Innovative solutions for the wood industry

Achieving more with intelligent sensors

SICK
Sensor Intelligence.

Groundbreaking solutions.

For top production performance

As a leading developer and manufacturer of intelligent sensor technology worldwide, SICK plays a major role in shaping process optimization throughout the industrial arena. On both a large and small scale, SICK sensor solutions contribute to making all production safer, quicker and more cost-effective. Risks and sources of error are systematically eliminated, and individual production steps or complete processes are accelerated significantly. With our extensive automation expertise, SICK is able to provide reliable solutions for all phases of the production process. SICK looks for areas to create efficiency, down to the smallest detail – enabling the highest possible productivity levels.

Global presence

Sensor solution provider

SICK
Sensor Intelligence.

Innovation leader

International service solutions

E-business – Partner portal


Source: Weinig AG


Source: Weinig AG

STRONG PERFORMANCE

SAMPLE SOLUTIONS 8

SICK sensor highlights: Systematic woodworking.

In focus: Optimized processes for measurably more results.

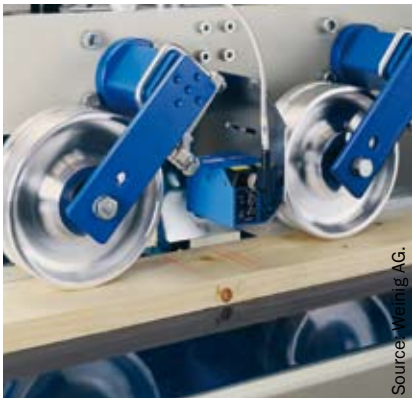
The demands on the wood industry are diverse and sophisticated. Fast, safe and efficient production processes are indispensable for high productivity in the saw mill, engineered wood, veneer and furniture industries. SICK offers a variety of perfected products and complete system solutions, which lead to optimized production results. As a technology leader in many areas, and as the worldwide leading developer and manufacturer of intelligent sensor technology, SICK has extensive expertise gained from many years of experience in factory, logistics and process automation. Let SICK help you optimize your processes in the wood industry.

ENVIRONMENT: W12-3 PHOTOELECTRIC PROXIMITY SENSORS

The W12-3 series offers the highest degree of process safety and reliability in the harsh operating environments of woodworking. They have a robust metal housing and, thanks to the optional I/O link, provide a simple connection to control systems for transmitting process and service data up to the last meter.

WHEN PRECISION IS REQUIRED – OD DISTANCE SENSORS

For contact-free, highly precise proximity measurements, the OD Hi and OD Max series are the right choice. In the wood industry, they measure profiles, gap dimensions, diameters and thicknesses, and are ideally suited for quality testing, where a lot depends on exact detection capabilities.

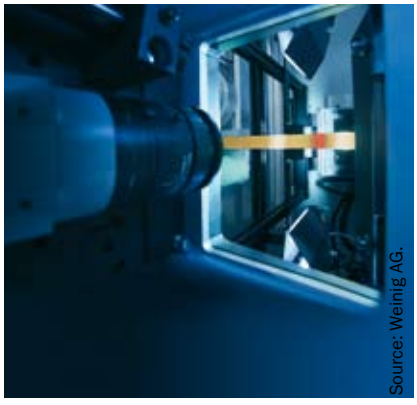


CLEARLY POINTING THE WAY – LUT LUMINESCENCE SENSOR

Where conventional sensors cannot ensure clear detection, the LUT series luminescence sensors are a good choice. Regardless of pattern, color or surface condition, they detect fluorescent materials and markings applied or added with chalk, ink or labels on almost any type of wood.

ENSURING PRODUCTIVITY – C4000 FUSION LIGHT CURTAIN

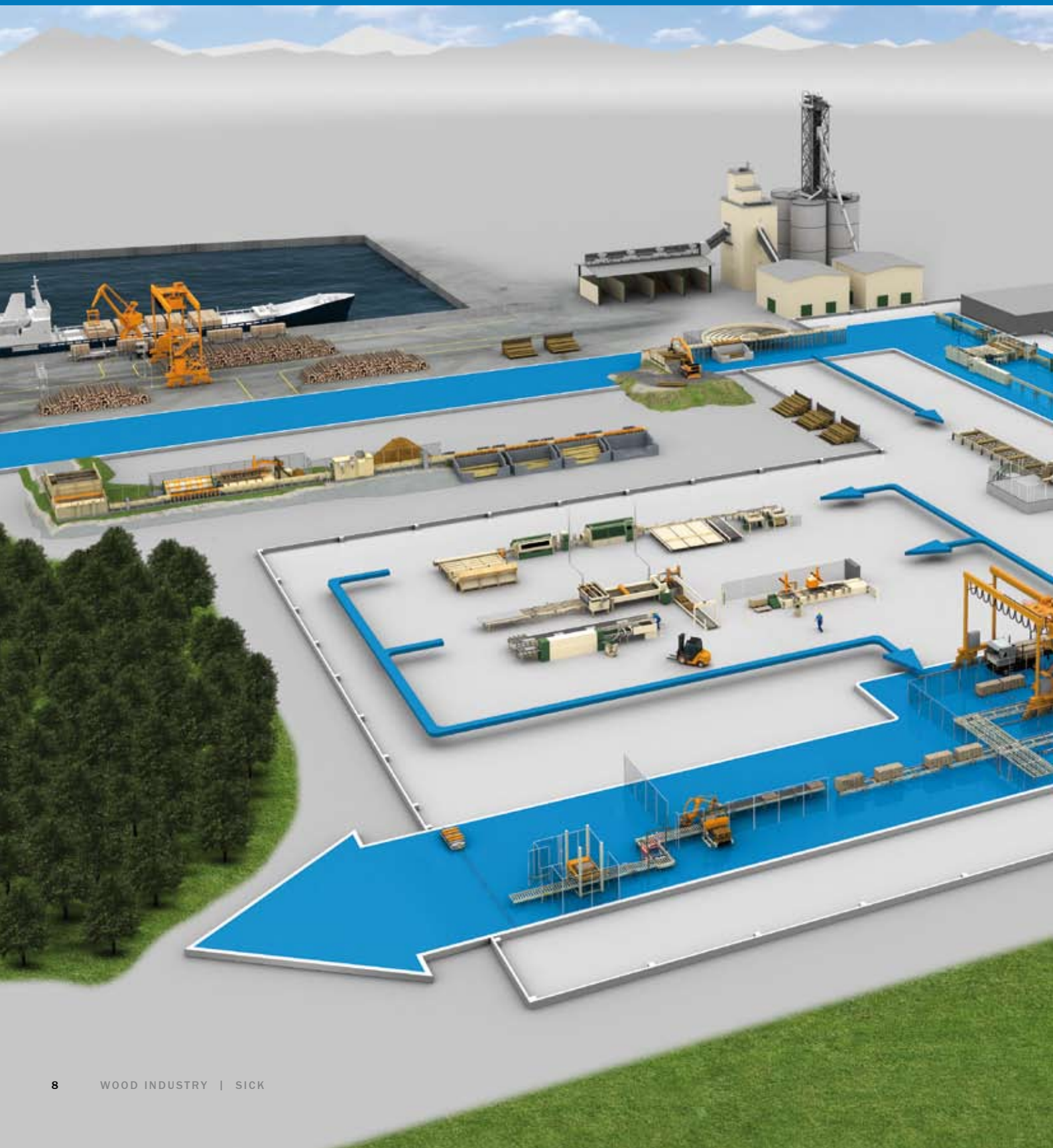
Whether saw dust, shavings or wood chips – the new C4000 Fusion safety light curtain detects small particles with its intelligent multiscanning function and reduced resolution up to 240 mm, and therefore provides maximum work safety in harsh environments. For optimized productivity and minimized downtimes.



ALL IN ONE – 3D RANGER CAMERA

With the 3D Ranger cameras, in multiscanning mode, both 3D data as well as brightness, brilliance and scattered laser light are registered simultaneously! The camera‘s speed and performance are extremely high thanks to the one-of-a-kind, patented sensor technology from SICK IVP.

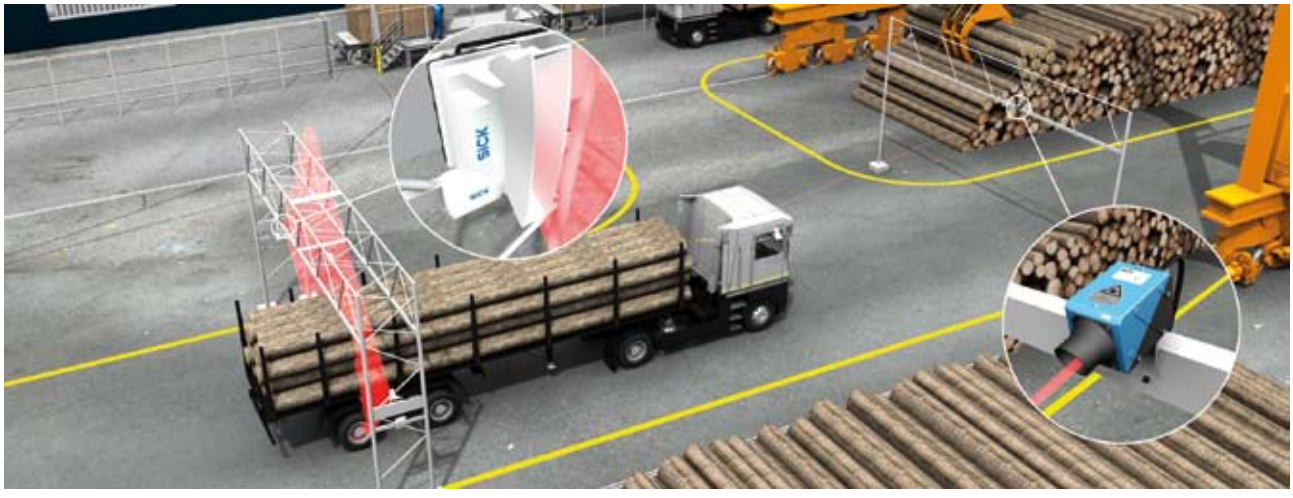
Innovative solutions for the wood industry.



Focus 1:
Transport

Volume measurement

Evaluation software generates a 3D model of the wood loading from the measurements of the LMS211 laser measurement system developed for the outside area and the DMT10 laser distance sensor, and calculates the volumes and lengths of the logs. The LMS400 is available for indoor use when a higher resolution is required.



Access protection

Contact-free danger zone and access protection with the M4000 multiple light beam safety device. Thanks to its long range and built-in functions, which can be very easily set via configuration buttons, efficient access protection can be realized with maximum availability. In combination with the PUM equipment column and integrated heating, it can also be used at ambient temperatures < 0 °C.

