

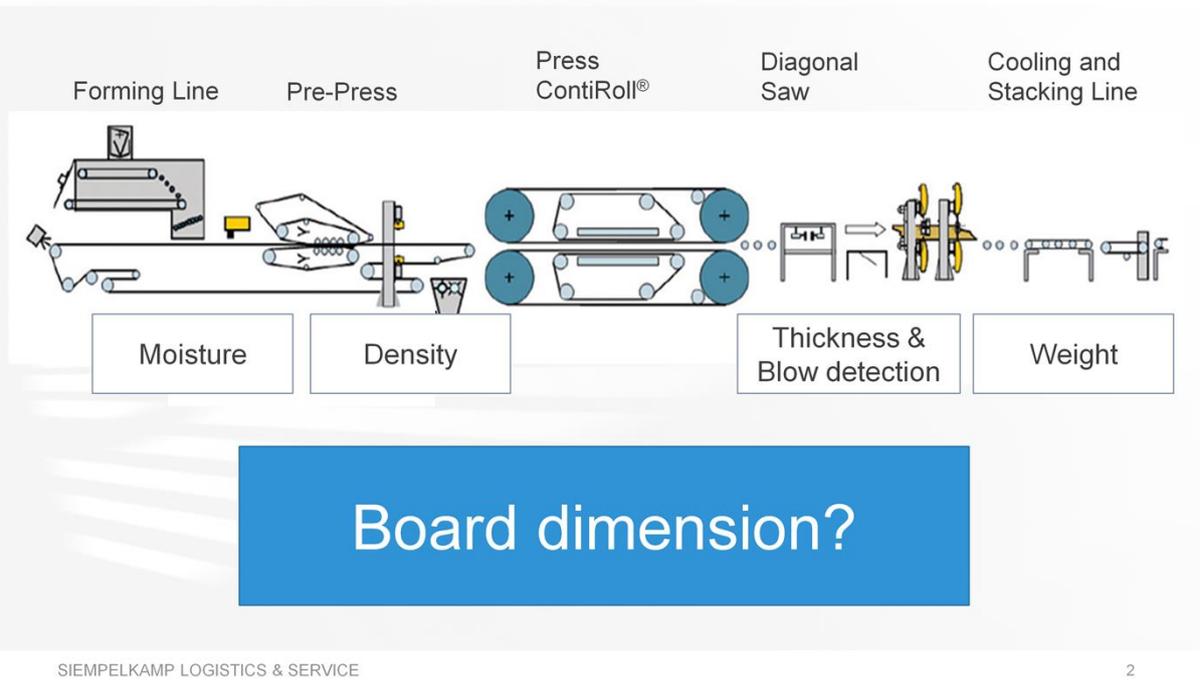
# SicoCam

## INLINE BOARD MEASUREMENT

Welcome to the presentation of Siempelkamp's Inline Board Measurement system:

SicoCam!

## SicoScan – Process Measuring System



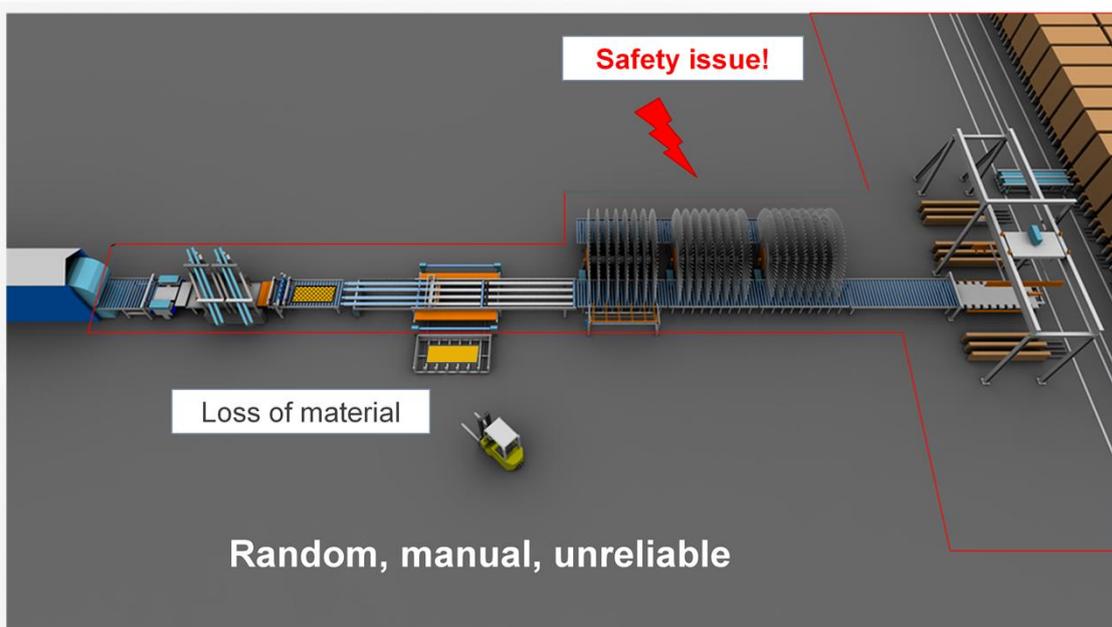
To optimise the production process of wood-based panels, Siempelkamp offers the well known SicoScan-system.

