

# Sensors & Applications

## Wood processing and furniture making industry



More Precision



## Sensors for the wood processing and furniture making industries

Micro-Epsilon offers innovative precision measurement solutions for the entire process chain in the wood processing and furniture making. From cutting of trunks to the control of incoming supplier parts, sensors from Micro-Epsilon provide high precision results. The comprehensive product range includes solutions for almost any measurement task from displacement and color measurement to 3D profile measurement. High quality sensors from Micro-Epsilon are developed and manufactured in Europe and have proven successful in harsh, industrial environments.

Compact and high-speed sensors ensure highest reliability in almost any area where high precision is expected – from machine monitoring to fully automatic quality control of the final product.



### scanCONTROL 29xx

High-end automation scanner for high precision profile measurements

Inline measurement of gaps, profiles, steps, angles

Models with red or blue laser line

Measurement on numerous surfaces, even reflective and matt

### colorSENSOR / colorCONTROL

Sensors for color detection and color measurement

Ideal for integration into processing lines due to high measuring rates

High accuracy

Robust and suitable for industrial use

### optoCONTROL

Optical micrometers for precise applications

Measuring ranges up to 98 mm, measuring distance up to 2 m

Detection of edges, gaps, positions and diameters of round objects

Inspection and detection of position and presence

Different models for numerous fields of application

### optoNCDT 1220 / 1320 / 1420

Compact laser triangulation displacement sensor for high speed, precision measurements

Non-contact displacement and distance measurements from 10 mm to 500 mm

High accuracy

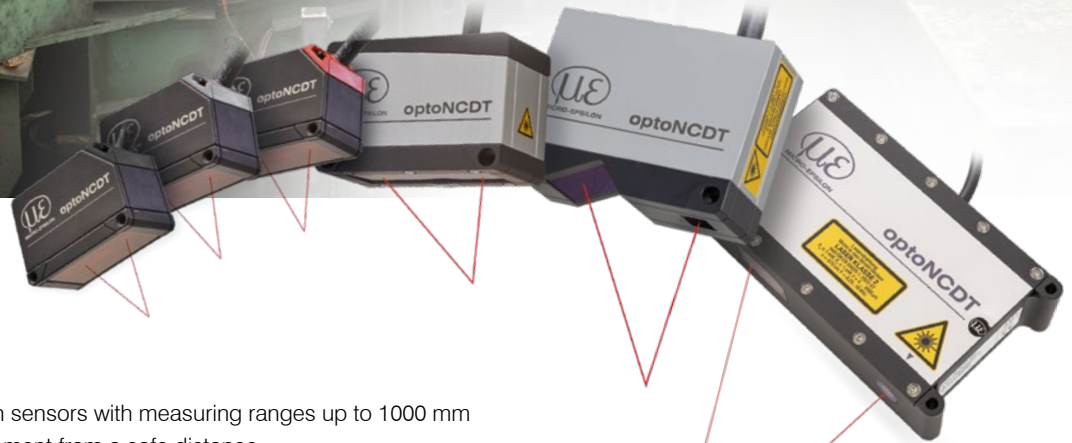
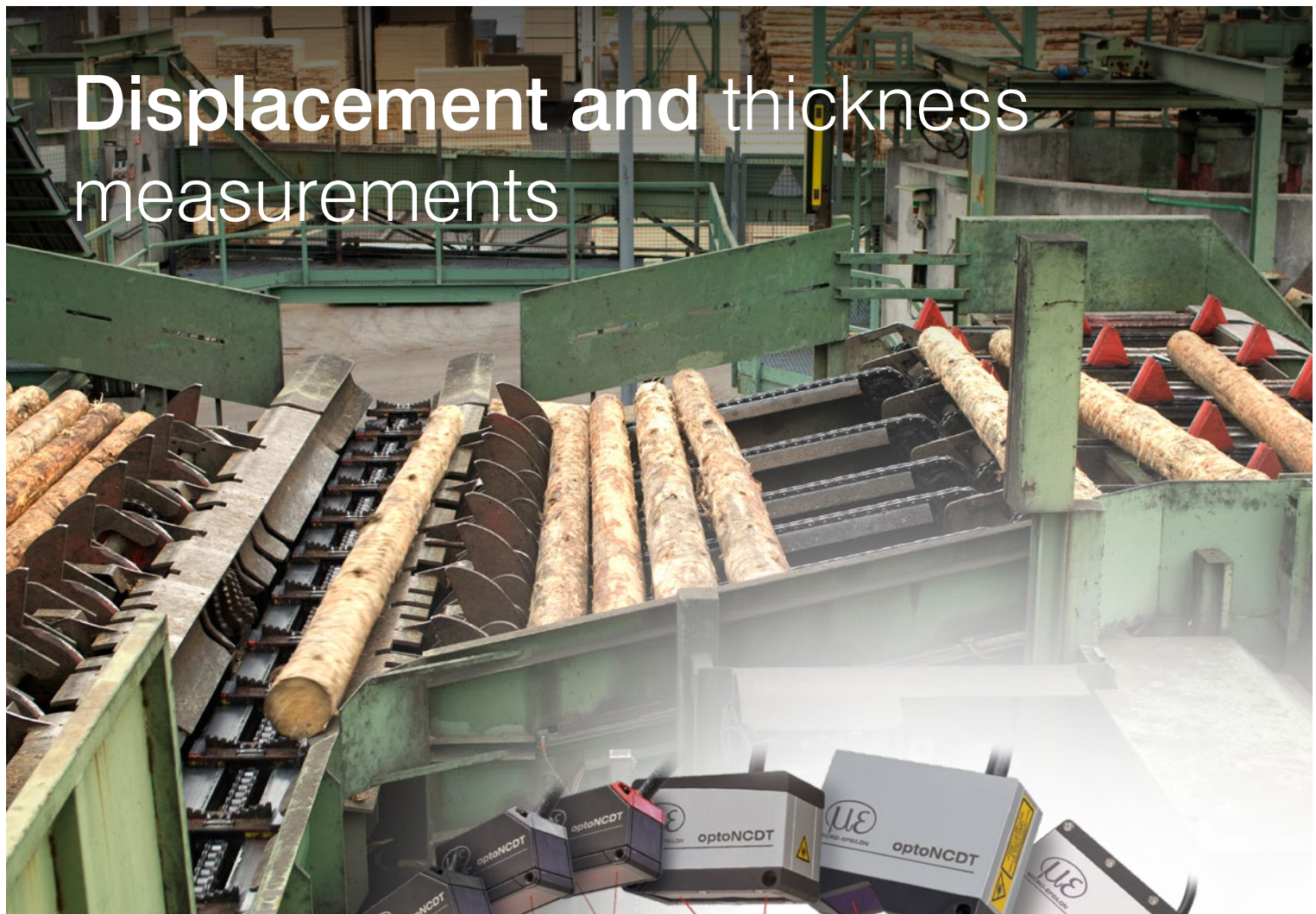
High measuring rate for dynamic measurements