Height measuring

The BTF13 wire-draw encoder provides high-resolution, linear measuring lengths up to 30 m for measuring the height of the crane gripper.

Position detection

Non-contact POMUX® KH53 length-measuring system for detecting the position of the crane portal with a resolution of 0.1 mm, and optionally for measuring lengths up to 38, 107, 354 and 1700 meters. The POMUX® KH53 is wear-free and is also ideal for harsh ambient conditions.

Commissioning with RFID

For error-free commissioning, transponders with a UHF frequency band are attached to the wood packages. Once the packages are on the truck, the truck passes through a portal equipped with an RFID read/write device when it leaves the premises. The product's long range and fast data transmission allow a multitude of transponders to be registered simultaneously.

End position detection

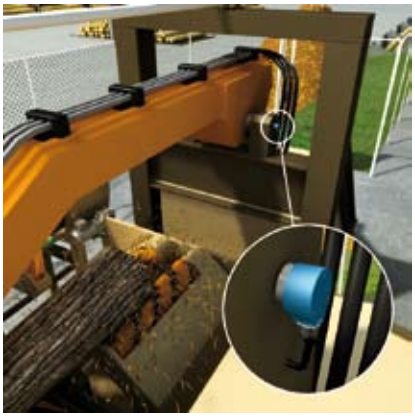
IQ40 inductive proximity sensor for detecting the end position of the crane screw.

Focus 2:
Log sorting

Log measurement
Log length, diameter and contour are measured by the LMS221 laser measuring system and by the MLG automation light grid. From the acquired data, any large roots on the log are detected. The log is then fed to a butt reducer via the bypass.

Height measuring

The height of the hold-down arm is detected with the ATM60 position encoder for determining the log diameter. The rotation time is calculated from this. The ATM60 is extremely robust and reliable and has high shock and vibration resistance.



Diameter detection

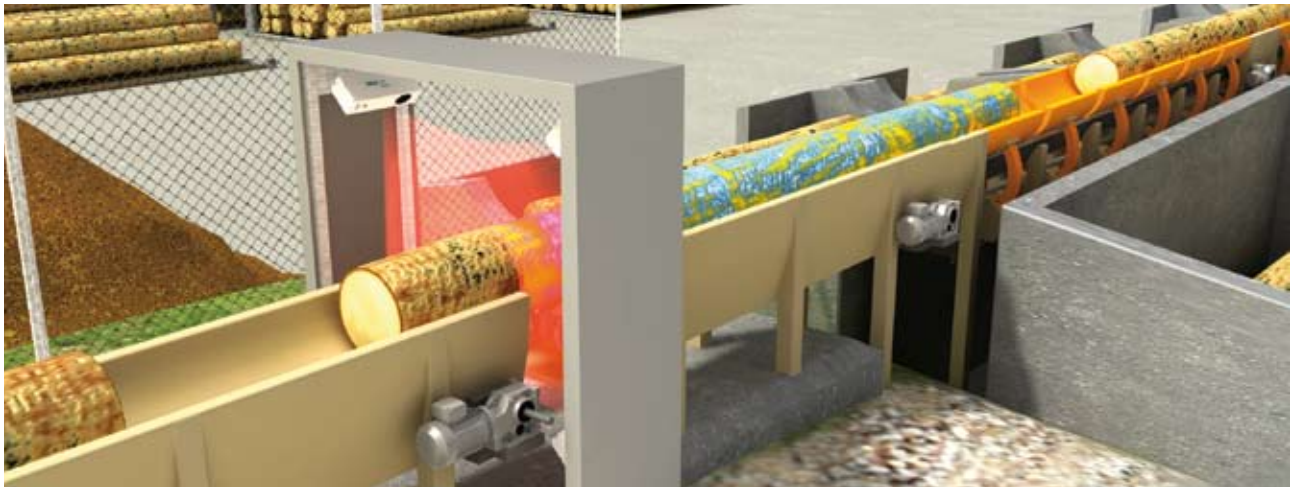
The MLG automation light grid detects the log diameter so that the log can run centered into the debarker. MLG offers a variety of options with regard to size, resolution, configuration options and interfaces.

Access protection

The i1002 Lock safety switch ensures the reliable opening, closing and locking of protective doors over a long service life. With a robust and compact housing.

3D log measurement

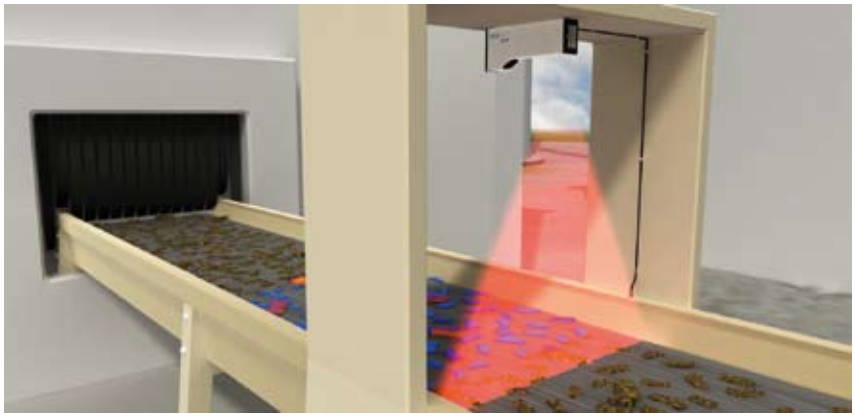
With the Ruler E camera, integrators can develop a powerful 3D scanning solution. With this innovative camera, an exact three-dimensional image of log profiles can be produced with that show log irregularities, even in harsh environments. The data is used for cross-sectional-dependent log sorting, where each log is allocated to the right ejection box.



Focus 3:
Transport and scrap wood disposal

Quality determination

The IVC-3D Smart Camera is the ideal choice for continuously determining the quality of wood chips on transportation systems in 3D. With integrated 3D image generation, lighting and image analysis, testing can be done at production speed, independent of contrast.

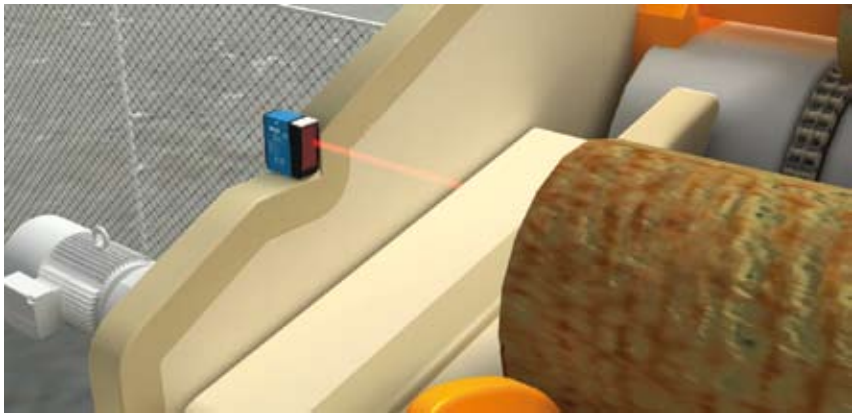


Volume determination

BULKSCAN is a proven 3D measuring system with a pulsed laser beam for measuring the throughput of bulk material on conveyor belts. It allows the volume of wood chips or sawdust on transport systems to be determined continuously.

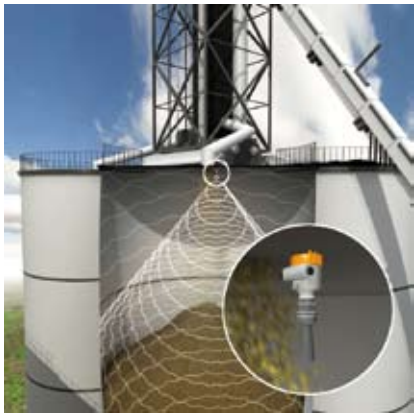
Distance measurement

The DT60 laser distance measurement sensor determines the distance of the log to the deflecting wall, in order to ensure that the log is optimally bucked.



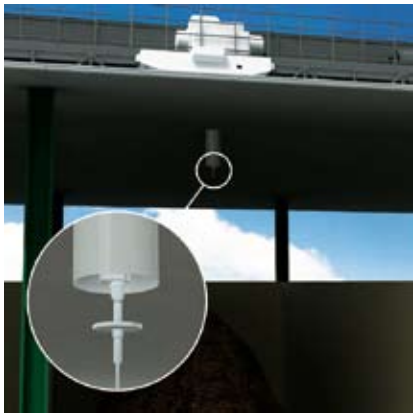
Filling level measurement with radar

The MaihakPULS400 is specialized for bulk material. Using innovative radar technology, it measures the filling levels continuously without contact in a measuring range up to 70 m. Even when there are high levels of dust in the containers, it reliably detects filling levels.

