes patented sensors with various light sources, as well as numerous housing formats and functional principles. And thus the ideal product is always available for any application and reliable functioning is ensured at temperatures ranging from -40 to $+250\,°C$ and over distances of 0 to 100 m. Photoelectronic sensors perform recognition and measurement tasks and transmit the results via all common intelligent interfaces.

High-Precision Laser Distance Sensors

Long-Range Laser Distance Sensors

Reflex Sensors

Sensors for Roller Conveyor Systems

Through-Beam Sensors

Fork Sensors

Retro-Reflex Sensors

Retro-Reflex Sensors with Light Band

Light Curtains

Fiber-Optic Cables

Fiber-Optic Cable Sensors

Gloss Sensors

Color Sensors

Contrast Sensors

Luminescence Sensors

Print Mark Readers

**Temperature Sensors
for Contactless Measurement**

System Integration

RS-232 • IO-Link • Ethernet TCP / IP

PROFINET • EtherNet / IP • EtherCAT
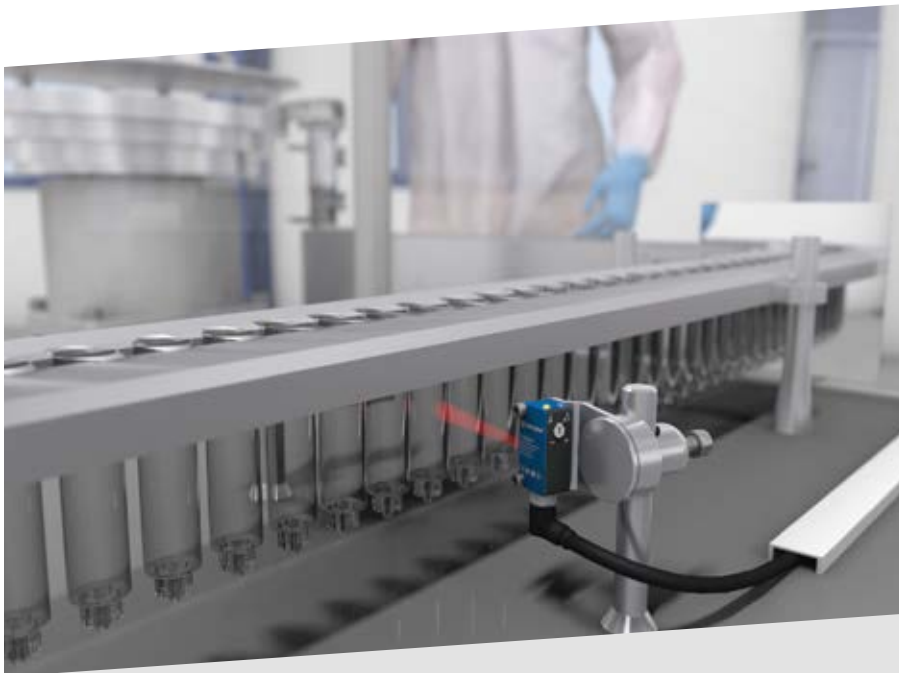
Pharmaceuticals Industry
To safeguard material flow, the presence of syringes in infeed and sorting lines must be reliably detected. The transparent or milky glass or plastic housings are detected by retro-reflex sensors for transparent objects and the single-lens optics enable the syringes to be reliably detected even at small distances.

Packaging Industry

Retro-reflex sensors with light band mounted on the side detect packages of different colors, shapes, surfaces and transparencies over the entire width of the track from the front edge for object detection on conveyor belts. The length of the switching signal can also be used to determine the position of the objects and thus adjust the speed of the system.
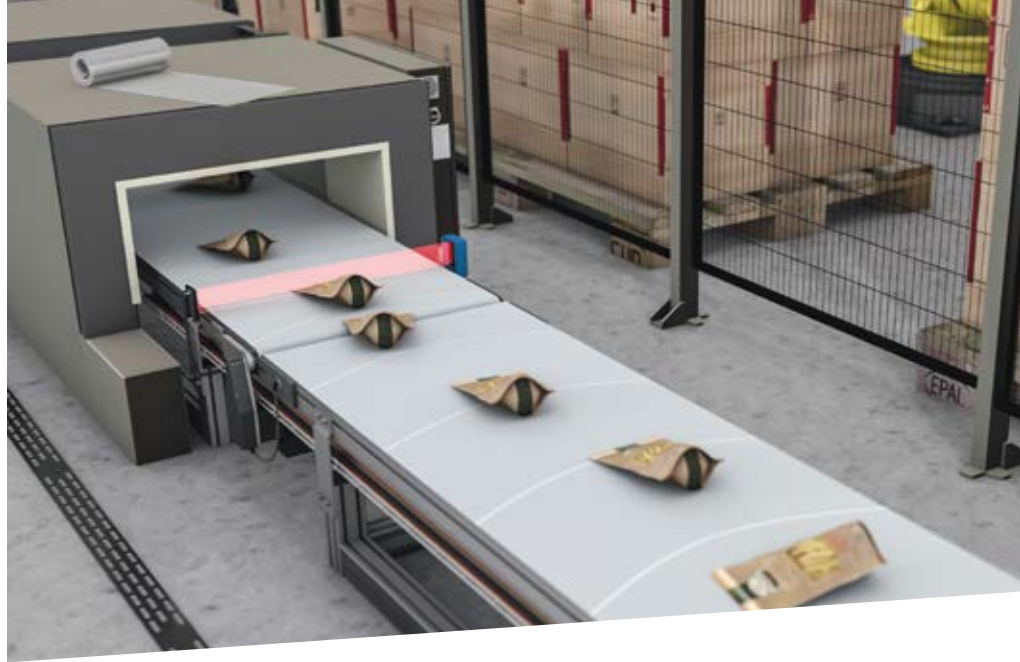
Beverages Industry

During the automated filling and packaging process, individual bottles and bottle containers must be placed in pick&place applications by gripper arms. Long-range laser distance sensors check the free space on the conveyor belt before depositing. Thanks to the wintec sensor feature, all different colors and shapes of bottles are reliably detected.