Compact design and easy mounting

IO Link, RS422, fieldbuses



# Displacement and thickness measurements



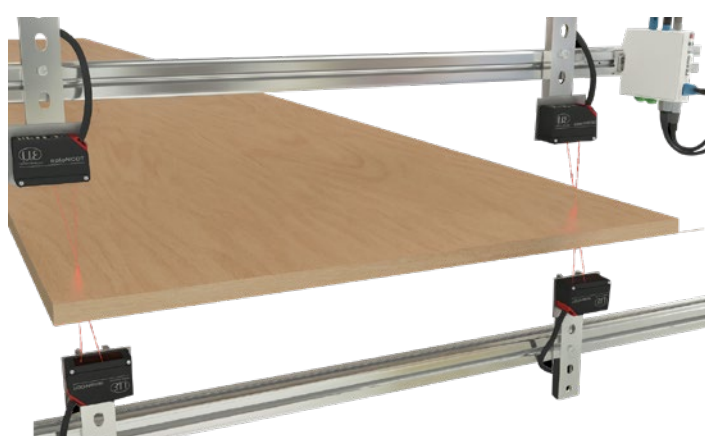
## **optoNCDT**

- Laser triangulation sensors with measuring ranges up to 1000 mm
- Accurate measurement from a safe distance
- High measuring rate for monitoring fast processes
- High accuracy
- Numerous interfaces for easy integration:  
IO-Link, EtherCAT, Ethernet/IP, Profinet, Ethernet, Analog

### Precise distance measurement and geometry inspection

In wood processing, the optoNCDT laser sensors are used for a diverse range of measurement tasks. They increase production output, ensure high quality standards, provide high process reliability and protect tools from possible damage.