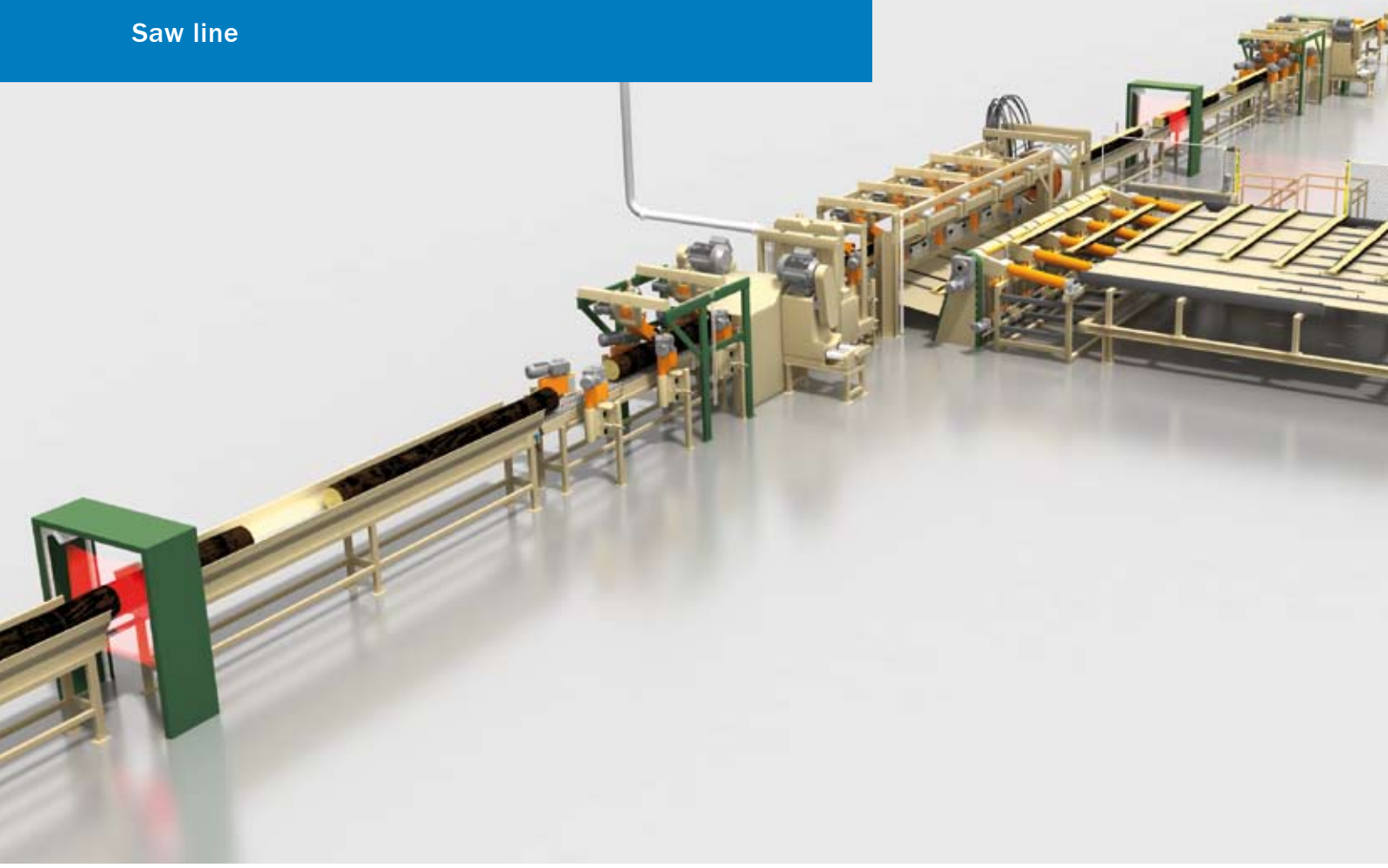


Filling level measurement with rotating paddle switch

The MaihakMBA200 has proven itself as a bin level indicator of bulk material (for full, empty and required volume), both in large storage silos, as well as in small containers. It works reliably, even under difficult working conditions. The rugged construction is designed for many years of use.



Focus 4:
Saw line



Cant measurement

To optimize the sideboards, which are cut off in the following profiler and sawing unit, an exact 3D image of the cant profile is made with the Ruler E 3D camera. The data also contains the position of knots, which is determined by the scattered laser light, as well as the log curvature and ovality. Vision integrators use the data for powerful 3D scanners.

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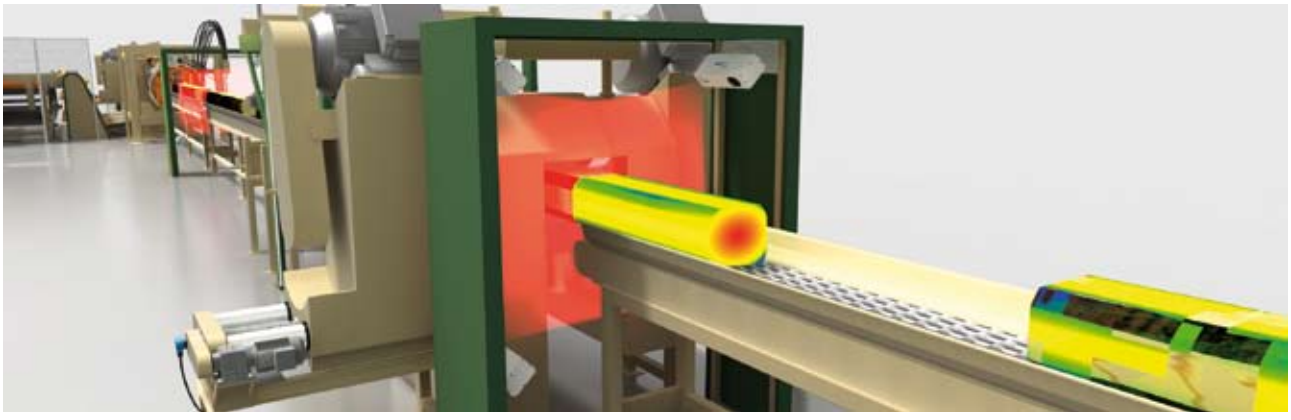
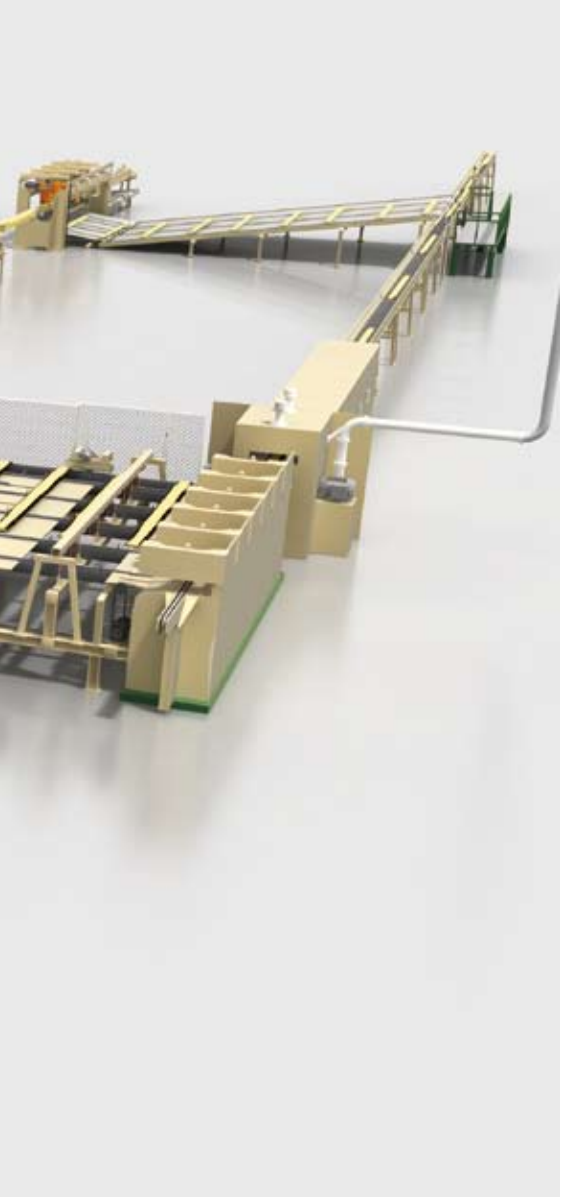
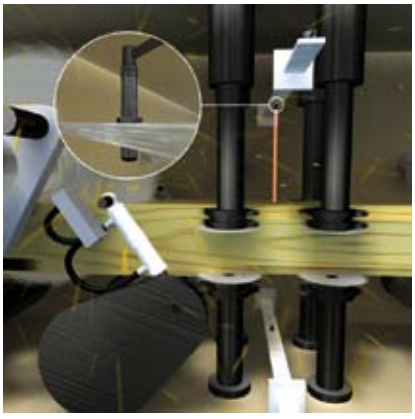




Board detection
Boards are detected with the WT27-3 photoelectric proximity sensor. This robust general purpose sensor easily handles strong vibrations or shock effects, as well as extreme temperature fluctuations.

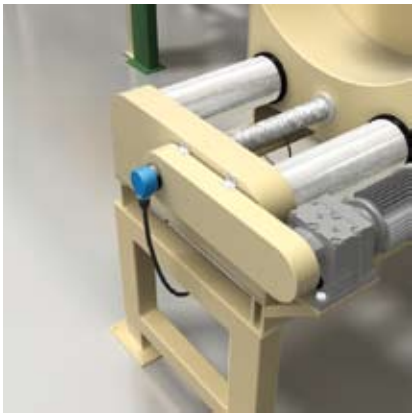
Cant detection
The cant is detected by a VS/VE12 photoelectric reflex sensor. Thanks to its round, miniature housing, it is the ideal option for standard applications under cramped conditions.



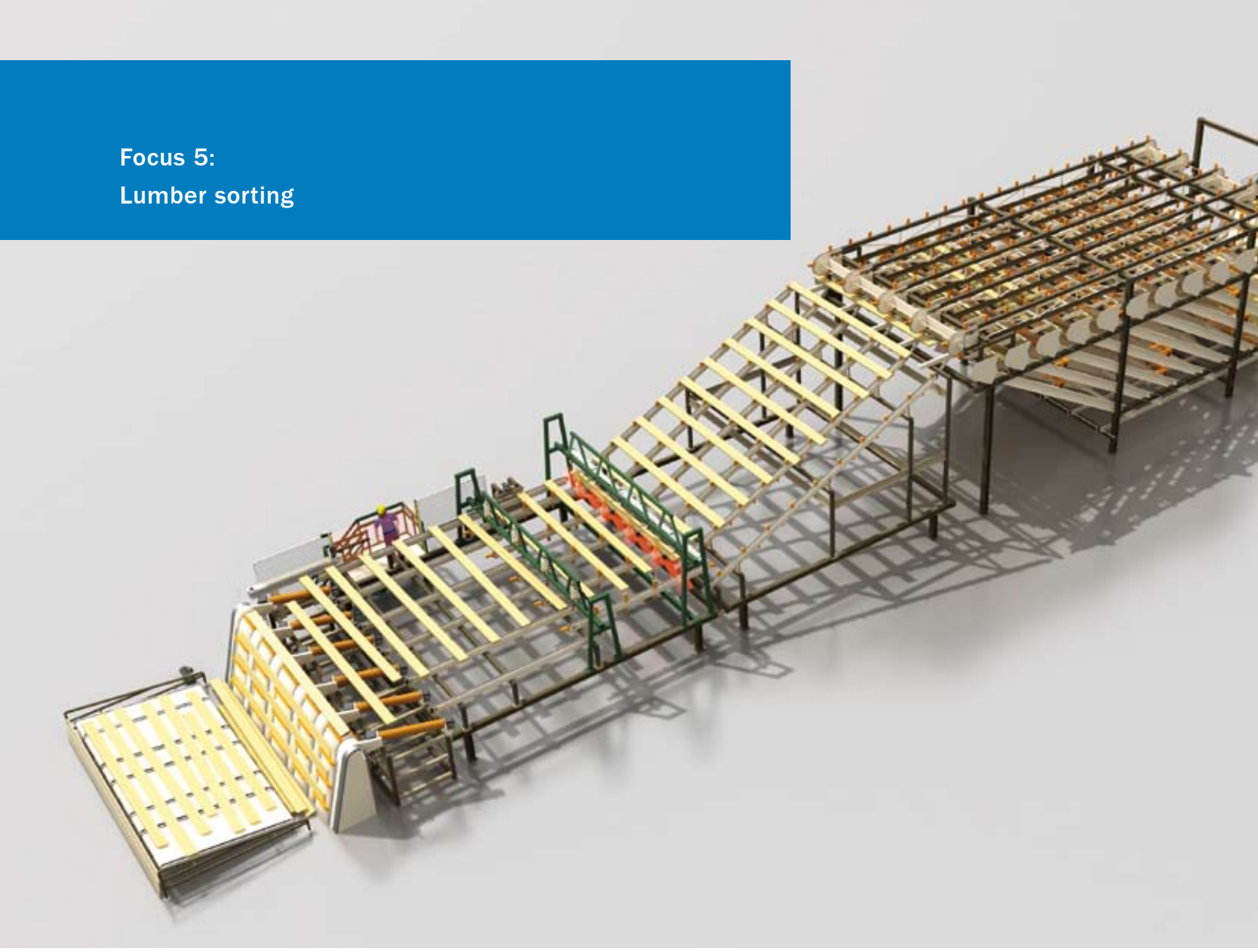
Board detection
The WT12-3 photoelectric proximity sensor offers excellent performance in regard to object detection and availability. It works reliably under all ambient conditions with ambient light, optical reflections and a device installation positioned opposite to it. Its metal housing makes it ideal for use under harsh sawmill conditions.

