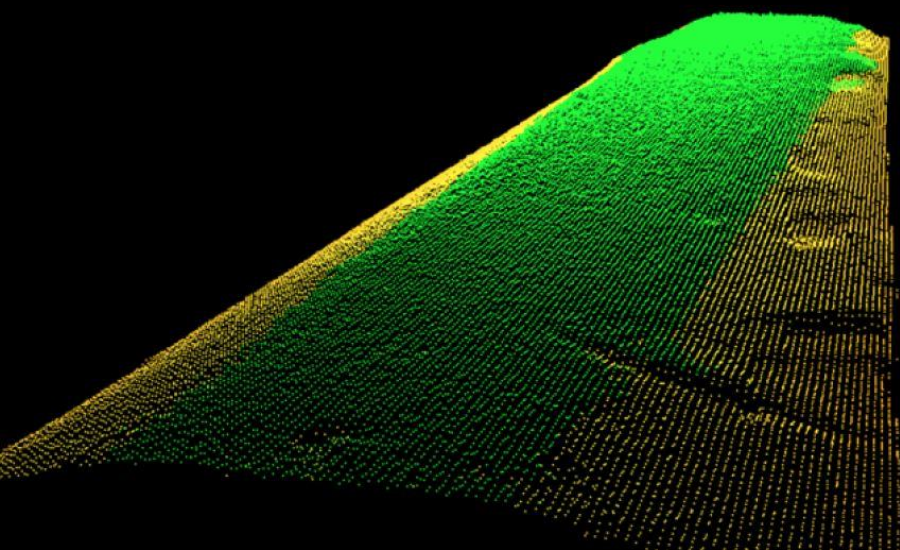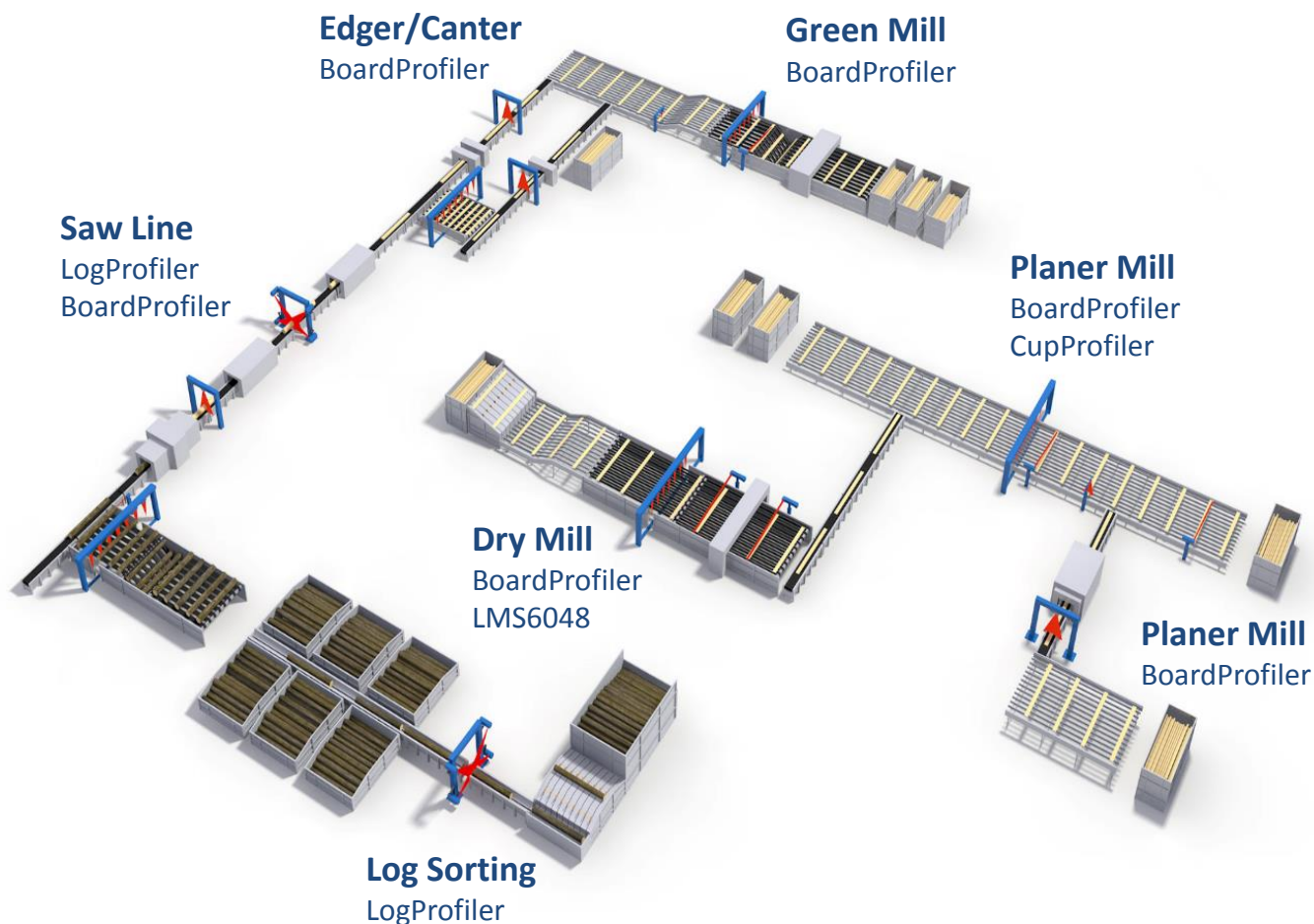# LIMAB ®
CONTROL BY MEASUREMENT

