

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 customers specified rule tables. By comparing the size and location of measured width, thickness and wane the system determines the optimum cutting position and transmits this data.

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



Rejecting/turning before edgers

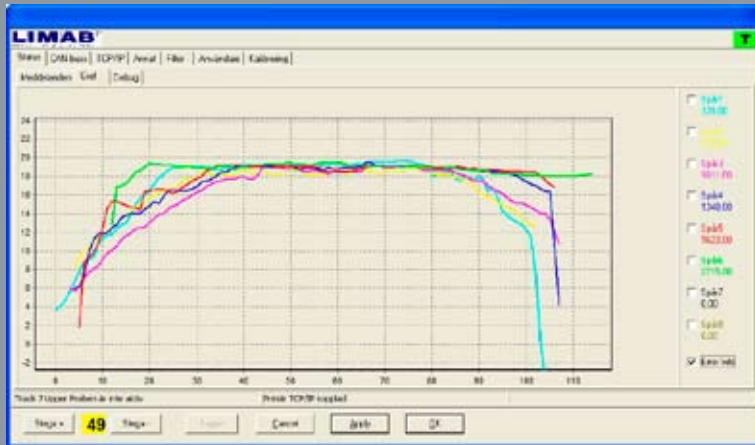
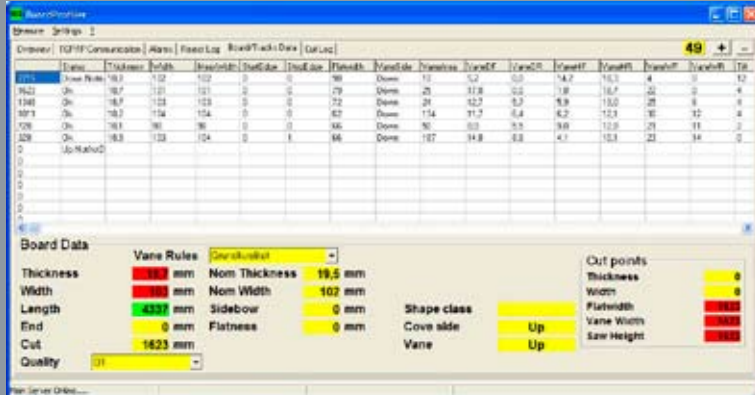
Using single sided camera edger systems the wane of the board must face the camera. The BoardProfiler measures both board sides accurately and gives board turning signal if necessary. Boards will also be rejected if the thickness, flatbow, crook or twist is not within tolerance.

Software

LIMAB's long experience in 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
- Conicity
- Width
- Wane
- Twist
- Flat bow



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The LIMAB BoardProfiler is a complete system for the inline-process measurement of board dimensions and shape. This system has a modular design structure and is designed for use in transversal conveyors. 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 high resolution board profiles. The sensors are connected in a CAN-Bus network which minimizes cabling and simplifies the installation ensuring reliable data transfer. Due to the non contact measuring technique and the solid 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 100 BoardProfiler systems (2009)



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 products will be rejected and statistics are compiled for a complete run, displayed or printed on request.

The system can also be used for enhanced sorting of boards into drop sorters.



Cup and shape measurement

Mounted in a planer or sorting mill the BoardProfiler will determine the orientation of the cup and provide a signal for board 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 as stand alone or connected to vision systems giving required board dimension profile data.

Technical specifications

Lasers

Type	LIMAB PreciCura SR
Stand off	100 mm (3,9")
Measuring range	200 mm (7,9")
Resolution	0.01mm (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)	± 0.2 mm ±2σ
Width resolution	1 mm at 1m/s, 0.5 mm at 0.5 m/s (depending of conveyor stability)
Wane width (at 1m/sec)	± 2 mm ±2σ
Wane depth (at 1m/sec)	± 2 mm ±2σ
Flatness (at 1m/sec)	± 1 mm/m ±2σ
Twist (at 1m/sec)	± 0.5° ±2σ
Edge bow (at 1m/sec)	± 1 mm/m ±2σ
Cove (cup) (at 1m/sec)	± 0.1 mm ±2σ

Length measurement

LMS6048 (optional)	
Measuring range	4800 mm (188,98")
Resolution	1 mm (0,039")
Repeatability	± 1.5 mm ±2σ (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
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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 is represented in 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 North America Inc.

9301 Monroe Road, Suite B
Charlotte, NC 28270
USA
Tel: 001 (0) 704 321 0760
www.limab.com

LIMAB Oy

Henry Fordin Katu 5K
FIN 00150 HELSINKI
Finland
Tel: 00358 947 80 36 68
www.limab.fi

LIMAB GmbH

Mitterlangstr. 28
D-82178 Puchheim
Germany
Tel: 0049 (0) 89 84058320
www.limab.de

LIMAB UK Ltd

Unit 1J Chelston Business Park
Wellington
Somerset, TA21 9JQ UK
Tel: 0044 (0) 1823 668633
www.limab.co.uk



Exportgatan 38 B
SE-422 46 HISINGS BACKA, Sweden
Phone +46 (0)31 - 58 44 00
Fax +46 (0)31 - 58 33 88
sales@limab.se - www.limab.com