Wane measurement
An exact profile of the board is created by means of two highly precise OD Hi displacement sensors mounted opposite from each other. The vision integrator uses the data from the measurement and interpolates the differential between the profiles for optimizing the board, which is then trimmed in the saw.

Position detection
The ATM60 encoder signals the precise position of the machine to the system control.



Focus 5:
Lumber sorting



Lumber measurement

Lumber measurement is optimized by using a Ranger E 3D camera arranged on each side of the board. The Ranger E is the fastest 3D camera on the market. With Ranger E, several object features can be measured at the same time. In addition to an exact image of the surface, the entire spectrum of possible board defects can be detected: Knots, cracks, gaps, sap, stains, rotted spots, etc. Vision integrators use the data for both lateral and transverse optimization.

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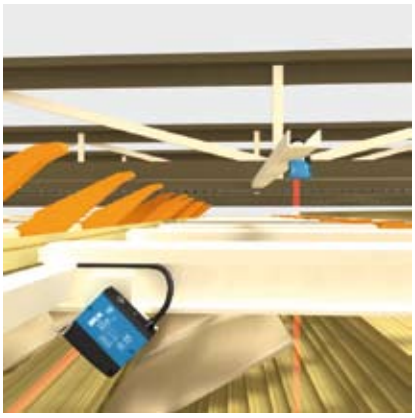
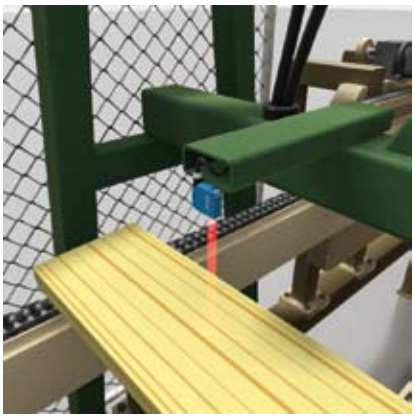
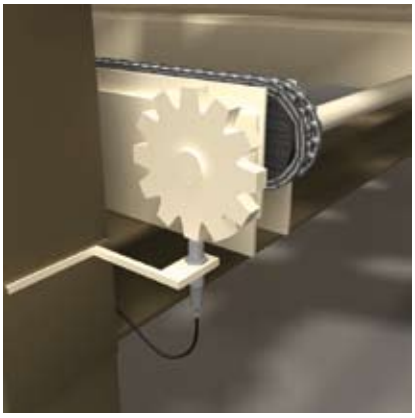
Filling level and board detection
The filling level of the box is measured with the DT60 distance sensor. It is designed for a measuring range up to 5300 mm and has high measuring precision. The boards are detected by a WT12-3 photoelectric proximity sensor.



Board detection
The WT12-3 photoelectric proximity sensor offers excellent performance in regard to object detection and availability. It works reliably under all conditions with ambient light, optical reflections and while a device is being installed opposite of it. Its metal housing makes it ideal for use under harsh sawmill conditions.

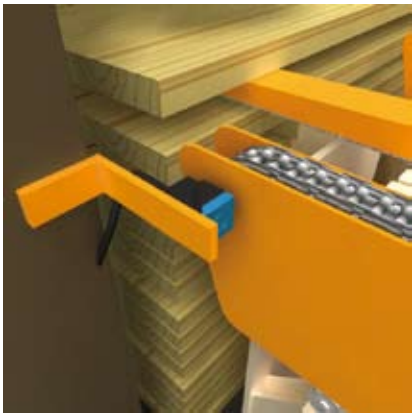


Path measurement
For path measurement, an IME inductive proximity sensor is used for tracking the board position. It can be installed flush or non-flush with its robust brass housing.



Hazardous point-of-operation protection
When separating timber, the workers must separate the stacked boards by hand at irregular intervals. Thanks to the reduced resolution of up to 240 mm and the intelligent multiscanning function of the new C4000 Fusion safety light curtains, the workers can reach into the beam field with their hands and arms without switching off the system – for maximum work safety and optimized productivity.

End position detection
IQ40 inductive proximity sensor for detecting the end position of the conveyor unit.



Focus 6:
Veneer peeling

Log measurement

To achieve optimum volume and quality during peeling, an exact three-dimensional image of the log is made uisng the Rule E 3D camera to detect the log's irregularities. The Rule E offers the highest performance and precision. Among other things, Ruler E is used to measure the log profile, detect and localize contour errors and to classify different qualities. The camera is designed for the rough environment of the wood industry.

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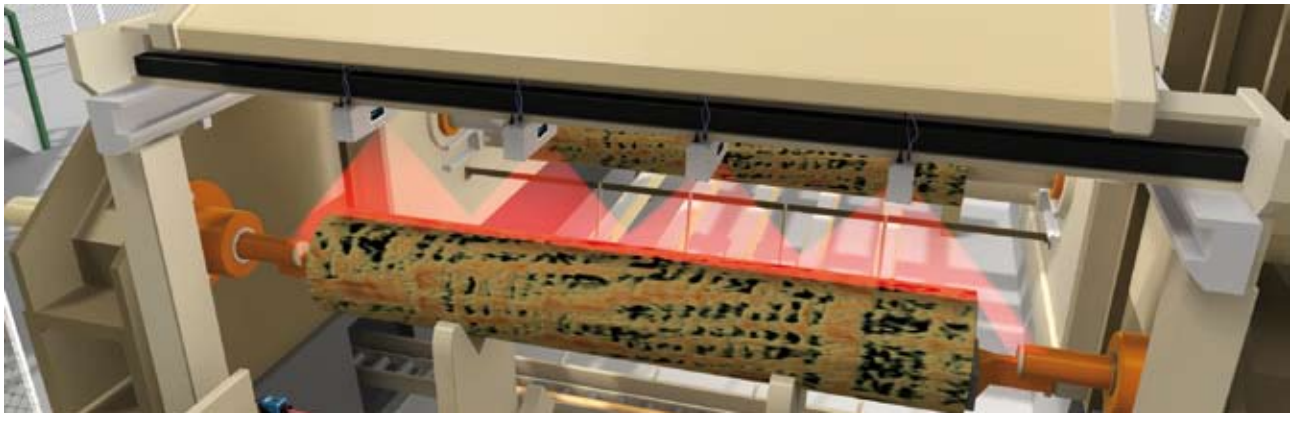
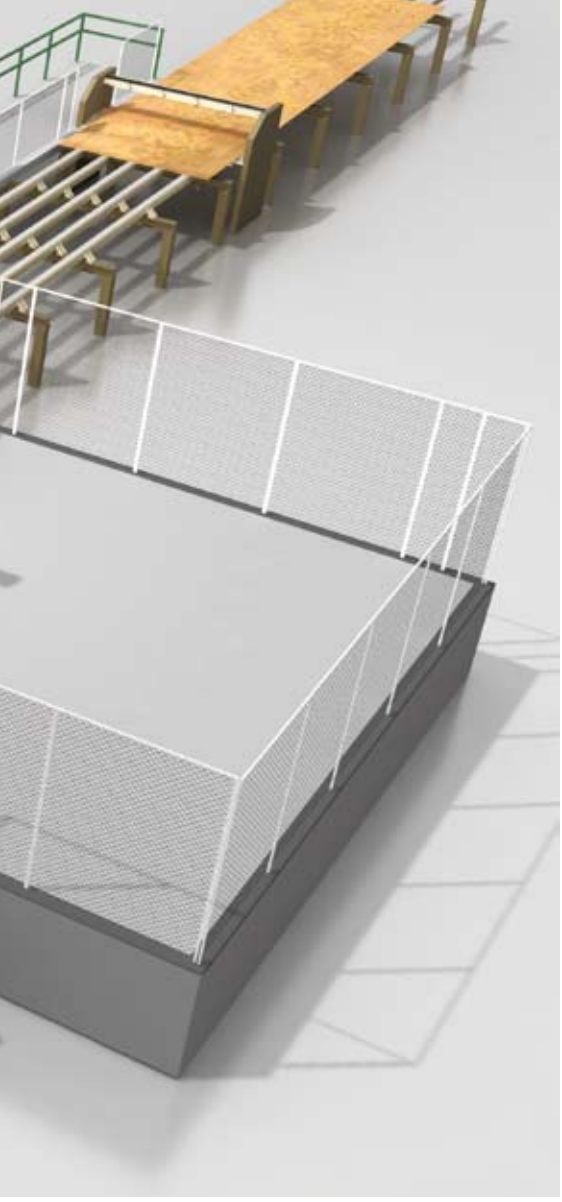




Distance measurement

To optimally buck in the log, the distance from the log to the deflecting wall is determined with the DMT10 distance measurement sensor. The DMT10 emits extremely short light pulses, measures the transit time of these pulses from the object and back, and then calculates the distance within a working range of up to 150 meters.

End position detection

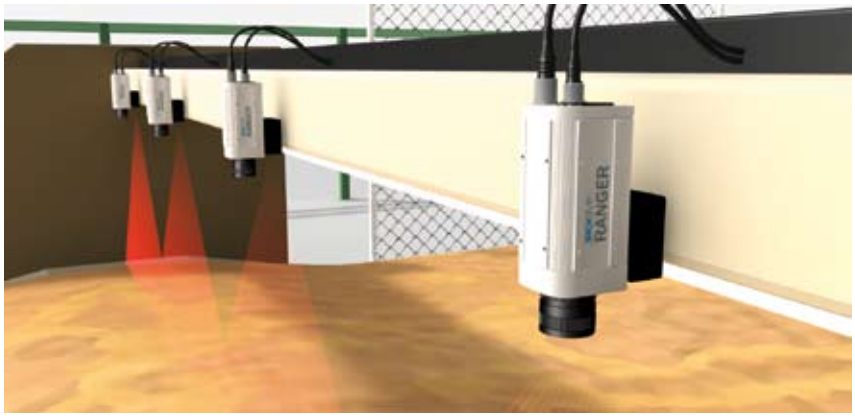
The end position is detected with an inductive IME sensor, which offers the most reliability for industrial applications. The sensor can be flush mounted into metal.