Automotive Industry

During final assembly, various types of car body components and their position must be accurately identified. Long-range laser distance sensors with wintec are mounted at defined scanning points for this purpose, which are reliable in operation despite strong reflections, gloss and inclined angles. Even when mounted directly next to each other, the sensors do not influence each other.
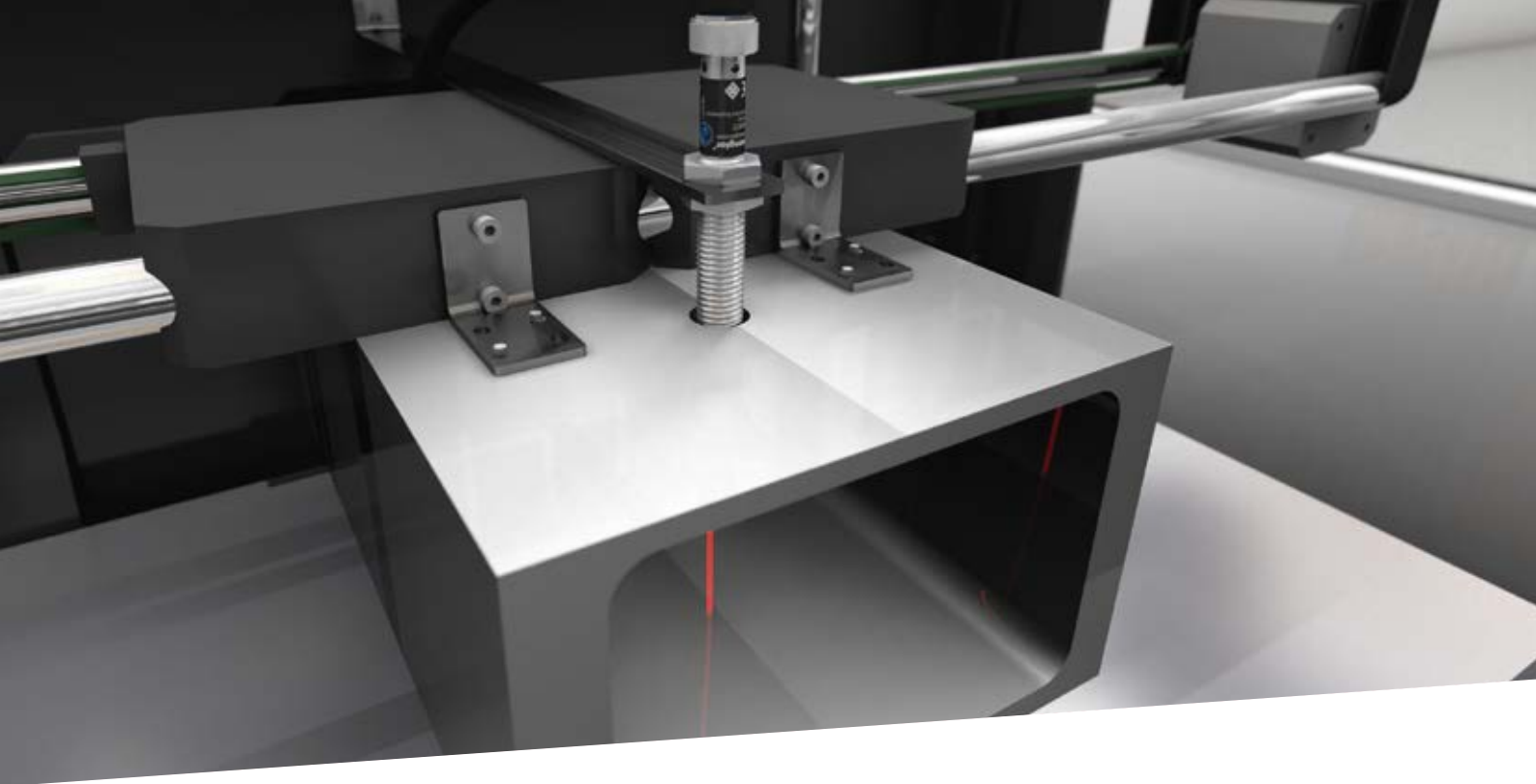
Pharmaceuticals Industry

Before filling and packaging, vials must be counted and monitored on an infeed conveyor for their exact number and position. This dynamic pressure monitoring uses a retro-reflex sensor for transparent objects. In the event of bottlenecks, the belt speed is lowered so that no further bottles are fed into the conveyor line.

Woodworking Industry

When laminate packages are transported out on Euro pallets, they must be checked for completeness. A light curtain for measuring tasks is used for this purpose, which immediately determines whether individual packages are missing in the stack. The IO-Link interface enables the resolution to be adapted for individual package heights.

Automotive Industry

When welding pipes or covers to plastic containers – for example wiper water tanks – the components are fixed in a holder by gripper plates. The reflex sensor with background suppression installed above monitors the closing of the grippers. If these are closed, the sensor switches.

Beverages Industry

After the filling process, beverage bottles are sealed fully automatically. Fork sensors check that the caps and lids are present and positioned correctly. Thanks to the very fine, collimated laser light beam, they can also accurately detect transparent objects, even at high speeds.
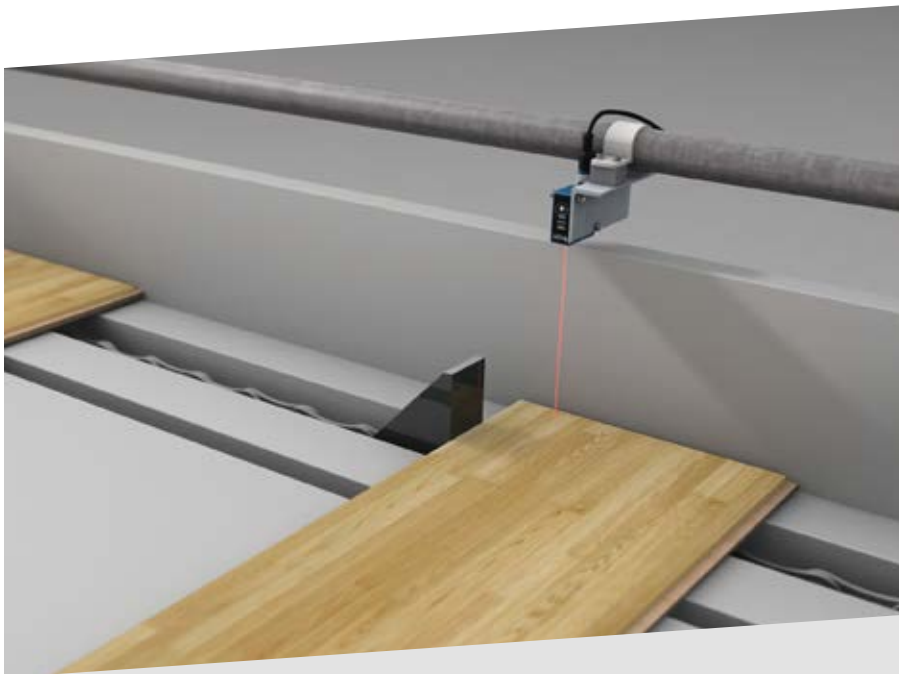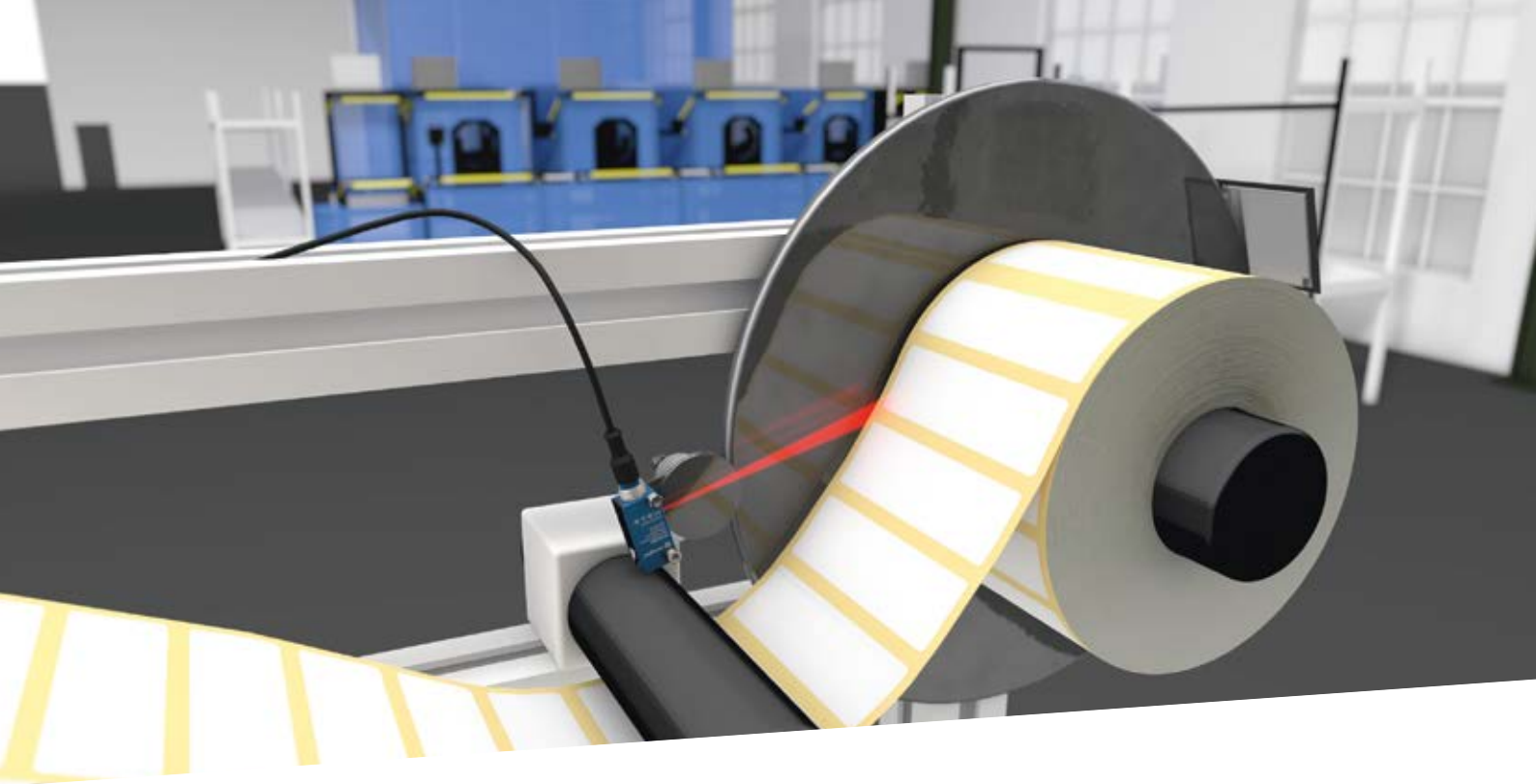
Woodworking Industry