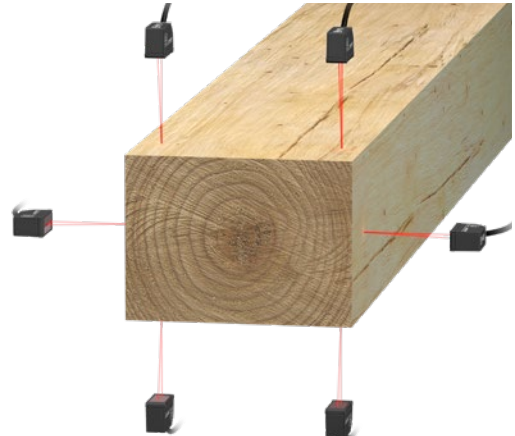
For thickness and width measurement of plates, planks and beams, two synchronized optoNCDT sensors are used. To ensure precise, error-free thickness measurements, a synchronous measurement process is required. By adding further sensors, a single measurement can also be used to inspect torsion and dimensional accuracy.



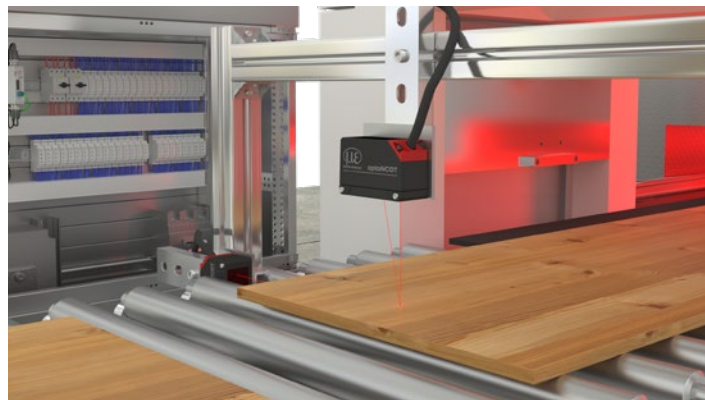
Thickness measurement of planks

Several optoNCDT sensors are used for example, to inspect the wane prior to the trimming process. During this process, the sensors detect the profile of the plank, which enables optimization of the cutting profile. Further application possibilities include wood sorting, the corresponding classification and dimensional inspection.

Furthermore, optoNCDT sensors are used in downstream processes such as multi-track planarity control of doors, windows and plates.



Dimension control of beams



Position monitoring during the plank processing



Plank positioning prior to sawing



# Profile measurement

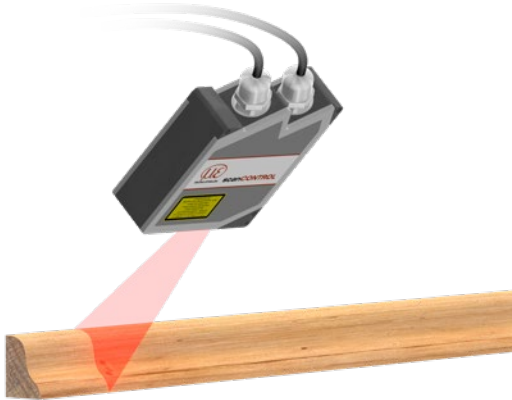


## **scanCONTROL**

- Compact laser scanner with integrated controller
- High profile frequency for dynamic measurements
- Synchronizable for multi-scanner applications
- Different measuring ranges
- Blue Laser sensors for high precision measurements

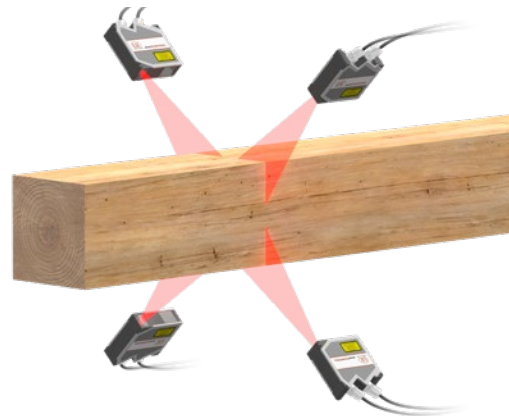
## Precise profile and geometry inspection

scanCONTROL laser scanners are used for two-dimensional detection of wood and furniture profiles. A laser line is projected onto the target surface. The high quality receiving system projects the diffusely reflected light of this laser line onto a highly sensitive sensor matrix. In addition to distance information (z-axis), the integrated controller in the sensors also uses this camera image to calculate the position along the laser line (x-axis). In the case of moving objects or a traversing sensor, it is therefore possible to obtain 3D measurement values.