With SicoScan following measures are possible:

- Moisture in Forming Line
- Density behind Pre-Press
- Thickness & Blow Detection behind continuous Press
- Weight behind continuous Press

But what about the board dimensions behind Length-cut and Trimming Saw?

## Measurement today



To verify the dimensions of raw boards (particleboard, MDF, and OSB) f.e. in the cooling and stacking line, it has been common practice to randomly extract boards (which is the Siempelkamp recommended procedure) or manually measure them in the cooling turner (what will be done at some factories).

This method results in a lot of waste and a high error rate.

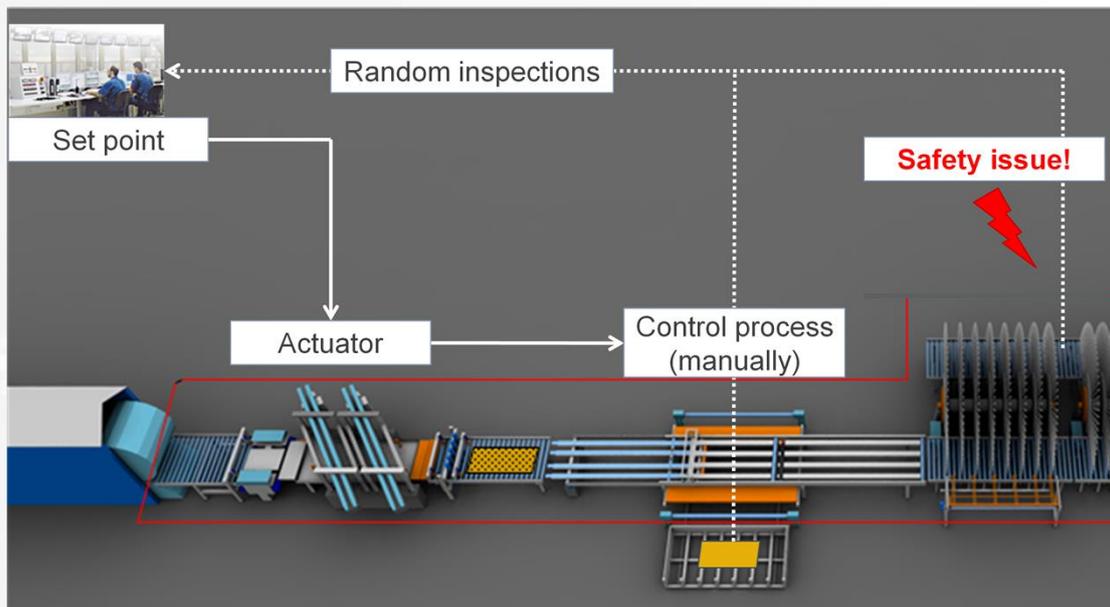
However, the biggest problem is the large risk involved for the employees when measuring the boards inside the cooling turner because they have to enter the safety area to do so.

The weak points of the traditional board measurement:

only random inspections, incomplete measurements, error-prone measurements, for example, because of measuring tapes that have expanded due to heat.

To make matters worse, the multi-diagonal saw in high-performance systems has been doing more of its cutting in tandem, triple or quadruple mode, in other words with two or more saw units.