When producing prefabricated parquet floors, high-precision laser distance sensors ensure that the assembled wood layers are applied precisely in the correct position. Sensors with analog output are used to accurately detect the different heights of the individual parquet layers.

Consumer Goods Industry

When manufacturing consumer goods, it must be ensured that the components are available in the correct position and quantity during the assembly process. Reflex sensors with background suppression detect the smallest parts regardless of color and inclination angle.

Packaging Industry

When adhesive labels are automatically unrolled, a retro-reflex sensor monitors the material feed to prevent idling of the roller. If there is too little material on the roller, the reflector mounted opposite is detected and the sensor is switched. This allows the roller to be replaced in good time.

Intralogistics

In large distribution centers, items of clothing, for example, are stored and removed fully automatically from the warehouse using shuttles. Integrated long-range laser distance sensors measure distance values and provide precise information about quantity and rack occupancy via IO-Link. Thanks to wintec technology, objects packaged in shiny protective film are reliably detected.

Ultrasonic Sensors

Ultrasonic sensors are suitable for detecting transparent, dark, glossy, reflective or porous surfaces. They can detect objects or liquids despite the presence of dirt, dust, mist or ambient light. The measured values are determined by transmitting and receiving ultrasonic waves which are output as voltage, current or via IO-Link.
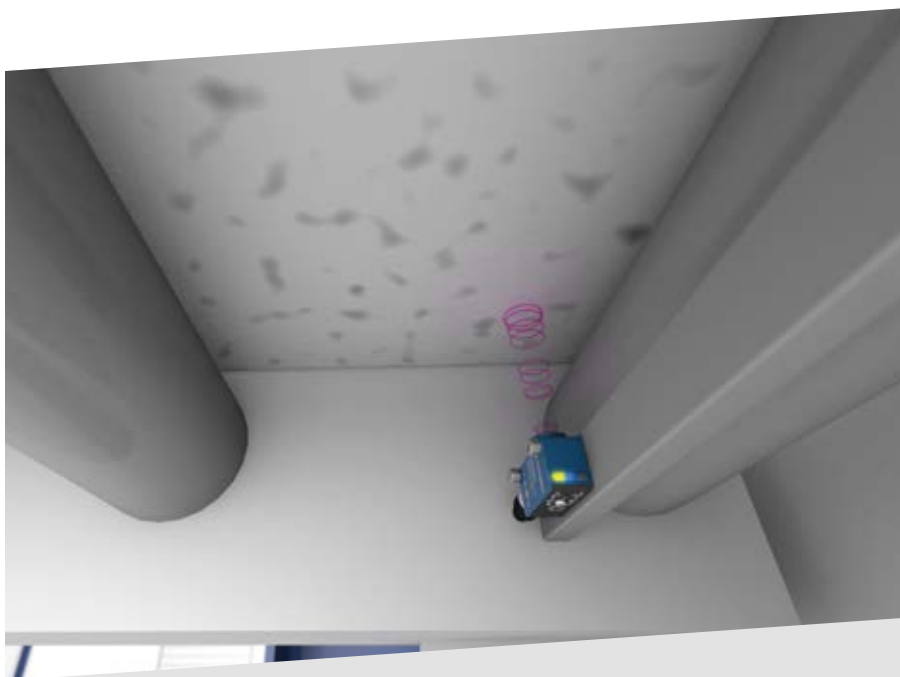
The various settings and operating modes available for the ultrasonic sensors can be easily selected via the IO-Link interface or at the display. Multiple objects can be detected over a larger area in synchronous mode, while multiplex mode prevents reciprocal influence between adjacent or opposite sensors.

System Integration

IO-Link

Building Materials Industry

During interim storage of wooden or plastic panels in automated buffer stores, the ultrasonic sensor installed between the conveyor rollers detects the presence and end position of the panels and thus prevents multiple storage despite dusty environments and shiny objects. IO-Link allows the process data to be parameterized and continuously read out.

Electronics Industry

In chip card production, PCB panels are printed and stamped using a tool. An ultrasonic sensor with a large sonic cone detects the laminated, perforated and stamped sheets regardless of color, transparency and surface.

Machinery Manufacturing

To ensure material replenishment, the fill level of vibrating spiral conveyors is monitored by an ultrasonic reflex sensor with IO-Link. The operator is informed of the fill level in two stages: when the bottom is still well covered and when the container is almost empty.

Beverages Industry

Glass bottles of different shapes, colors and transparency are printed using digital inkjet printing. An ultrasonic sensor detects the bottles individually at the neck of the bottle and activates the printhead. This prevents the printheads from unintentionally starting printing from different directions and spraying each other.

Inductive Sensors

Inductive sensors detect metallic objects through electromagnetic induction. The many formats, housing materials, and wide switching distances ensure a wide variety of applications. Due to the fact that no moving parts are used, these sensors are maintenance-free, waterproof and impervious to contamination and impacts.

The innovative weproTec technology prevents sensors from influencing each other reciprocally. And thus weproTec makes it possible to mount sensors directly next to or opposite each other. Inductive sensors can be used in temperatures ranging from −40 to +450 °C.

System Integration

IO-Link

Printing Industry

Shaft radial run-out must be monitored when printing rolls are produced to ensure consistent print product quality. Thanks to their high resolution, inductive sensors with analog output detect deviations of just a few micrometers. The robust housing in metric design enables use in harsh and dirty industrial environments.

Equipment Manufacturing

The position monitoring of carriages must be reliable, repeatable and feasible for both stainless steel (V2A) and aluminum. A welding field resistant inductive sensor with correction factor 1 and high switching frequencies reliably switches to different materials. Use in welding systems enables very high magnetic field resistance for DC and AC magnetic fields and Teflon coating (PTFE).

Automotive Industry

In drying plants, car body paints are heated. Each chassis is transported through the furnace using skid carriers and chain conveyors, where there are temperatures of up to 450 °C. Side-mounted inductive sensors for extreme temperature ranges monitor the position of the skid carriers with high switching distances of up to 40 mm.

Metalworking Industry

For checking the presence of steel sheets before and after rolling or punching processes, the sheets are transported on roller conveyors and reliably detected by an inductive sensor at the outlet. Thanks to the increased switching distance, the sensor can be optimally integrated regardless of the height fluctuations of the steel plate.

Safety Technology

Safety technology for body, hand, and finger protection is used to protect both man and machine. Certified according to international standards, light barriers and curtains with or without muting functions, safety switches, locking devices, emergency stops, relays and protection columns protect all production systems.

Simple integration, uncomplicated settings and increased protection against manipulation are the impressive features of the safety components. wenglor safety components also have integrated measuring functions that can provide information on object statuses (width, length, height) and transmit this information via IO-Link.