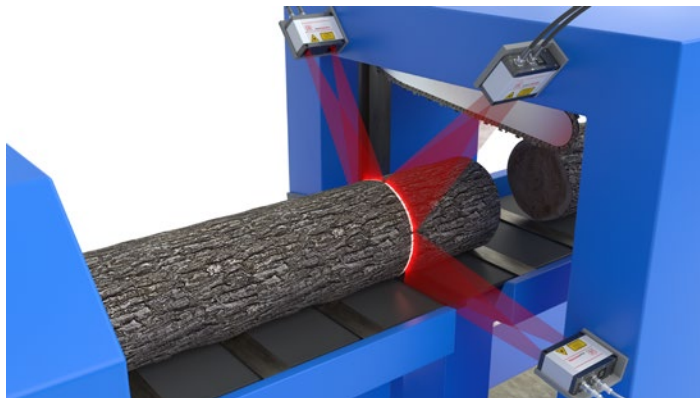


Profile measurement of milled wood

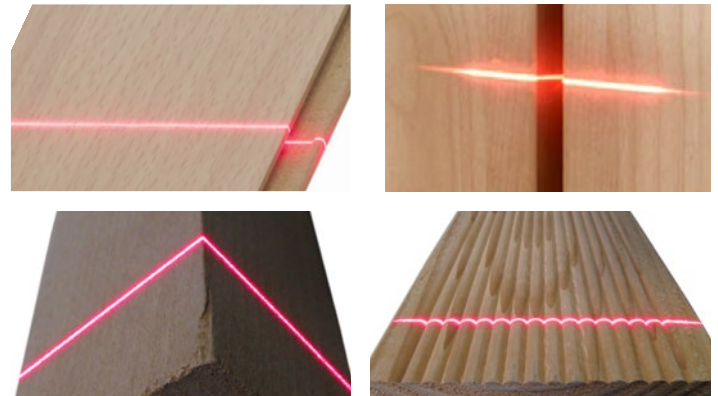
In the wood processing and furniture making industry, the scanCONTROL laser scanners are used, for example, to optimize the cutting profile. A 3D model enables the calculation of an optimal cutting pattern for each trunk. After cutting, the dimensions are controlled using laser scanners. At the same time, rectangularity and warpage are inspected.



Inspection of the sawn geometry



Surface profile of a tree trunk



Measurement of different geometries in wood and furniture manufacturing



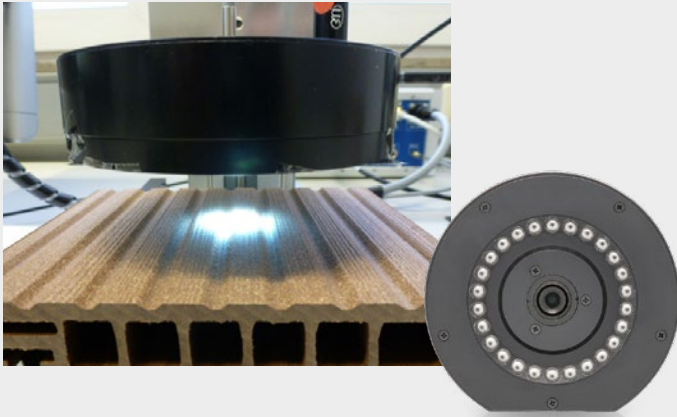
# Color measurement



## colorSENSOR / colorCONTROL

- Sensors for color detection and color measurement
- Ideal for integration into production lines thanks to high measuring rates
- High accuracy
- Continuous line production
- Robust and suitable for industrial use





### Color measurement of floorboards

Plastic floorboards are made of colored granules and shaped by extrusion. This is why it is essential that the desired color of the floorboards is homogeneous even if they are produced in different batches.

The inspection is carried out using the colorCONTROL ACS7000 spectral color measuring system and the ACS2 circular sensor (R45°c:0°). In the circular sensor, 24 lighting optics are arranged in a circular fashion around the receiving optics, providing continuous lighting that allows measurements to be carried out regardless of the angular position of the target object. Equipped with digital interfaces operating with high speeds, the sensor can be used directly in the extrusion line.