BoardProfiler 3D
Saw mill optimization for transversal and lineal processes

- Laser based board scanning with high resolution
- Optimization of cutting for trimmers
- Optimization for edgers, rip-saws and cross-cut saws
- Dimensional control and defect measurement
- Deformation measurement

We measure your way to perfection
LIMAB systems for saw mill optimization

Edger/Canter
BoardProfiler

Green Mill
BoardProfiler

Saw Line
LogProfiler
BoardProfiler

Planer Mill
BoardProfiler
CupProfiler

Dry Mill
BoardProfiler
LMS6048

Planer Mill
BoardProfiler

Log Sorting
LogProfiler

LIMAB

LIMAB started their activities in the early 80's. Since then, we have focused on developing laser based sensors and systems for a wide scope of measurement applications in saw mills and for the flooring industry.

Product development and production is done within the company, which makes it possible to have full control of our products and offer high quality sensors and systems according to the requirements of our customers.

The BoardProfiler 3D is a state-of-the-art, in-line measurement system for transversal and lineal applications.

We are also offering systems for log sorting, the LogProfiler, dimensional control, the TSorter, board length measurements, the LMS6048, cup detection, the CupProfiler, and stack layer measurements, the SLMS.

LIMAB is the one-stop-shop for dimensional measurement solutions.

BoardProfiler 3D

LIMAB has a history of more than 30 years in providing the saw mill industry with laser-based measurement systems for sorting and yield optimization purposes.

We have now reached the third generation of the well-renowned BoardProfiler system, the BoardProfiler 3D.

The BoardProfiler 3D integrates the LIMAB 2D sensor, the ProfiCura, which makes a full 3D scan of the board. It gives the possibility to get the complete board dimension and will also detect defects such as wane, holes as well as other dimensional defects. The BoardProfiler 3D is designed for both transversal lines, the BoardProfiler 3D-T, and lineal production lines, the BoardProfiler 3D-L.

The ProfiCura sensor scans every mm of the board with high accuracy at high line speeds. It´s a robust sensor for applications in any sawmill environment. The ProfiCura sensor is designed a variety of applications and provides accurate readings regardless of structure, color or moisture content of the board.

BoardProfiler 3D provides high accuracy board measurements for installations such as in trimmers, sorting lines, planer lines, edgers and rip-saws with the purpose of grading, sorting and optimization.

The operator software combines user-friendliness and customization possibilities.

LIMAB ProfiCura 2D sensor

The LIMAB ProfiCura 2D sensor family includes several versions in order to cover different measurement tasks and applications. Each sensor version has its own stand-off, measuring range, field of view, measurement speed and accuracy.
The ProfiCura 80 and 170 are mainly used when thickness accuracy is of highest importance. The sensor detects small thickness variations as well as cracks and holes.

ProfiCura 180 and 300 have a larger stand-off and measurement range, which as an example is important for log scanning.
The ProfiCura 600 is specially designed for transversal processes and integrated in the BoardProfiler 3D-T system.

BoardProfiler 3D-T for Transversal lines

The BoardProfiler 3D-T is a board scanning system for detection of geometrical defects of a board in a transversal process at a green mill, dry mill or planer mill. Every mm along the board is scanned and the system detects wane, thickness, width and other dimensional defects. This information is then processed by our proprietary software and optimizes each board to the best yield and highest value.