System Integration

Performance level c • Performance level d

Performance level e • IO-Link
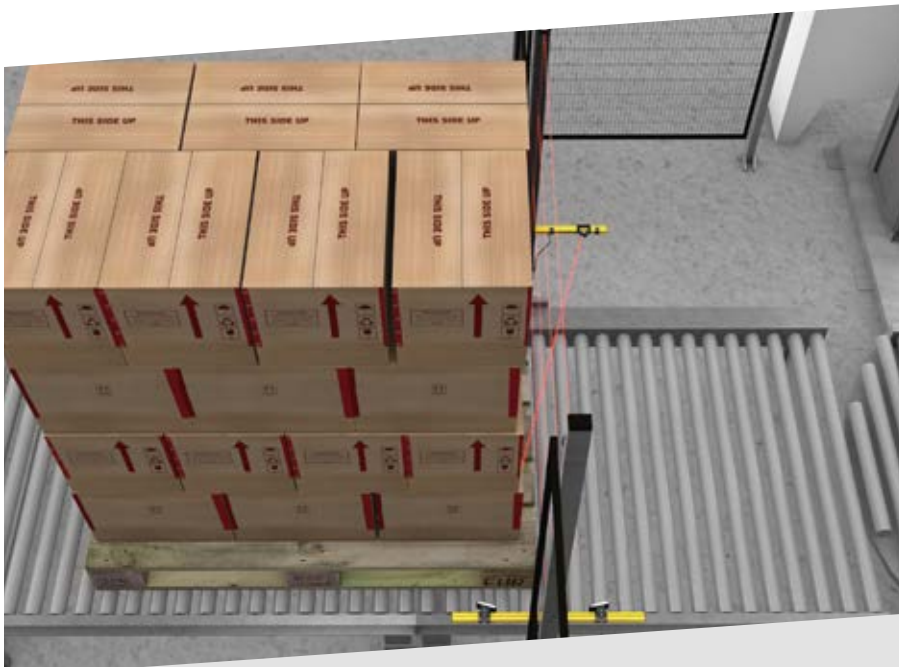
Intralogistics
During the fully automated packaging of boxes on Euro pallets, safety light arrays with muting function ensure that the pallets can be safely returned to and from the danger zone without stopping the system.

Packaging Industry

Packaging machines have service flaps that can be opened manually to correct process errors. The machine runs only when the movable dividing flap is properly closed; RFID encoded safety switches monitor this protective equipment.

Electronics Industry

In the manufacture of cable harnesses, function and quality tests are carried out in the high-voltage and low-voltage range. Safety light curtains with finger protection offer a continuous safety field active over the entire housing length and prevent reaching in during the active test procedure.

Metalworking Industry

To safeguard the danger zone on presses for workers, a safety light curtain with integrated muting and blanking function is installed. Individual beams can be deactivated so that swarf or small parts that fall during the pressing process are not detected. Reaching in with hands or fingers will immediately stop the machine.

Fluid Sensors

Fluid sensors detect parameters such as pressure, flow, temperature or fill level in liquid or gaseous media. The range of products includes models with one or two measuring functions, with an integrated analysis module and display, in stainless steel or plastic, and with IO-Link or two analog switching outputs.

They monitor processes in cooling, cleaning and hydraulic systems, as well as in environments where strict demands are placed upon hygiene and durability. weFlux[2] fluid sensors measure temperature and flow or temperature and pressure in combination and offer the greatest flexibility for installation in closed pipe systems.

System Integration

IO-Link

Cosmetics Industry
In perfume production, minimum and maximum fill levels of fragrance precursors in vacuum containers must be accurately recorded. For this purpose, sensors are installed in metric stainless steel housings which determine the level of the medium at two independent measuring points, regardless of its viscosity, density or color.

Food Industry

In the production of processed cheese, a filling temperature of over 80 °C must be ensured due to biochemical hygiene requirements. A temperature sensor monitors this value. If the temperatures drop, this sensor sends a signal to the controller and the filling stops.

80 °C

Beverages Industry

Before reuse, plastic beverage crates must be cleaned on all sides with warm water under high pressure. A pressure sensor monitors the constant line pressure of the system. If the pressure drops or is too low, the sensor informs the controller of the condition.
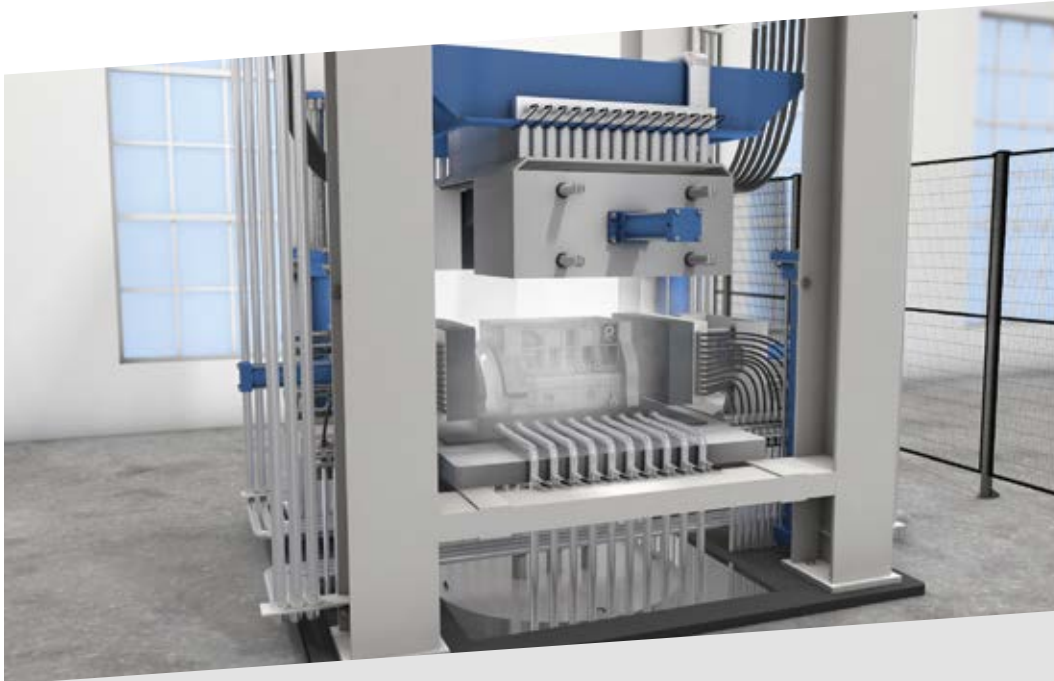
Metalworking Industry

During the casting process, the casting molds must have a constant cooling rate. This is the only way for the cooling melt to meet expectations in terms of strength and surface structure. Pressure sensors measure pressure and temperature in each return line of the cooling water circuit and transmit the values via IO-Link.

Industrial Communication

Fieldbus gateways, IO-Link masters, switches and junctions, as well as connection boxes with all common protocols, enable communication in real time. Thanks to Industrial Ethernet or IO-Link, data can be exchanged or transmitted for further processing. From control to field level – from factory to smart factory.

Switches and Junctions

IO-Link Masters

Fieldbus Gateways

Ethernet Connection Boxes

System Components

System components are used to integrate sensor and image processing products into any production facility. Patented mounting and connection technologies, protective housings, mounting brackets and alignment tools provide the mechanical basis for precise results. Selected materials ensure stability.