## Measurement today



SIEMPELKAMP LOGISTICS & SERVICE

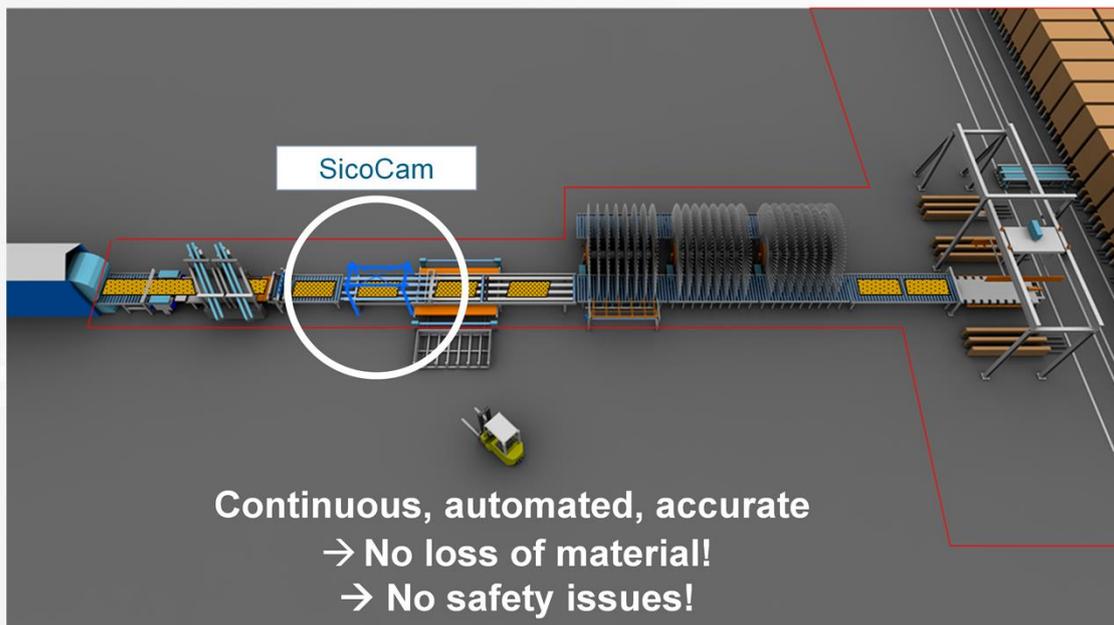
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Today the operator adjust the set pint of the Diagonal saw (actuator) according to the commission data of the current production.

The controll process is random and manually. In any case of deviations, the operator needs to calculate and insert the correct set point manually.

This is a kind of an „open-loop“ system!

## Innovation SicoCam



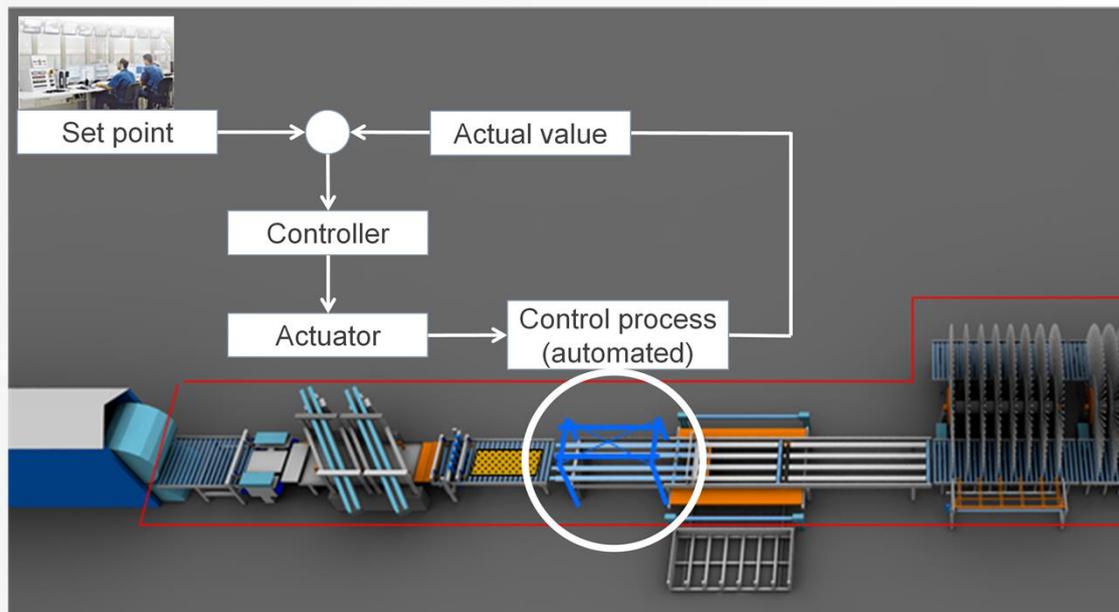
The newly developed SicoCam changes this in a revolutionary way:

With this intelligent, fully-automated, and highly accurate inline board measurement device, our engineers provide the answer to all these problems.

SicoCam stands for a

- safer working environment
- guaranteed quality
- and significantly reduced waste

## Innovation SicoCam



SIEMPELKAMP LOGISTICS & SERVICE

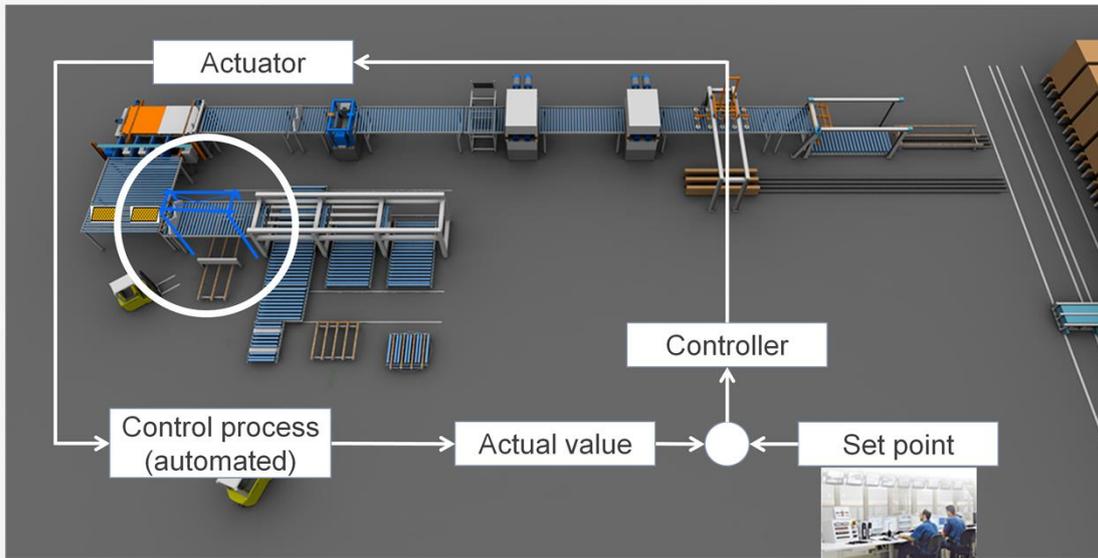
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SicoCam carries out continuous, fully-automated measurements.

If needed the diagonal saw can therefore be adjusted immediately.

This ensures consistently high product quality. Furthermore, due to reduced waste, the new system cuts costs.

# SicoCam in a finishing line



Can also be used in the sanding and cut-to-size line to measure board dimensions!



First installation of SicoCam in a particle board production – reliable operation since June 2016.

“Now that the board-measuring system is located within the machinery, the saw can be corrected immediately after any dimensional deviations are found. For example, if the diagonal saw had to switch into tandem mode, sometime the board length is alternating depending on the saw carriage that performed the cut. Because of SicoCam now we are able to correct the different lengths immediately. Up to now the SicoCam works for more than two years in the chip board line properly and our operators are very satisfied.”

“With the new system, we can also respond quickly to process changes in order to stabilize our processes and ensure consistent quality of the finished product.”