Access protection

The i1002 Lock safety switch ensures the reliable opening, closing and locking of protective doors over a long service life. It also has a robust and compact housing.

Veneer measurement

Measure everything at once at speeds which were previously unreachable. With the Ranger E 3D camera, an exact image of the surface is created during veneer measurement. By using scattered laser light, the positions of branches and cracks are detected precisely – for optimally determining the quality of every veneer. In addition to 3D measurement, the Ranger E can measure a multitude of other object properties at the same time, such as brightness, brilliance and scattered light.



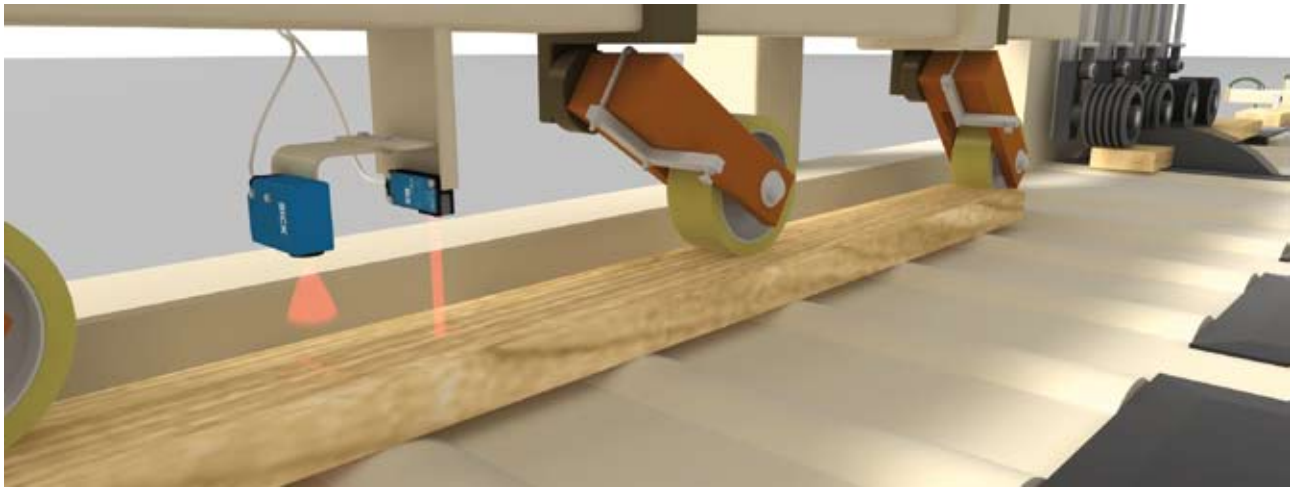
Path measurement

Extremely reliable: The mechanical gears of the ATM60 Multiturn absolute encoder.

Focus 7:
Planing and cross cutting system

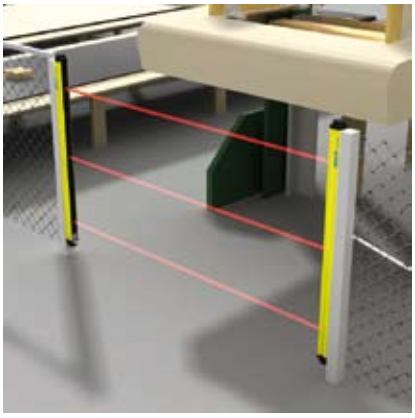
Cross cutting calculation

The LUT3 luminescence sensor detects fluorescent materials and markings applied or added with chalk, ink or labels, regardless of pattern, color or surface condition, on almost any type of wood. The WT18-3 photoelectric proximity sensor with precise background suppression ensures that the beginning of the board is measured to the millimeter for exact cross cutting.



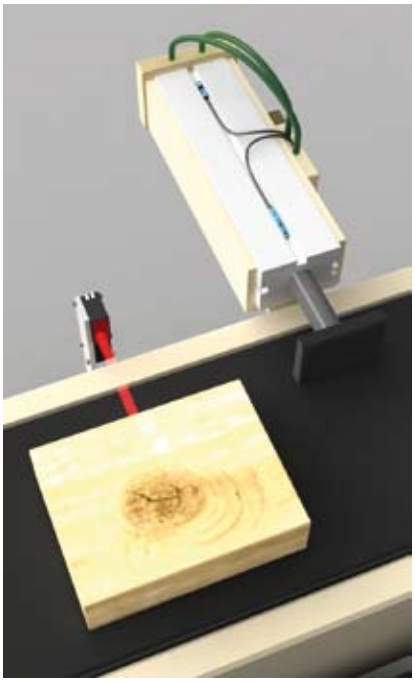
Access protection

The M4000 provides non-contact access protection. Thanks to its long range and integrated functions, which can be set very easily via the configuration buttons, efficient access protection can be realized with maximum availability.



Package ejector

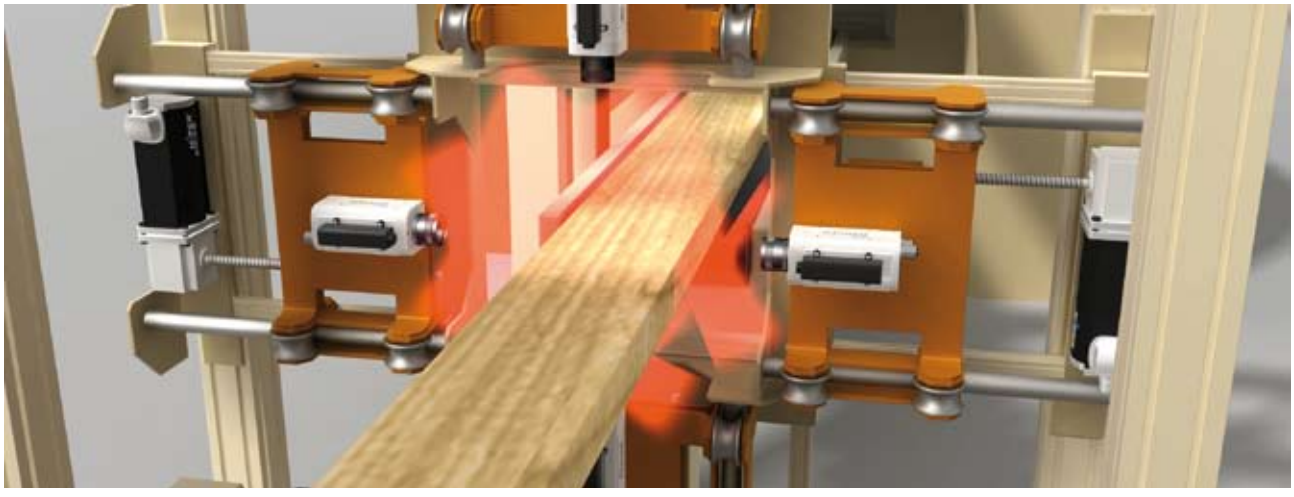
The MZ2Q cylinder sensor with its compact design is used for sensing the end position at the pneumatic cylinder and for detecting intermediate positions. The opposite end position is queried by the MZT8 magnetic cylinder sensor, which is extremely short and is highly robust with regard to media resistance and leak-tightness. For exact ejection, the WT18-3 photoelectric proximity sensor is used. With its precise background suppression, it is not sensitive to ambient light sources and can be used in an operating ambient temperature range from -40 °C to +60 °C.



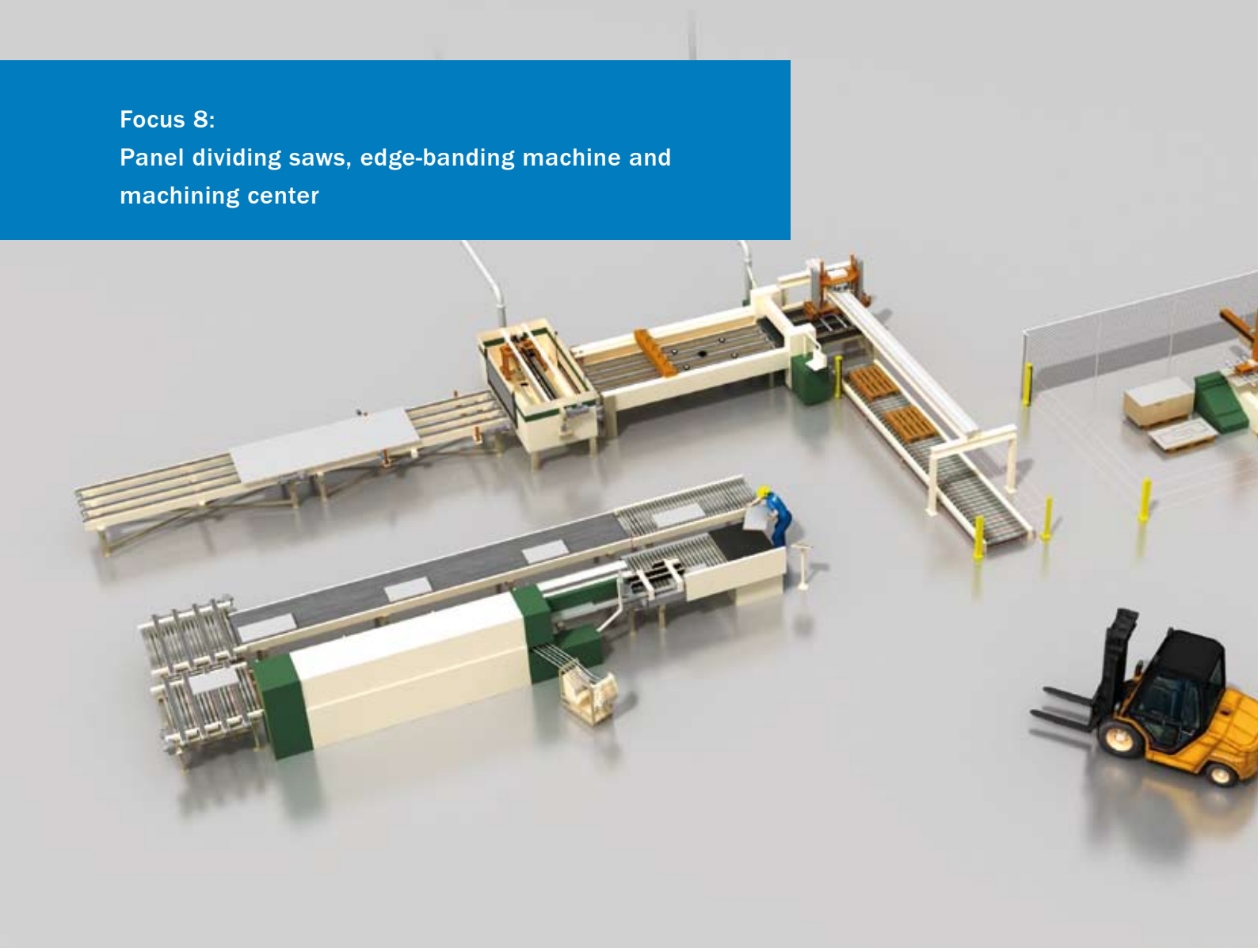
Quality determination

The board quality is determined with a Ranger E 3D camera arranged on each side of the board – the fastest camera available on the market. With Ranger E, several object features can be measured at the same time. In addition to an exact image of the surface, the entire spectrum of possible board defects can be detected: Knots, cracks, gaps, sap, stains, rotted spots, etc. The HIPERDRIVE® HDA30 format adjustment drive ensures the ideal measuring distance of the Ranger E 3D camera.