Software

Software products are used to configure and parameterize sensor and image processing products as well as to evaluate measurement and image data. Integrated wizards as well as predefined modules and templates guide users without programming knowledge to the solution.

wenglor also offers various interfaces to various robot systems and industrial communication components such as IO-Link masters, gateways and NFC in order to be able to integrate smart sensor and image processing products perfectly into complex automated systems.
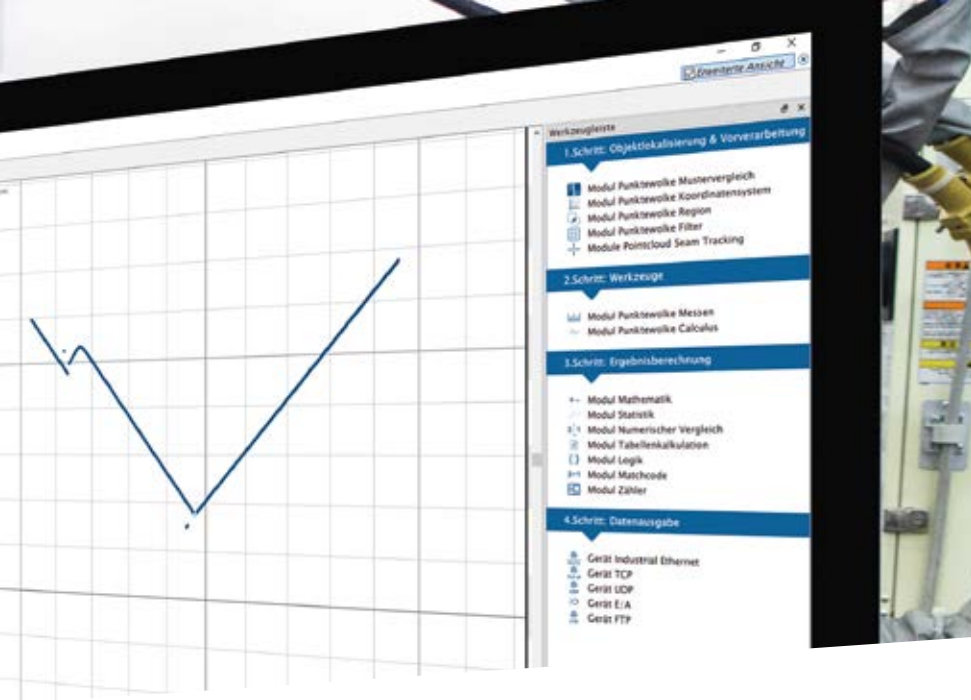
wenglor supplies the right software for the hardware, from individual configuration options for sensors to software products for 2D/3D image processing components.

Numerous standard interfaces ensure perfect system integration.
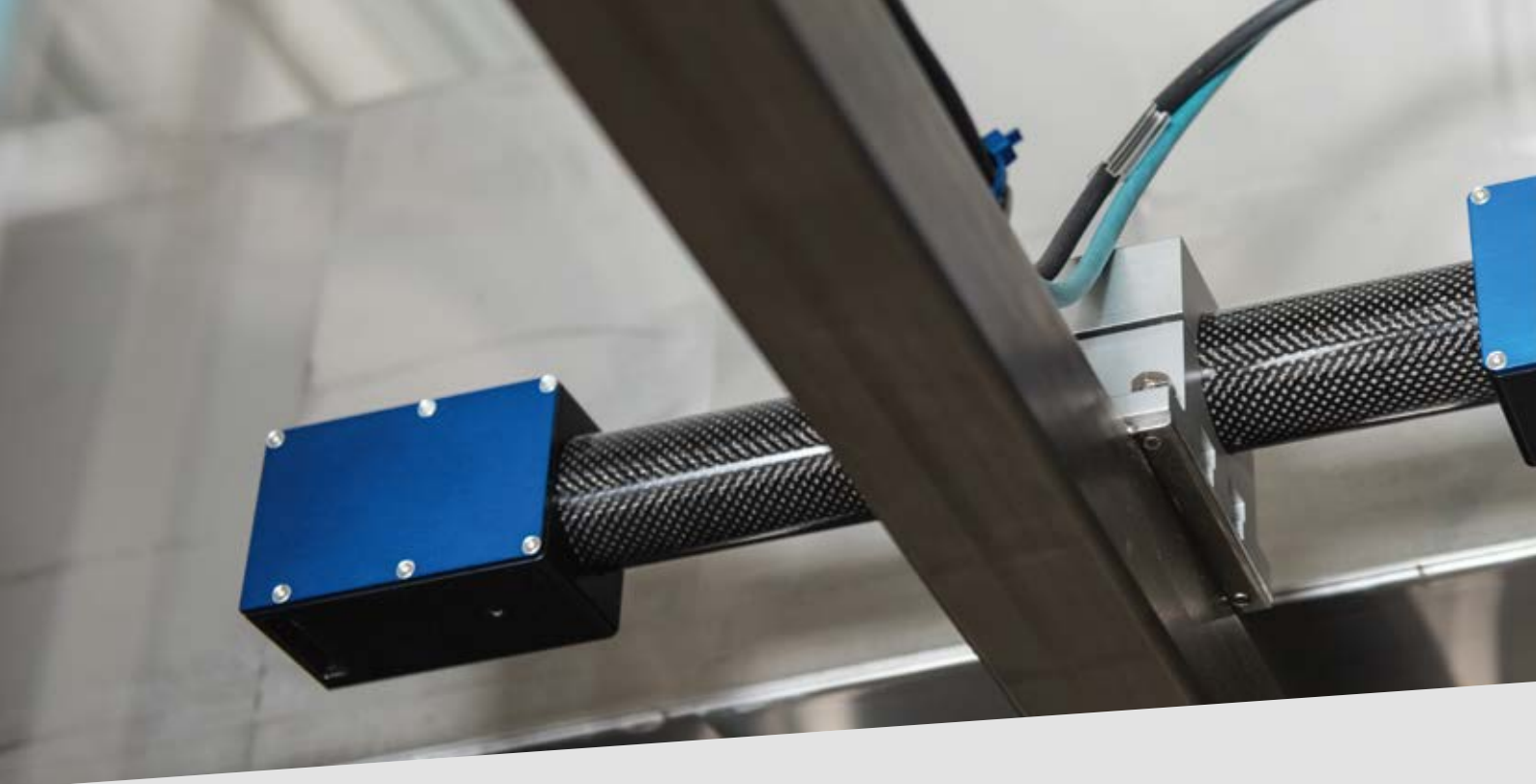
2D/3D Sensors

Sensors in this category can measure objects with micrometer accuracy in 2D and 3D. Using the principle of laser triangulation or structured light, point clouds are created that enable all types of 3D measurement. The measurement data can be evaluated using custom software via standard interfaces.