Notes of the Technology Manager



Camera

Line Laser

LED  
Flashlight

Carriage

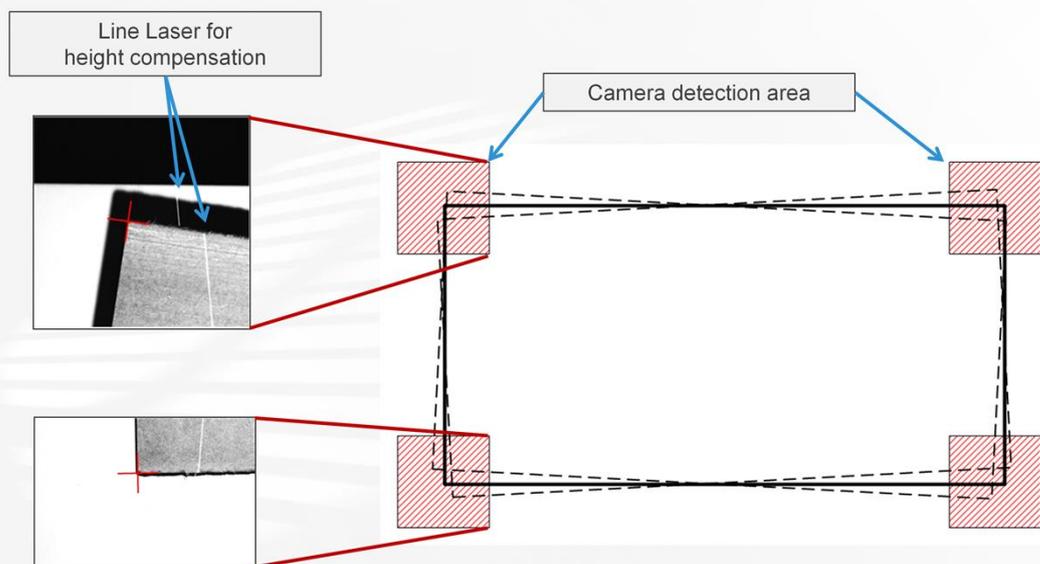
After being cut to length from an endless strand, the individual boards are measured on a conveyor track as they pass through the system.

Above this track, four programmable cameras are mounted on a gantry, with the cameras mounted on a movable carriage positioned in the rear of the passage in the direction of transport.

With the aid of the carriage, the camera system is adjusted to the different board lengths. Its setting accuracy is on the 0.01 millimeter scale. A small photoelectric sensor provides front-side detection and activates the capture function (triggers the cameras).

The boards will be transported on a belt or roller conveyor, the SicoCam gantry is positioned above it and each board is measured during movement up to a maximum speed of four meters per second.

There is no mechanical connection to the existing conveyors. It's completely decoupled, and there is no need to make any modifications to the existing machinery, including functional modifications or decelerating of the boards.



The heart of the system is the camera with its hard- and software. Not every camera is capable of the performance, sensitivity, and rapid shutter speed necessary for this task. When it comes to exposure time, we need to be working in the microsecond range.

The pre-installed, high-performance HALCON image processing library and the flexible design of web-based human machine interfaces make it possible to adapt the solution perfectly to specific customer requirements.



A screen on the equipment and in the press control center visualizes the measurement results, which are archived for a period of four weeks.

The order data supplied by the higher-level plant PLC are available to the measuring system for automatic adaptation to the relevant product geometry.

SIEMENS SIMATIC HMI

Siempelkamp cut correction for MDS 1-3 7/26/2018 1:58:25 PM

	actual DDS	SicoCam	memory		
scaling DS 1	10001,5	10003,2	10001,5	Calculate diagonal	act. values to memory
scaling DS 2	10012,0	10016,3	10012,0	Calculate meas. wheel	recover old values
scaling DS 3	10007,4	10007,4	10007,4	Calculate tandem cut	SicoCam values transfer
measuring wheel	49,916	49,865	49,916	Calculate trimmer 1	refresh measuring
distance saw 1 <->2	511,6	511,6	511,6	Calculate trimmer 2	
distance saw 1 <->3	1914,0	1914,0	1914,0		
distance saw 2 <->3	705,4	705,4	705,4		
calb. value trimmer 1 L	1486,0	out of limit	1486,0		
calb. value trimmer 1 R	1498,0	out of limit	1498,0		
calb. value trimmer 2 L	1483,0	1483,0	1483,0		
calb. value trimmer 2 R	1477,0	1477,0	1477,0		

TOUCH

F1 F2 F3 F4 F5 F6 F7 F8

The measured values can (after adjustment of the main PLC) also be used for automatic correction of the diagonal saw (length and diagonal correction). There is a separate button installed in the SicoCam monitor to trigger the correction (using a medium value of about 20 measures boards).