With this, adjusting operations on auxiliary axes are automated efficiently, inexpensively, with high precision, and communicated over an industry-standard network bus.

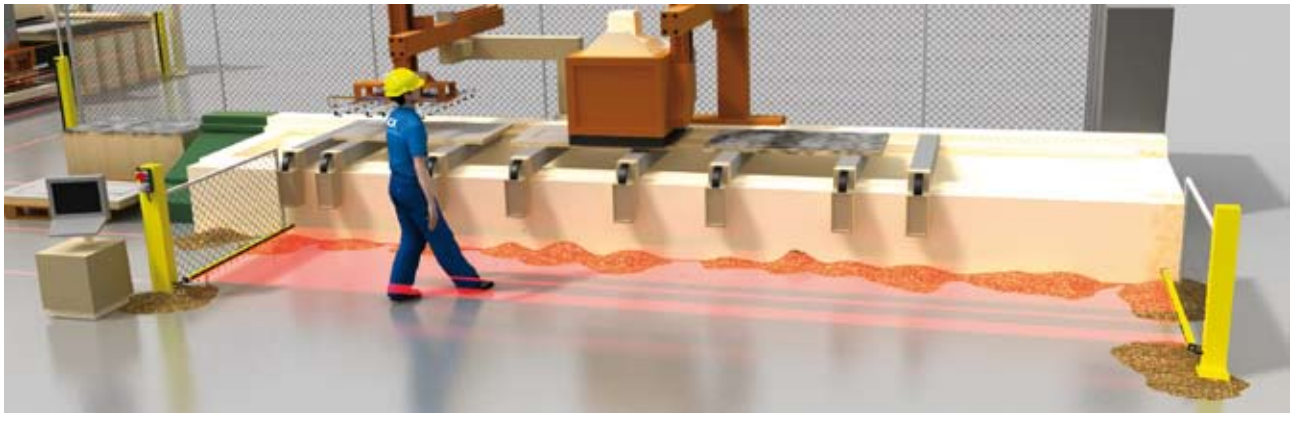


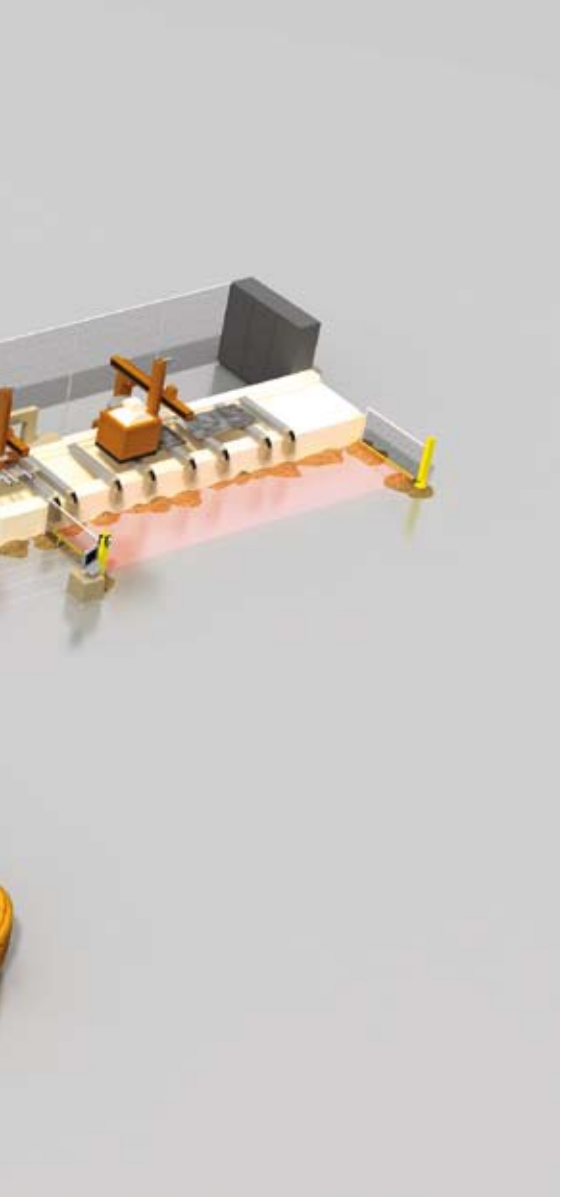
Focus 8:
Panel dividing saws, edge-banding machine and machining center



Hazardous point-of-operation protection

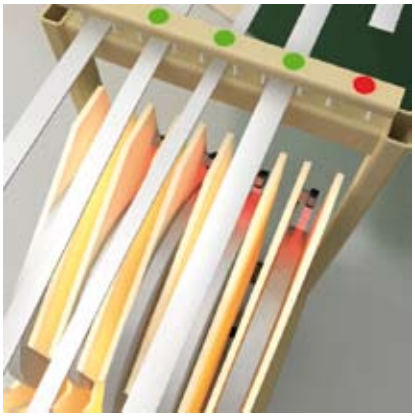
Chips and other residue falling into machining center areas protected by safety light curtains do not result in the system switching off, thanks to C4000 Fusion. Due to the multi-scanning function and a reduced resolution of up to 240 mm, C4000 Fusion offers high flexibility. This makes short set-up times and high availability possible.





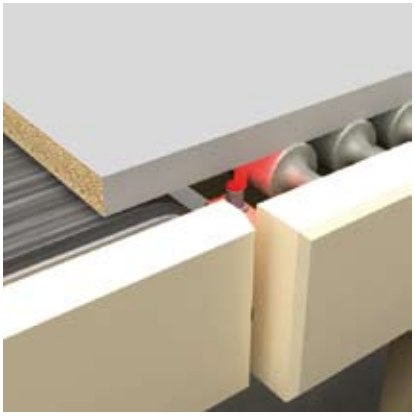
End of material detection

The end of the material is reliably detected with the compact and versatile WT9 photoelectric proximity sensors. The sensing distance ranges from 30 to 250 mm. Precise background suppression makes the WT9 immune to ambient light sources and is easy to adjust.



Board detection

VTB18 photoelectric proximity sensors can be used for versatile detection tasks in automation technology. The small transition zone from the sensing distance to the background allows objects to be precisely detected. Interferences outside of the working area will be reliably ignored.

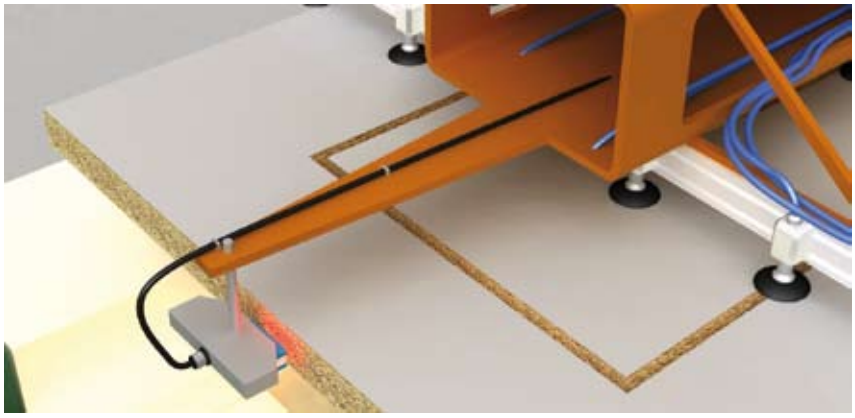


Access protection

The M4000 provides non-contact access protection in a hazardous area. Thanks to its long range and integrated functions, which can be set via the configuration buttons, efficient access protection can be realized with maximum availability.

Board detection

The WT12-3 photoelectric proximity sensor is suitable for detecting boards on the lifting device. In addition to its excellent performance, it easily adapts to different applications due to its slender housing and versatile fixturing options.



Width measurement

The width of the panel is measured by the DT500 distance sensor.

Focus 9:
Storage and conveying technology

Crane protection

The loading crane is secured in both directions of travel with S3000 safety laser scanners. When the direction of travel changes, the protective and warning fields switch. The size and shape of these fields dynamically adapt and can be defined to meet specific application requirements. S3000 is a modular system with up to eight protective fields – mobile and stationary. It is characterized by its long range, fast response time, as well as its reduced sensitivity to ambient light and dust.

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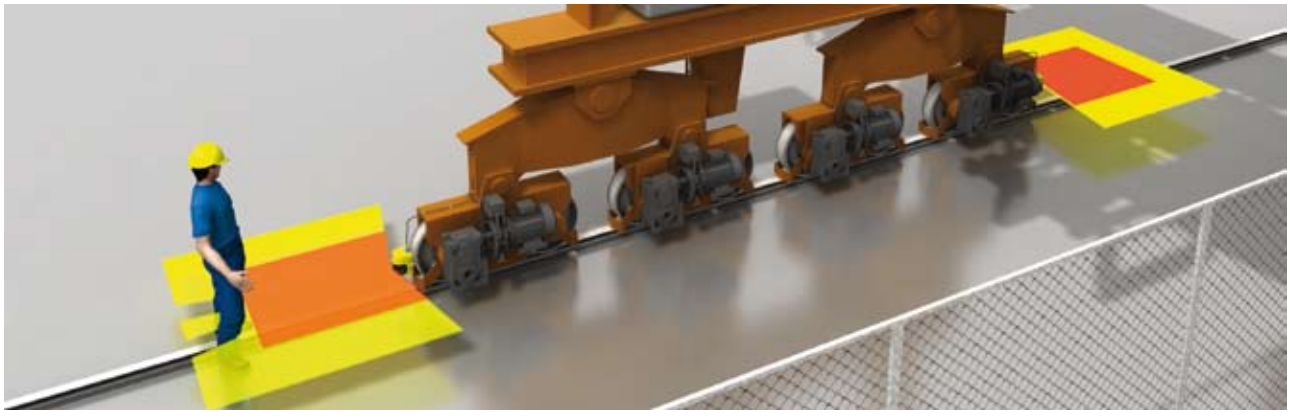
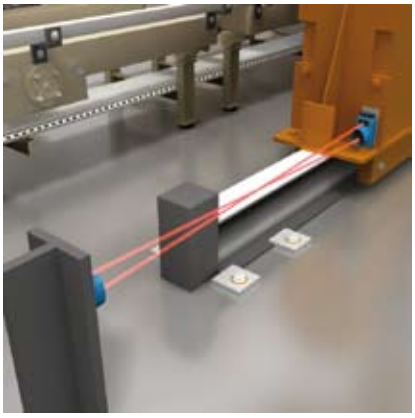


Data exchange

The ISD300 infrared-based data transmission system ensures smooth data exchange between the (racking) storage and retrieval vehicle and the controller. It has a data transmission rate of up to 2 Mbps and a range of 0.2 to a maximum of 200 meters.