2D/3D sensors are specialized in complete 360° object measurement, exact positioning control for machines and highly accurate surface inspection – regardless of degree of gloss, color, and surface characteristics. They offer a large selection of measuring ranges and light sources, as well as laser and performance classes.
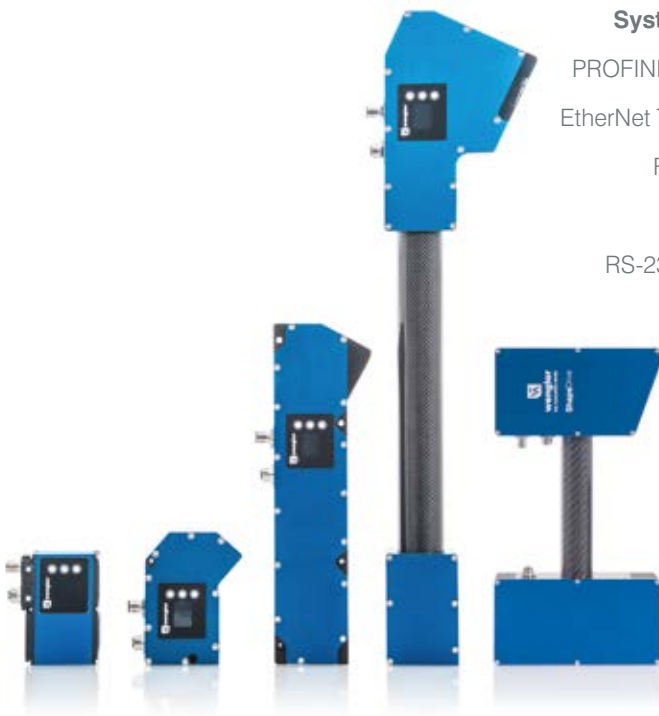
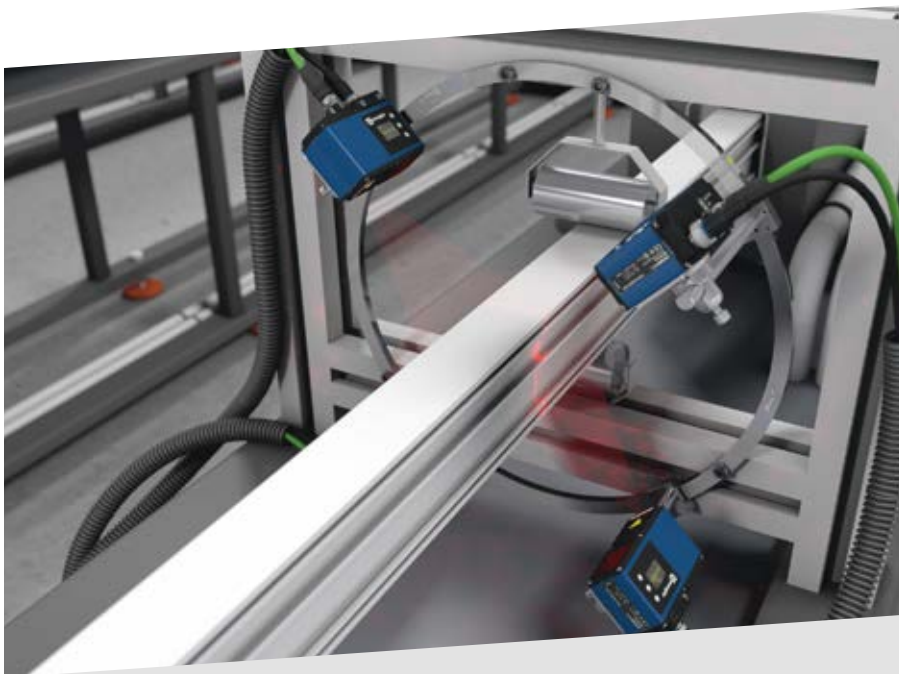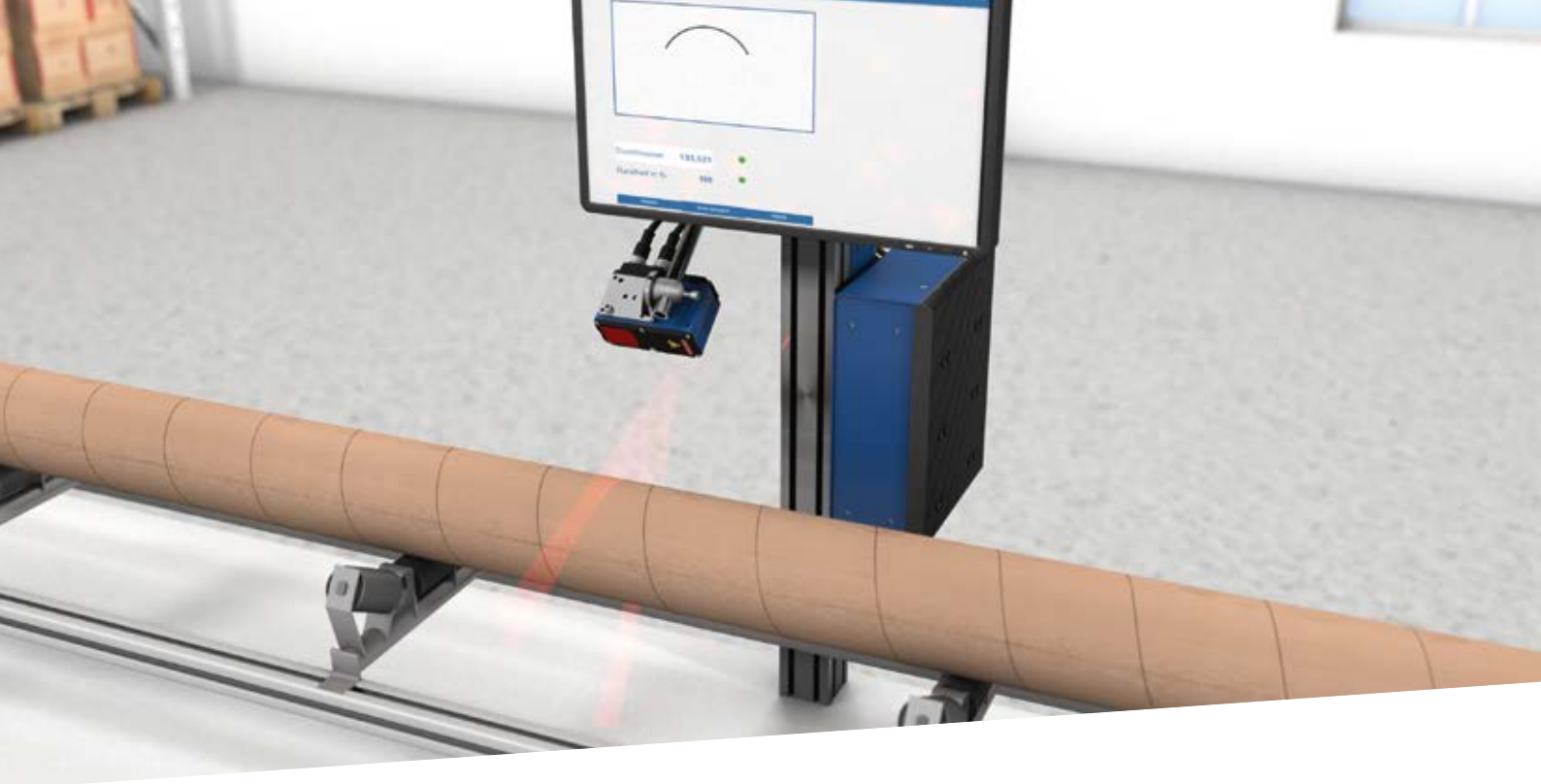**System Integration**

PROFINET • EtherNet/IP

EtherNet TCP/IP and UDP

FTP • Digital IOs

Encoder input

RS-232 • GigE Vision

Plastics Industry
Plastic profiles must be precisely checked for contour defects and specified dimensions after the extrusion process. Four 2D/3D profile sensors measure the passing profile to the exact micrometer in 360°. The individual 2D height profiles are then combined, analyzed, and compared with defined geometric data.

Woodworking Industry

When producing prefabricated parquet floors, the contours of the milled wood joints (tongue and groove) must be measured with micrometer accuracy by two 2D/3D profile sensors. The calculated 2D profile data is processed, evaluated and visualized by a control unit with software.

Paper Industry

A 2D/3D profile sensor is used to check the constant diameter of laminated paper sleeves. This measures the object precisely to a tenth of a millimeter by laser triangulation. The configurable uniVision software evaluates the data via an IPC and then determines the diameter of the sleeves.
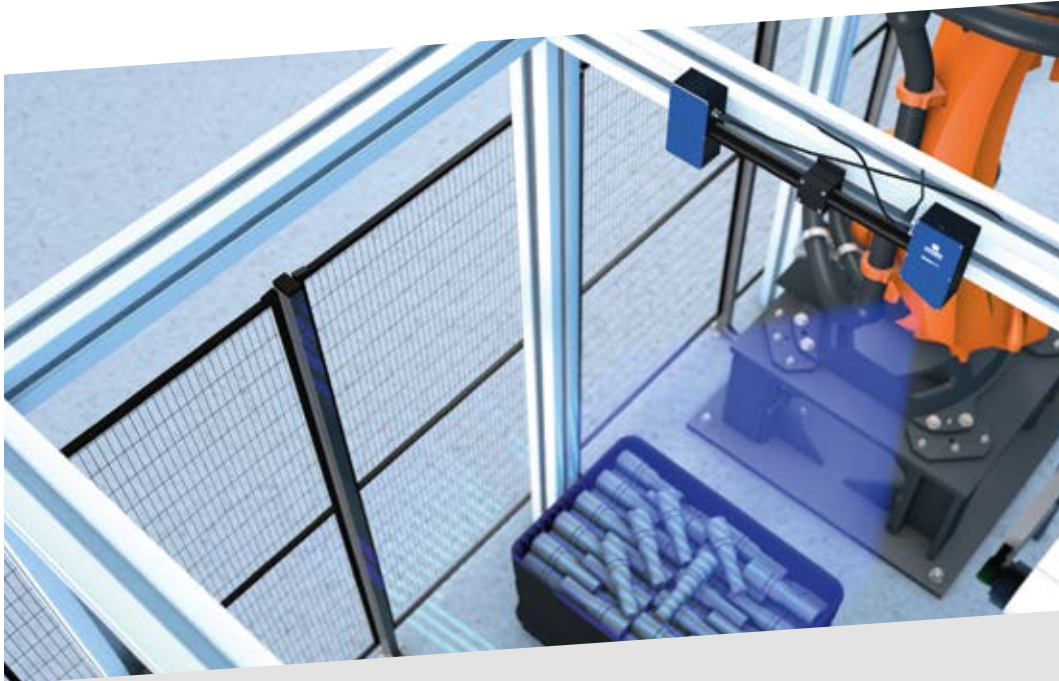
Machinery Manufacturing