## SicoCam at a glance

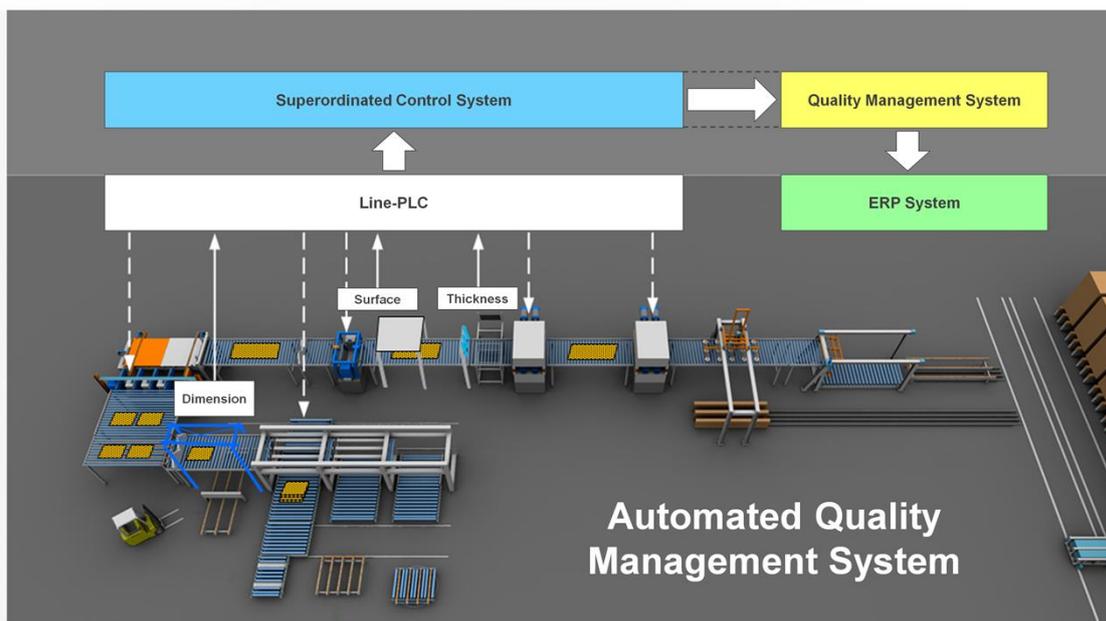
### Technical data

- **Possible board dimensions:**
  - Length 1,200 – 8,800 mm ( $\approx 4'$  -  $29'$ )
  - Width 915 – 3,200 mm ( $\approx 3'$  -  $10'$ )
  - Thickness 3 – 60 mm ( $\approx \frac{1}{8}''$  -  $2\frac{3}{8}''$ )
- Board surface unsanded or sanded
- **Accuracy of +/- 0.3 mm (0.012")**
- Lateral misalignment: max. +/- 30 mm ( $1\frac{1}{4}''$ )
- Conveying speed up to **4m/sec** ( $13'$ /sec) and a **board cycle time of 1.1 sec.**

### Features

- **No measuring faults** due to slipping boards or acceleration during measuring process
- Optical system characterised by extreme **low maintenance**
- **Individual configuration** for almost all applications possible
- **Can also be used in the sanding and cut-to-size line** to measure board dimensions
- Connection to superordinated control system for **data-transfer as required**

## SicoCam applications in future



SicoCam is an addition to the SicoScan device family from Siempelkamp, which is used to provide quality measurement and fully automated process control in the production of wooden composite boards.

Because of customers feedback it becomes more and more apparent, that the installation of SicoCam is not limited to cooling and stacking lines behind presses, but also particularly for finished boards in sanding and cut to size lines. SicoCam can initiate format changes in fully automated fashion as a stand-alone measuring system or when used within a control circuit.

The next step in the near future will be the integration of SicoCam to the super-ordinated production and quality management system to provide higher profitability.

## SicoCam

Permanent quality assurance!

**Safety at work!**

High dimensional accuracy!

SicoCam is a fully automated measuring system for dimensional inline board measurement.

Four cameras capture the corners of every board that passes by during production. The measurement data undergo software-supported processing in the form of width, length, and diagonal dimensions and can be evaluated immediately.

**SicoCam stands for a safer working environment, guaranteed quality, and significantly reduced waste.**

## THANK YOU FOR YOUR ATTENTION

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