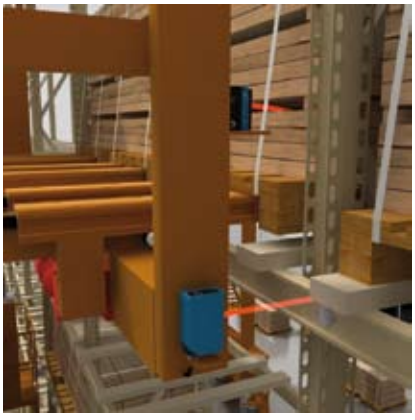


Reading data

The CLX490 bar code reader is a compact all-in-one solution for one-sided reading with narrow web widths up to 400 mm.
It reads the bar code on the wood package and delivers the data to a central computer.

Distance measurement and fine positioning

The DS60 distance sensor signals that a shelf has something on it. It is immune to reflections and is characterized by an especially long scanning distance. Fine positioning of the (racking) storage and retrieval vehicle is handled by the DMP2 position finder. It allows the vehicle to track until its receiver array is centrally illuminated by the light reflected by the reflector. Thus, the DMP2 is independent of changing positions, which are influenced by temperature, load or the steel construction, for example.

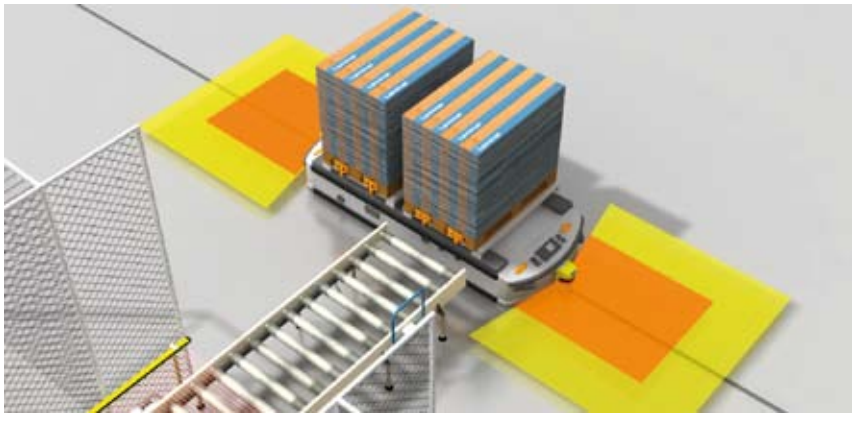


Hazardous point-of-operation protection

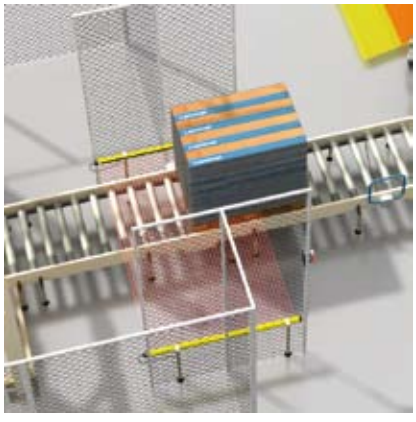
In order for the worker to be able to apply something to the front side of the package, or in order for sawdust, shavings or wood chips to be able to fall down: The new C4000 Fusion safety light curtain offers maximum work safety with its intelligent multiscanning function. And, it does not switch off when small objecs, such as sawdust, are present due to its 240 mm resolution.

Focus 10:
Packaging and conveying technology

Transport system protection
The AGV is secured in both directions of travel by the powerful S3000 safety laser scanners. The size and shape of the safety and warning fields dynamically adapt and can be defined to meet specific application requirements. When the direction of travel changes, the protective and warning fields switch.

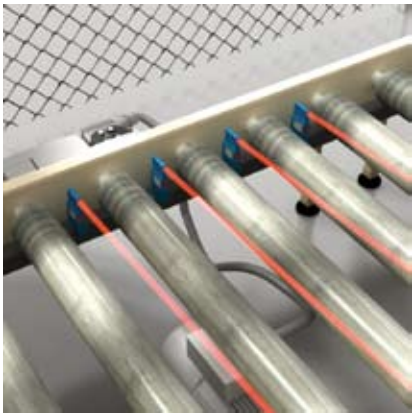


Access protection
Automated material transport is protected with the C4000 Palletizer Advanced safety light curtain so that pallets can pass unhindered, but if a person enters, the system is stopped. C4000 Palletizer Advanced requires no additional muting sensors.



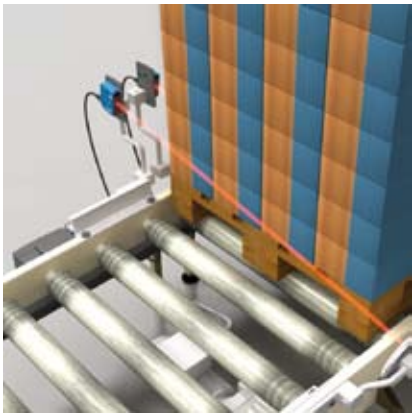
Pallet detection

The WTR2 proximity sensor controls the material flow and supports the movement of pallets on the roller conveyors. The special slender housing design in the upper section of the WTR2 fits between all standard roller distances.



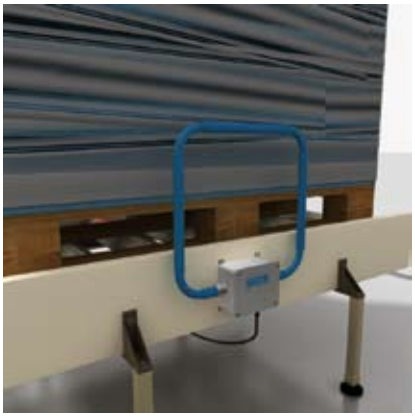
Package detection

The WL24-2 photoelectric sensor with reflector detects loaded pallets. It is characterized by high precision at long distances, as well as its high insensitivity to ambient light.



Data exchange

With laterally-mounted RFID receiving antennas on the RFA341 read/write device, the transponder is read without contact and even without direct visual contact, and the data is transmitted to the control system.

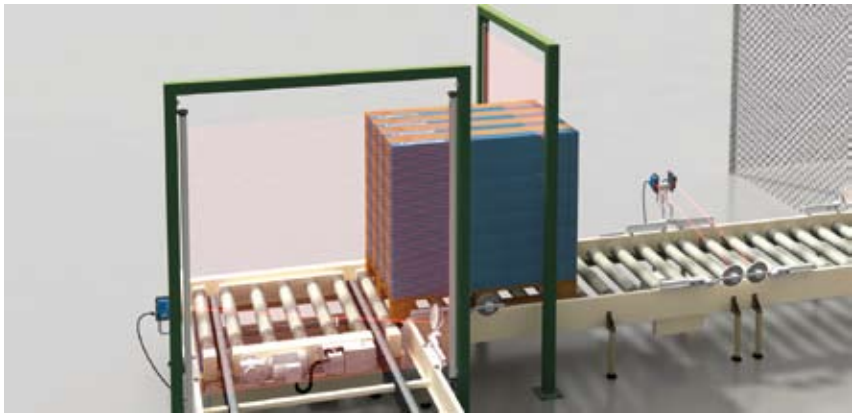


Access protection

The M4000 Advanced multiple light beam safety device together with the UE403 switching amplifier and the WL27-3 muting sensor form the efficient solution for decentralized, conventional muting applications involving automatic material transport.

Package measurement

MLG modular light grid for checking the projection/loading of the pallet. The first pair checks for the lateral contour, and the second pair checks the front edge and back side.



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Solid safety concepts for perfect safety at work

safetyPLUS® offers a unique range of competences for human and machine protection. Because SICK is the world's leading producer of industrial safety systems and offers a mix of expertise, products and services.

Robust system solutions for complete safety applications

Behind safetyPLUS® is the world's most diverse range of products: an all-round safety package from safety switches through opto-electronic sensors to safe controller solutions and networks. Offering easy and virtualy trouble-free utilization from the project planning to worldwide use.

Unlimited savings potentials through integrated safety concepts

The unique economic efficiency of safetyPLUS® saves time and money! This starts during uncomplicated project planning and ranges through installation and commissioning right up to running production. Every SICK technology is as simple as possible in fundamental use and will still be up-to-date in five years' time.

Gap-free safety through services for every day

The services of safetyPLUS®: SICK experts provide advice and support from the first visit through the risk assessment and up to CE-certification – always in compliance with current standards and directives and with the SICK inspection seal for machines and plant. By the way: SICK carries out more than 10,000 safety inspections annually worldwide.