In bin picking, the 3D sensor uses structured light to create a point cloud with very high resolution. Using this information, a software detects the position of even the smallest objects and calculates the corresponding gripping points. This allows the robot to pick items reliably.
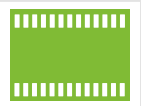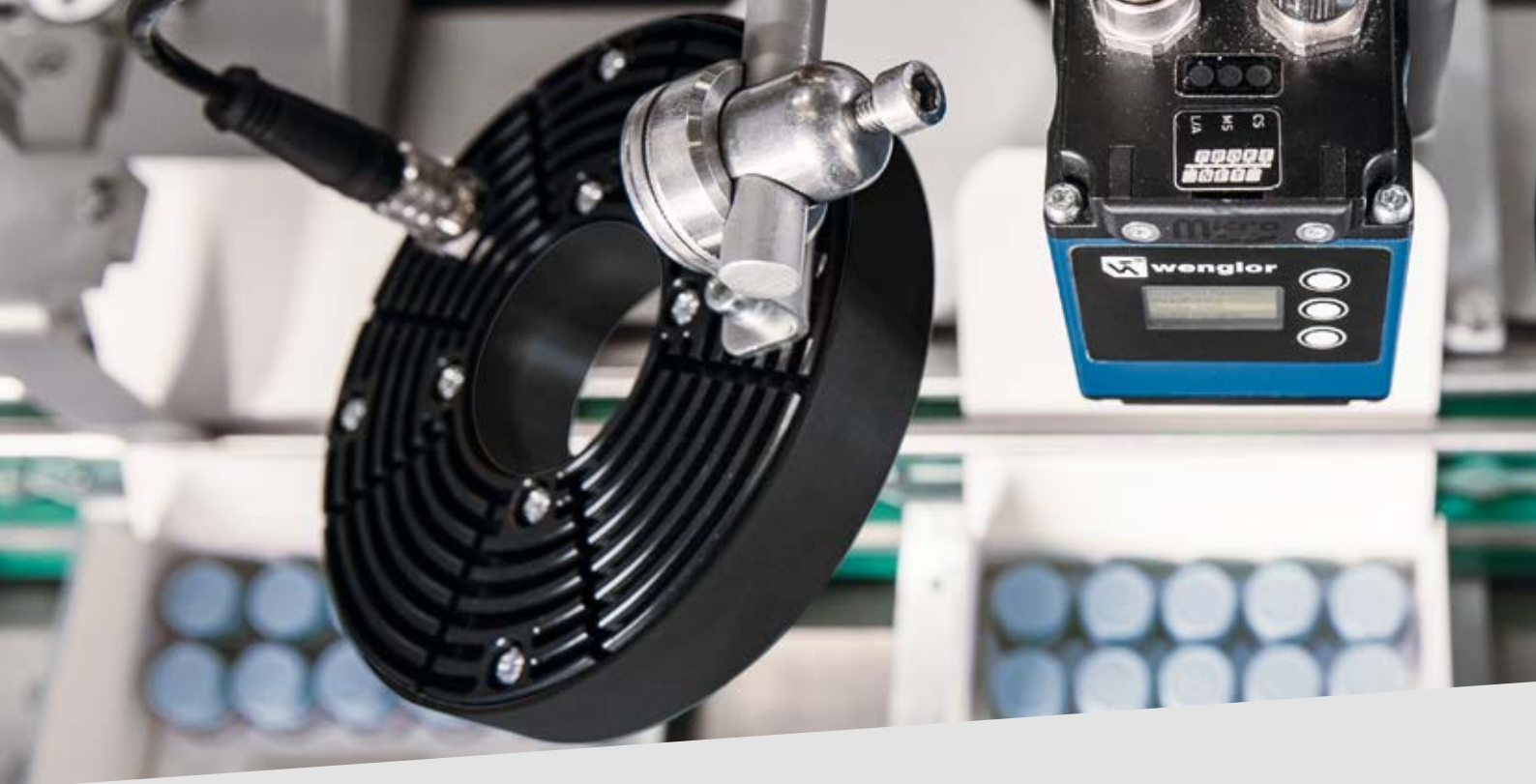
Image Processing and Smart Cameras

Vision systems, Smart Cameras, vision sensors or sensors for optical character recognition (OCR) solve industrial image processing tasks in real time. Within this product area, users have access to digital cameras, lenses, illumination devices and application-based software packages and IPCs.

They execute numerous tasks involving the inspection of specified characteristics and contribute to the assurance of highest possible quality standards. Their ability to differentiate and sort according to shape, size, structure and color makes these intelligent wenglor products some of the most important components for modern industry.
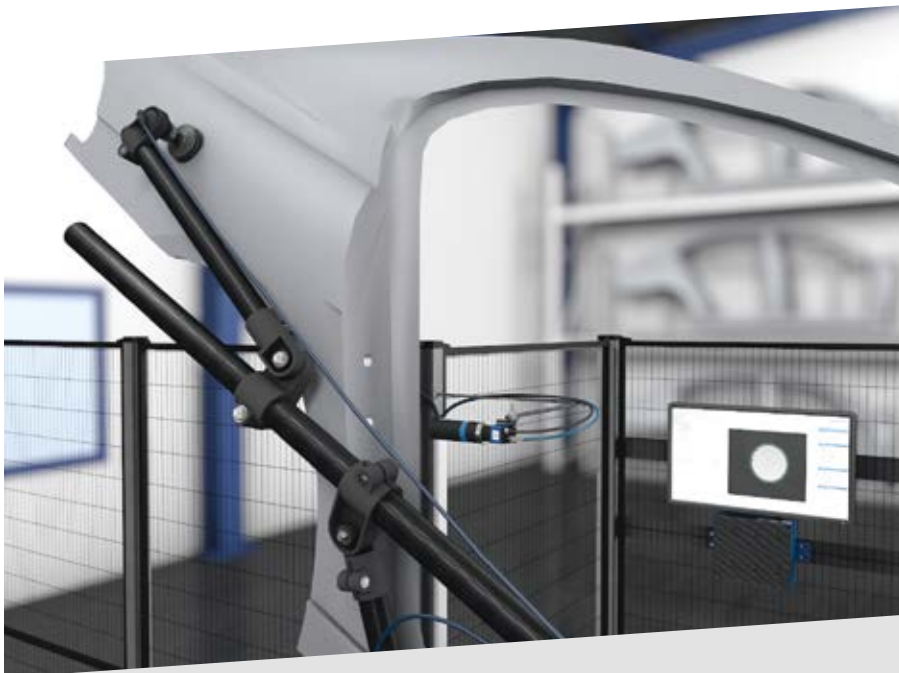
System Integration

PROFINET • EtherNet/IP

Ethernet via TCP/IP and UDP • FTP

Digital IOs • Encoder input • RS-232

Automotive Industry
When punching body parts, the diameters of the calottes produced must be measured. The digital camera of the vision system, consisting of lens, backlighting and control unit, takes a precise image. The uniVision software installed on the control unit evaluates and visualizes the data.