The system can be customized and equipped with different sensor configurations, from a full board scanning with multiple ProfiCura 600 sensors or a combination between ProfiCura and PreciCura sensors to the basic set-up including PreciCura sensors mounted modularly direct in front of each trimmer blade. There is always a combination that will fit your requirements and the installation needs a minimum of space.

The system can easily be retrofitted to an existing line.

The BoardProfiler 3D-T for transversal processes is available for several applications.

BoardProfiler 3D-TT – Trimmer system
BoardProfiler 3D-TE – Edger system
BoardProfiler 3D-TR – RipSaw system
BoardProfiler 3D-TC – Cross-Cut system
BoardProfiler 3D-TD – Dimension system
BoardProfiler 3D-TS – Shape system

BoardProfiler 3D-TD
Dimension sorting

The overall dimensions of the finished board are scanned with a high scan resolution. The data is evaluated by the BoardProfiler 3D-TD to accurately determine the overall dimension and quality grading for sorting and classification. Dimensional statistics are produced which are available for quality assurance or process analysis purposes.

BoardProfiler 3D-TS
Shape-optimization and classification

The BoardProfiler 3D-TS accurately measures the overall shape of the board and will determine side-bow, twist and flatbow for classification according to the defined geometrical rule tables. The system is normally used in classification lines to provide correct geometric deformation information to the saw mill management system.

BoardProfiler 3D-TT
Optimisation for trimmers

The high measurement resolution of the ProfiCura 600 sensors ensures that every mm of the board is scanned even on high speed lines. Detecting the precise 3D model of each board, the BoardProfiler 3D-TT will calculate the best trimming position based on your rule tables. This ensures the best possible trimming and will maximize your production yield whilst maintaining the best quality products for your customers.

BoardProfiler 3D-TE/TR/TC
Edger, Rip-saw and Cross-cut saw optimization

Edger, Rip-Saw and Cross-Cut optimizations for transversal production lines are made exactly in the same way as with our lineal systems. The difference is that we measure the board in the transversal process before the boards enters the lineal process, where it will be fixed and oriented correctly before it is processed through the saw blades/cutter.

BoardProfiler 3D L for Lineal lines

LIMAB BoardProfiler 3D-L gives a complete scanning of the thickness profile of boards in lineal conveyors.

The system is used to optimize wooden boards in edgers, rip-saw lines or in other optimization processes. The ProfiCura 2D sensors generates a complete description of the board's geometry and its defects. This information is then processed by the software resulting in cutting proposals for an optimized output.

The ProfiCura sensor is the heart of the system and has today different versions depending on the accuracy and resolution required by the customer. Boards up to 600 mm wide can be measured. The sensor is very easy to install and requires a minimum of space.

The system can easily be mounted in an existing conveyor process with minimal installation costs.

The BoardProfiler 3D-L for lineal processes is available for different applications.

BoardProfiler 3D-LE – Edger system
BoardProfiler 3D-LR – RipSaw system
BoardProfiler 3D-LC – Cross-Cut system
BoardProfiler 3D-LH – Hit & Miss system
BoardProfiler 3D-LS – Shape system
BoardProfiler 3D-LD - Dimension system
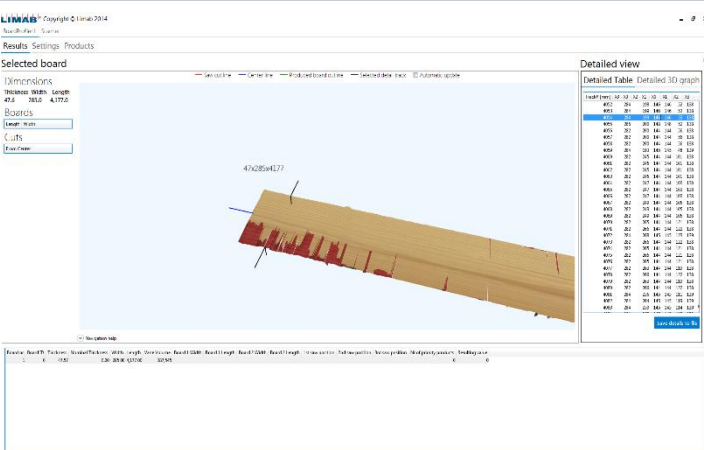
BoardProfiler 3D-LH
"Hit & Miss" Thickness & width

The overall dimensions of the finished board are scanned with high scan resolution. This data is used by the BoardProfiler 3D-LH to accurately determine the overall dimension of the boards. With the Hit & Miss system we find small geometrical errors which are not accepted in the process. These defects are evaluated for sorting or classification in for example planer lines or floor production lines.