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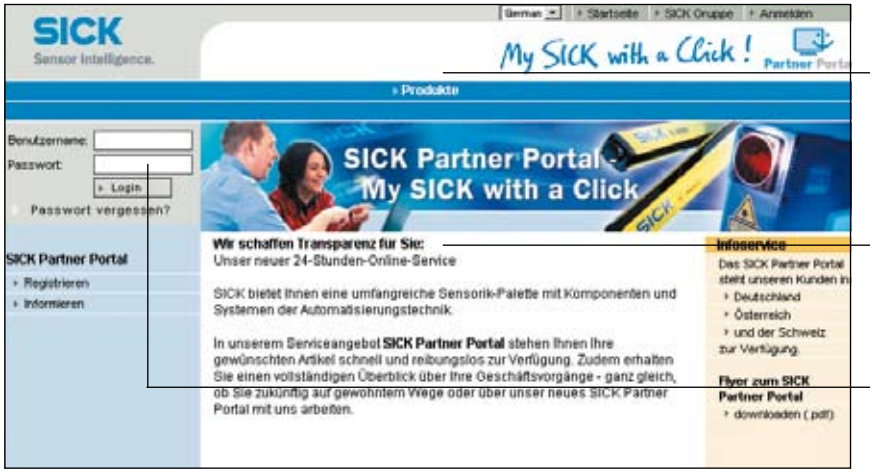

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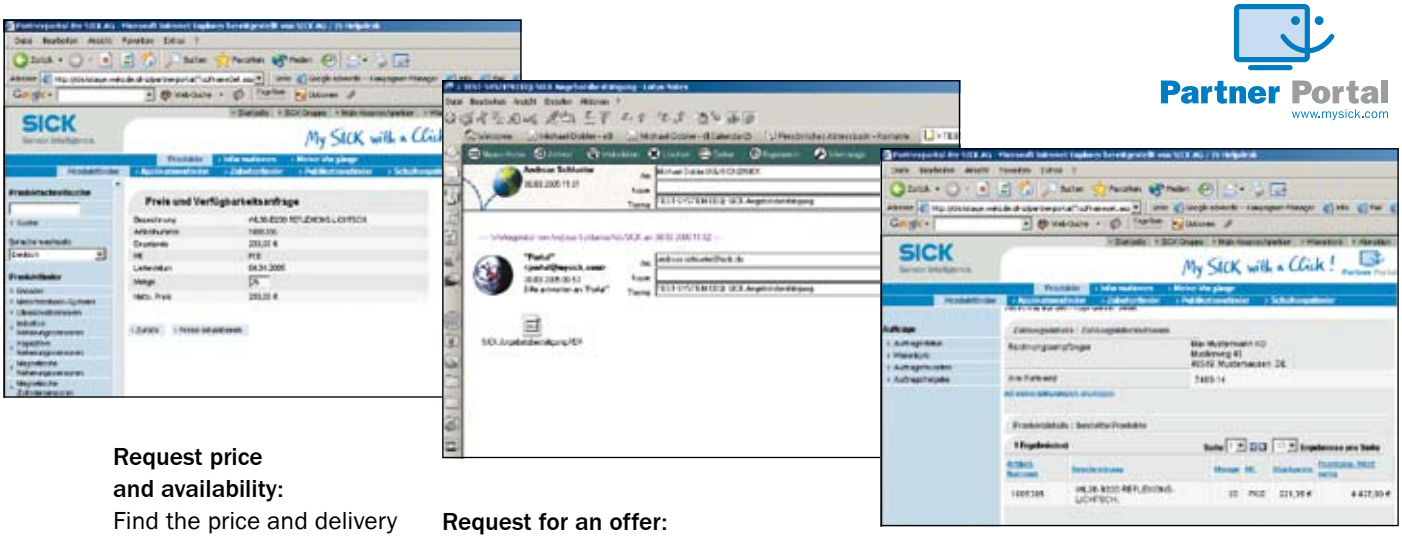

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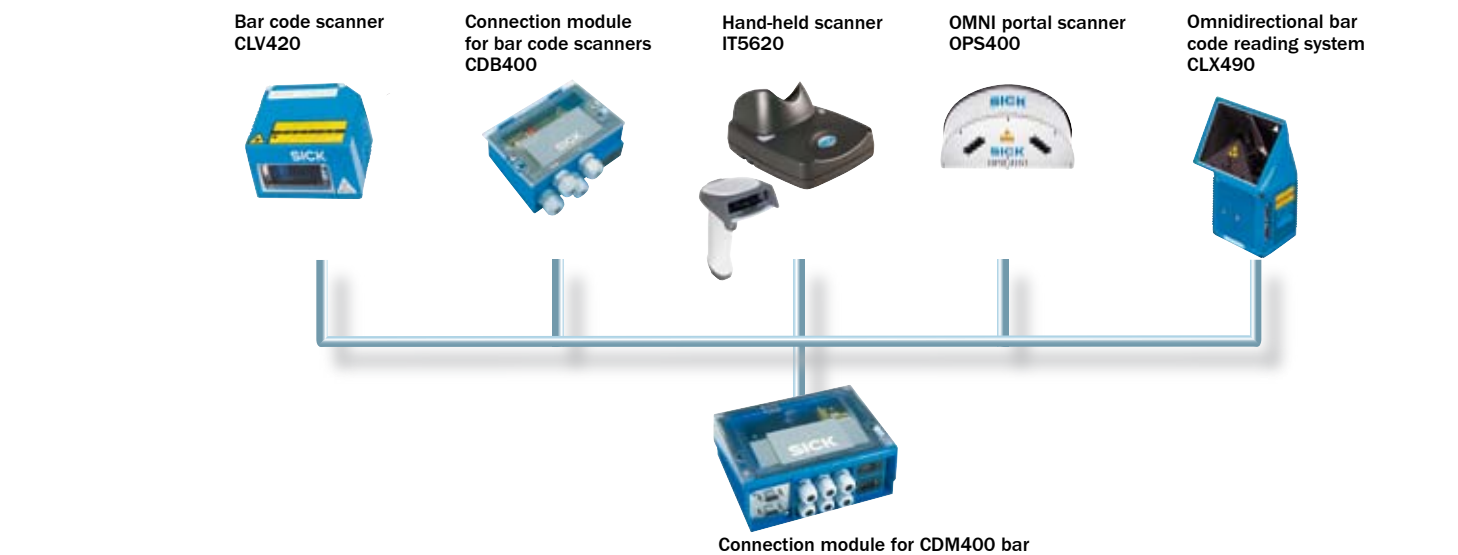
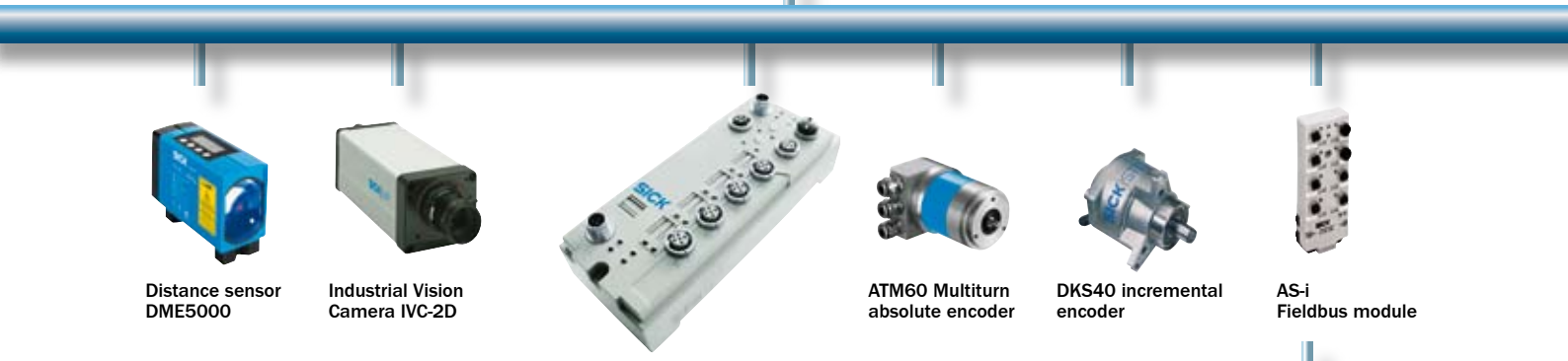




I/O link connection mod-

IO-Link

I/O LINK – THE NEW SENSOR/ ACTUATOR INTERFACE

Passive function elements become active process participants that communicate with the control level in order to autonomously signal their states and errors. This complete, central and continuous flow of information on all functions down to the sensor level allows more efficient operation of the plant as a whole.

FLEXIBLE CONTROL – WITH OR WITHOUT SAFE PLC

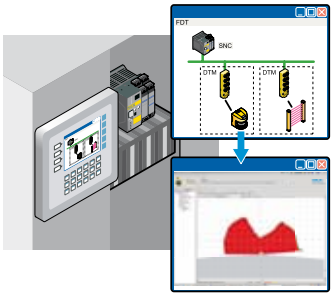
Safety controllers from SICK solve safety tasks flexibly and economically. Only as much control technology as the task requires is used. The system can easily be adapted and expanded – from simple solutions right up to more complex and interrelated safety functions. A considerable gain in efficiency!

Industrial Safety Systems.
Made by SICK.
safetyPLUS®

Flexible safety control

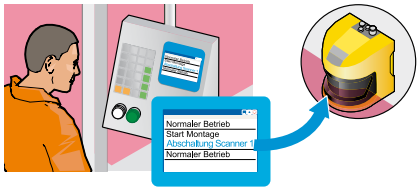
FDT/DTM TECHNOLOGY

- Standardized “Style Guide”: differing device tools can be operated with the same philosophy.
- Central data storage: the configuration data from differing device producers, the Device Type Managers (DTMs), are centrally stored in the Field Device Tool (FDT).
- Uniform access point: only the FDT constructs the connection to devices via the field level.



OPC SERVER

- Status and diagnosis direct to the Human Machine Interface (HMI) and via the company network
- Remote maintenance from anywhere, right down to the protective field
- Administration of information: configuration backup centrally stored
- Active-X allows illustration of protective fields in the OPC client via just a few mouse-clicks.



Products from the Industrial Sensors, Industrial Safety Systems and Automatic Identification Divisions can be used on almost all system platforms. The potential for integration in the controller technology, based on standards valid worldwide, make every solution an investment with a secured future.

- **PROFIBUS, PROFIsafe**
- **DeviceNet, DeviceNet Safety**
- **AS-i, AS-i Safety at Work**
- **CANopen**
- **Ethernet**

Available gateways for these systems: PROFIBUS, Ethernet (TCP/IP), PROFIsafe and CANopen

Safety network solutions, AS-i Safety at Work

Safety network solutions PROFIsafe

Safety network solutions DeviceNet Safety

M4000 multiple light beam safety device

Safety switches

Safety light curtain C4000

Safety laser scanner S3000

M4000 multiple light beam safety device

Safety position switch

FACTORY AUTOMATION

With its intelligent sensors, safety systems, and automatic identification applications, SICK provides comprehensive solutions for factory automation.

- Non-contact detecting, counting, classifying, and positioning of any types of object
- Accident protection and personal safety using sensors, as well as safety software and services

LOGISTICS AUTOMATION

Sensors made by SICK form the basis for automating material flows and the optimization of sorting and warehousing processes.

- Automated identification with bar code and RFID reading devices for the purpose of sorting and target control in industrial material flow
- Detecting volume, position, and contours of objects and surroundings with laser measurement systems

PROCESS AUTOMATION

Analyzers and Process Instrumentation by SICK MAIHAK provides for the best possible acquisition of environmental and process data.

- Complete systems solutions for gas analysis, dust measurement, flow rate measurement, water analysis or, respectively, liquid analysis, and level measurement as well as other tasks

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