### Color detection of kitchen fronts

Kitchens are available in many different styles and colors. In order to ensure consistent color of different front panels, the colorSENSOR is used. The sensors inspect the color of the kitchen fronts in the painting plant. Color sensors ensure that the color shade is within the specified tolerances. Even the smallest color deviations imperceptible to the human eye can be detected reliably. Furthermore, the sensors used inspect if the color is constant over several production batches. This ensures homogeneous colors of different components used for kitchen fronts.

### Presence monitoring of transparent, protective film

After the plastic profiles for windows are extruded, a protective film is applied onto these profiles. This film protects the frames from scratches and dirt which can result from the delivery.

The colorCONTROL ACS7000 color measuring system checks if the protective film has been applied correctly. The color of the window frames alters a little after the film has been applied. The spectral colorCONTROL ACS7000 recognizes this color difference reliably. Its high measuring rate enables the measuring system to be used directly in the production line.



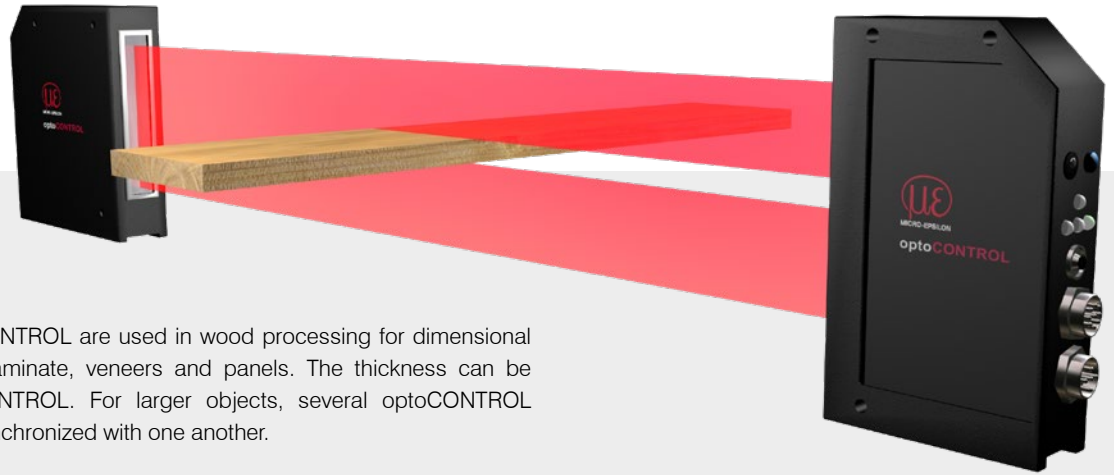
# Thickness measurement and positioning



## **optoCONTROL 2520**

- Measuring ranges up to 98 mm
- Distance light source/receiver up to 2 m
- Measurement via laser or LED
- For high speed measurements
- Micrometer-precise measurement of diameters, gaps and segments





Optical micrometers optoCONTROL are used in wood processing for dimensional quality control of boards, laminate, veneers and panels. The thickness can be measured with an optoCONTROL. For larger objects, several optoCONTROL devices can be used and synchronized with one another.

When printing woods with appealing decors, optoCONTROL micrometers are used to control the positions of the plate. This prevents the printing head from colliding with the plate. The measurement devices measure directly on wood and monitor the tools.





## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



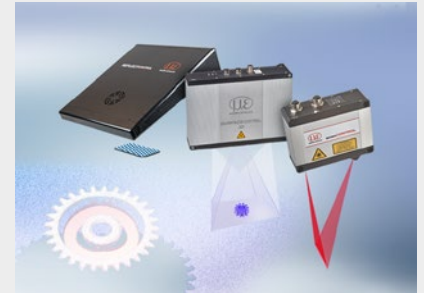
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection

## More Precision

Whether it is for quality assurance, predictive maintenance, process and machine monitoring, automation or R&D – sensors from Micro-Epsilon make a vital contribution to the improvement of products and processes. High precision sensors and measuring systems solve measurement tasks in all core industries – from machine building to automated production lines and integrated OEM solutions.



[www.micro-epsilon.com](http://www.micro-epsilon.com)