Metalworking Industry

With automated lathes, the machined parts must be checked for any chips on the thread before the process can continue. The compact weQube vision sensor takes care of this with an additional backlight. Thread and winding chips can be reliably detected by setting the image areas and thresholds.
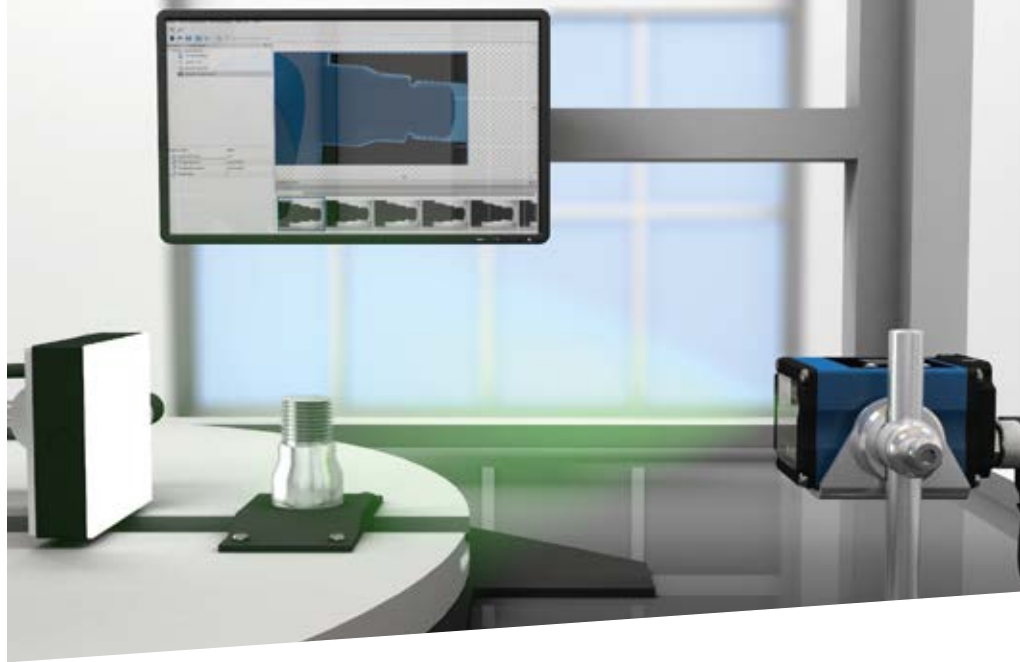
Automotive Industry

During "end-of-line" quality control in engine production, a robot-mounted vision system checks the correct assembly of attachments to prevent faulty engines from leaving the conveyor belt.

Plastics Industry

After injection-molded parts have been manufactured, they are visually inspected for defined quality characteristics. Geometry, color, inclusions, overspray or underspray or sprue separations, for example, are monitored via a vision system. The visualized measurement results are output via the integrated software.
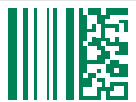
1D/2D and Barcode Scanners

The scanners read all 1D and 2D codes using different types of light. The light arriving at and returning from the code is reflected to varying degrees on a specific receiving element, decoded electronically, and evaluated.

The scanners can be used in both static and dynamic applications and recognize codes within specified areas or on large surfaces – even at varying distances. State-of-the-art interfaces and separate gateways also offer great flexibility for integration in existing systems.

Barcode Line Scanners

Barcode Raster Scanners

Barcode Sweep Raster Scanners

1D/2D Handheld Scanners
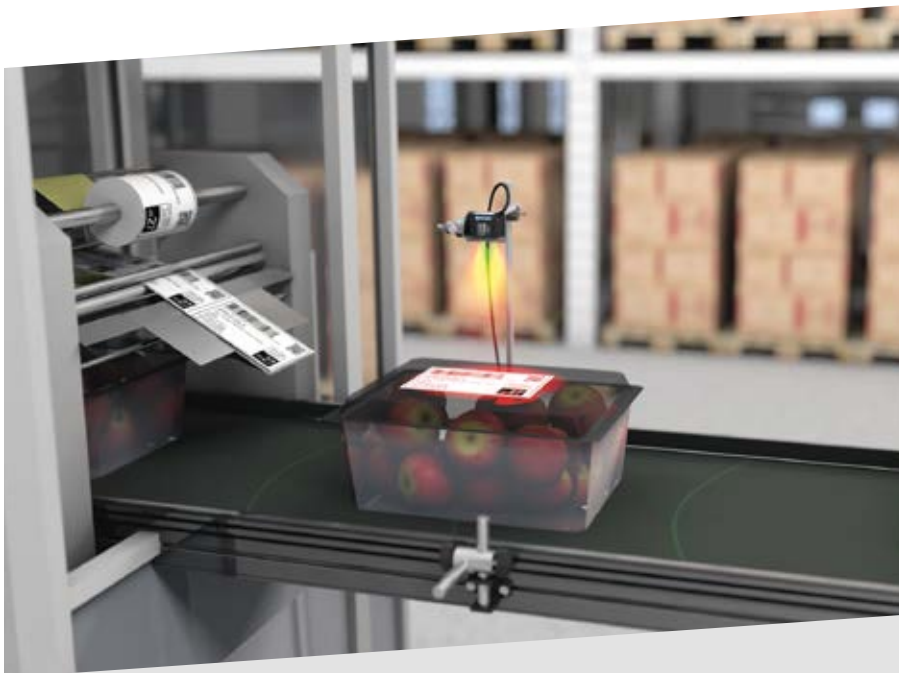
1D/2D Code Scanners

System Integration

RS-232/-422/-485 • USB

Bluetooth • EtherNet TCP/IP

PROFINET • EtherNet/IP

Food Industry

In the packaging process, the labels are printed, applied, and read by a stationary 1D/2D code scanner with integrated lighting after exact weight determination and compared with the target code. If the actual code and target code match, the product is passed on to the next process.

Automotive Industry

Before "end-of-line" quality control in engine production, a 1D/2D code scanner scans the DPM code needle-punched on the engine block. This determines which engine block type it is and which test program must be selected.

Machinery Manufacturing

For the traceability of individual components on assembly lines, the barcodes lasered on the workpiece carriers are read by barcode line scanners and passed on directly to the control system via Ethernet. This is where the processing step for tracking is saved.

Construction Industry

When laying and welding plastic pipes on construction sites, pipes and fittings must be connected correctly. Mobile welding equipment uses 1D/2D handheld scanners for this purpose, which capture laser or printed codes and transmit them directly to the mobile welding unit. This automatically sets the correct welding current on the device.

What We Do to
Protect the Environment

weGreen

Raising Awareness, Recognizing Opportunities, Tapping into Potential.

When developing our products, we place particular emphasis on technological advantages – including in the way we manufacture them. This is why we reduce the amount of casting resins used, reduce assemblies through combining functions and cut down on the number of individual parts in order to save resources. State-of-the-art nitrogen technology enables faster and, above all, low-emission production. Our sensors feature intelligent shut-off devices and reduced current consumption to help us and our customers reduce energy consumption and save precious resources. We cover around a quarter of our daily energy requirements with renewable energy sources such as geothermal energy or photovoltaics and thus save over 416 tons of CO_2 per year at our Tettnang headquarters alone.

Climate Targets Affect Us All.

We will not stop forming car pools, launching bike-to-work competitions and saving both flight costs and a considerable amount of CO_2 through web meetings.

But we know that this is far from enough. That's why we're going one step further: Since the beginning of 2020, wenglor has been supporting the Swiss start-up Climeworks, which has developed a pioneering technology. This technology removes carbon dioxide from the ambient air and then converts it into climate-neutral substances such as pure CO_2 gas or solid carbon. These substances can either be recycled as a valuable fertilizer for plants or stored in the ground as a solid.

Selected and only local suppliers have been commissioned for the printing and processing of this brochure – in order to avoid long transport routes and thus unnecessary CO_2 emissions.

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