

# BoardProfiler

System for wane and deformation measurement of boards and planks.



- Optimization of cutting for trimmers
- Reject/turning before edgers
- Deformation measurement
- Thickness and width measurement, multiple tracks



### Wane optimization for cutting in trimmers

The BoardProfiler calculates the optimum cutting position for each board based on the customers specified rule tables. By comparing the size and location for measured width, thickness and wane the system determines the optimum cutting position and transmits this date.

The system can be used with trimmers that cut at one or both ends of the board.



### Rejecting/turning before edgers

With single sided camera edger systems the wane of the board must be in the correct orientation for the camera. The BoardProfiler will determine which side of the board has wane so the board can be turned before the camera.

In addition it will also reject the boards if the thickness, flatbow or twist are not within the tolerance.

## Software

LIMAB's long experience is supplying the wood industry means that all the functionality that is likely to be needed is provided in the standard system. This allows an operator with minimum training to configure the wane rules, reject rules, and data archiving. The BoardProfiler runs on a standard PC with Windows XP operating system.

For each sensor measuring position (track) the system will determine the following measurements:

- Thickness
- Length
- Cove
- Side bow
- Flatness
- Width
- Wane
- Twist
- Flat bow

Track	Status	Thickness	Width	MeanWidth	StartEdge	StopEdge	Flatness	VaneSide	VaneArea	VaneDF	VaneDR	VaneTF	VanePR	VaneWF	VaneWR	Ta
1025	Down	16.8	102	102	0	0	90	Down	10	5.2	0.0	14.2	18.3	4	0	12
1022	Ok	18.7	101	101	0	0	79	Down	25	17.0	0.0	1.8	18.7	22	0	4
1048	Ok	18.7	103	103	0	0	72	Down	24	12.7	5.7	5.9	13.0	25	6	4
1011	Ok	18.2	104	104	0	0	62	Down	134	11.7	6.4	6.2	12.1	30	12	4
129	Ok	18.1	98	98	0	0	66	Down	53	8.9	5.5	9.0	12.8	21	11	2
328	Ok	18.8	103	104	0	1	69	Down	167	14.8	8.8	4.1	10.1	23	14	0

**Board Data**

Vane Rules: Grundloeflat

Thickness: 18.7 mm, Nom Thickness: 19.5 mm, Cut points: Thickness 0, Width 0

Width: 101 mm, Nom Width: 102 mm, Flatness: 90

Length: 433.7 mm, Sidebow: 0 mm, Shape class: Flat

End: 0 mm, Flatness: 0 mm, Cove side: Up

Cut: 1623 mm, Vane: Up, Saw Height: 18.8

Quality: 01



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LIMAB BoardProfiler is a complete system for the in-process measurement of board dimensions and shape. The system is designed for use on transversal conveyors and being modular the number and location of the measuring sensors can be selected offering optimum performance and providing a cost effective solution for any sawmill. The system can easily be retrofitted to existing lines without the need for costly modifications or fully integrated to new ones. Interfaces are available to many of today's OEM sawmill equipment suppliers.

The BoardProfiler uses LIMAB PreciCura SR laser triangulation sensors which are proven as a reliable and very accurate with numerous installations worldwide. The sensors provide the high speed measurement necessary to provide detailed profile measurement even on today's fastest lines. The sensors are connected on a CAN-Bus network which minimises cables and simplifies the installation ensuring reliable data transfer. Due to the non contact measuring technique and the ruggedized design the system is extremely reliable requiring very low maintenance. The system is not affected by timber moisture content and can be used for grading both green and dried wood.

References world-wide:  
Over 90 BoardProfiler systems (2008)



### Thickness and width sorting

The overall dimensions of finished boards are accurately measured at multiple positions along the board length for quality assurance purposes. Non conforming product will be rejected and statistics are compiled for a complete run which are displayed or printed on request.

The system can also be used for enhanced sorted of boards into bins in drop sorters.

The...



### Cup and shape measurement (planer mills)

Mounted in a planer the BoardProfiler will evaluate the shape of the board and determine the orientation of the cup and provide a signal for turning. The overall shape such as flatbow, sidebow and twist will also be determined and enabling poor boards to be rejected. A big advantage is that it works in transversal

conveyor lines instead of in lineal conveyors. This means that the space needed for measuring is less than 1m of the conveyor instead of otherwise typical 10m.

The system can be used stand alone but are also in many installations connected to market leading vision systems giving BoardProfiler information.

# Technical specifications

Lasers	
Type	LIMAB PreciCura SR
Stand off	100 mm (3,9")
Measuring range	200 mm (7,9")
Resolution	0.01 mm (0,001")
Measuring rate	2000 Hz
Power supply	18-36 VDC, <180 mA
Interface	CAN-Bus, max 1Mbit/sec
Protection class	IP65, NEMA 4
Laser class	2 (IEC 825)
Operating temperature	0-40°C (32-104°F)
BoardProfiler System	
Minimum number of tracks	1 (2 lasers)
Maximum number of tracks	32 (64 lasers)
Thickness accuracy (at 1m/sec)	$\pm 0.2 \text{ mm } \pm 2\sigma$
Width resolution	1 mm at 1m/s, 0.5 mm at 0.5 m/s (depending of conveyor stability)
Wane width (at 1m/sec)	$\pm 2 \text{ mm } \pm 2\sigma$
Wane depth (at 1m/sec)	$\pm 2 \text{ mm } \pm 2\sigma$
Flatness (at 1m/sec)	$\pm 1 \text{ mm/m } \pm 2\sigma$
Twist (at 1m/sec)	$\pm 0.5^\circ \pm 2\sigma$
Edge bow (at 1m/sec)	$\pm 1 \text{ mm/m } \pm 2\sigma$
Cove (cup) (at 1m/sec)	$\pm 0.1 \text{ mm } \pm 2\sigma$
Length measurement	
LMS6048 (optional)	
Measuring range	4800 mm (188,98")
Resolution	1 mm (0,039")
Repeatability	$\pm 1.5 \text{ mm } \pm 2\sigma$ (0,059")
Measurement object	
Board types	Green or dry
Conveyor spacing	300 ... 1500 mm
Board width	40 ... 600 mm
Board thickness	5 ... 150 mm
Board length	1.8 ... 12 m
Line speed	0 ... 2 m/s
Environmental conditions	
General	No direct sunlight on the measuring area

## Software functions:

- Real time graphs – showing cross section of the board at each measuring position.
- Numerical table – showing all processed measured values.
- Logging of board data – unlimited number of fully processed boards
- Product database – Defining board dimensions, tolerances and quality classes
- Alarm outputs – Reject signals, sorting signals, cutting signals
- Calculation of cutting proposal and transfer to trimming saw
- Statistics package – (optional)
- TCP/IP, Serial or Parallel communication for transmitting measurement values and receiving configuration data
- Service menu – system diagnostics and calibration.

We reserve the right to introduce modifications without prior notice.



LIMAB were founded almost 30 years ago and have a long tradition of producing laser sensors and non contact measuring systems to meet the needs of the sawmill industry. The headquarters and manufacturing plant is located in Gothenburg, Sweden. LIMAB have regional offices in the USA, Finland, Germany and the UK and sell to other parts of the world directly from Sweden or via representatives, agents and partners. Today we have customers benefitting from using our measuring systems in sawmills in the Nordic countries, Europe and North America.



**LIMAB**®  
CONTROL BY MEASUREMENT

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