BoardProfiler 3D-LS
Shape-optimization and classification

The BoardProfiler 3D-LS accurately measures the overall shape of the board and will determine side-bow, twist and flat-bow and then classify according to your geometrical rule tables. The system is normally used in classification lines to provide correct geometric deformation to the saw mill management system.

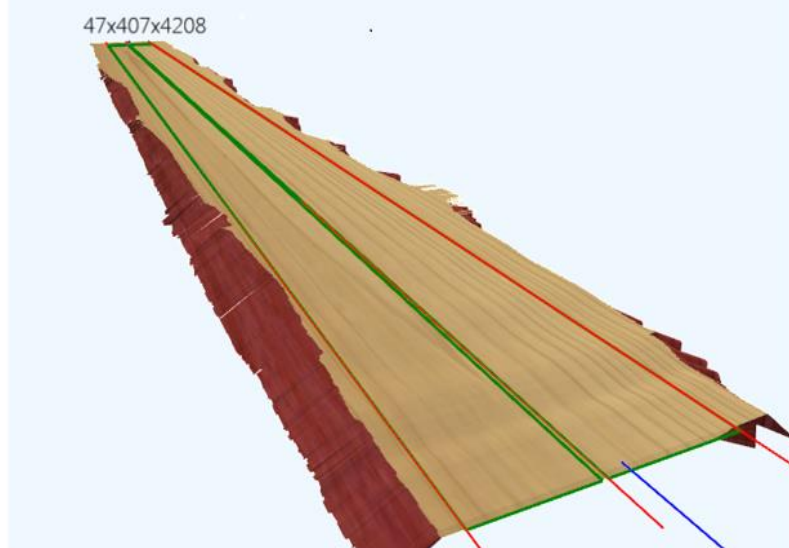## Selected board

Dimensions

Thickness	Width	Length
47.4	407.0	4,208.0

Boards

Length	Width
4000	126
4000	106

Cuts

From Center
106
20
131

— Saw cut line — Center line — Produced board outline — Selected detail track ☑ Automatic update

47x407x4208

ⓥ Navigation help

Detailed view

Detailed Table   Detailed 3D graph

Track# [mm]	X3 - X0	X2 - X1	X0	X1	X2	X3
0	308	228	179	130	98	129
1	308	231	179	132	99	129
2	308	244	179	145	99	129
3	308	246	179	147	99	129
4	308	251	179	152	99	129
5	380	289	190	141	148	190
6	380	289	190	141	148	190
7	380	289	190	141	148	190
8	380	289	190	141	148	190
9	380	289	190	141	148	190
10	380	289	190	141	148	190
11	380	289	190	141	148	190
12	380	290	190	141	149	190
13	380	290	190	141	149	190
14	380	290	190	141	149	190
15	380	290	190	141	149	190
16	380	290	190	141	149	190
17	380	290	190	141	149	190
18	384	289	190	137	152	194
19	384	290	191	139	151	193
20	384	290	191	139	151	193
21	384	290	191	139	151	193
22	386	289	190	135	154	196
23	386	289	190	135	154	196
24	386	290	190	135	154	196

Save details to file

Board nr	Board ID	Thickness	Nominal Thickness	Width	Length	Vane Volume	Board 1 Width	Board 1 Length	Board 2 Width	Board 2 Length	1st saw position	2nd saw position	3rd saw position	Nr of priority products	Resulti
1	0	47.56	0.00	285.00	4,177.00	324,233	187	4,000			87	100	300	0	12
2	0	46.81	0.00	416.00	4,214.00	125,204	157	4,000			157	0	162	0	21
3	0	47.03	0.00	414.00	3,307.00	227,786	157	3,000	187	3,000	157	0	192	0	17
4	0	47.38	0.00	407.00	4,208.00	2,495,949	126	4,000	106	4,000	106	20	131	0	15
5	0	46.82	0.00	416.00	4,187.00	1,423	187	4,000	187	4,000	187	0	192	0	25
6	0	47.36	0.00	285.00	4,135.00	2,257,418								0	
7	0	47.82	0.00	364.00	4,085.00	6,155,148	106	4,000			66	40	300	0	6
8	0	48.15	0.00	406.00	4,213.00	2,594,231	126	4,000			66	60	300	0	8
9	0	47.41	0.00	284.00	4,131.00	2,699,597	106	4,000			46	60	300	0	6

BoardProfiler 3D-LE/LR
Edger and Rip-saw optimization

The BoardProfiler 3D-LE/LR system measures the board from any direction to provide data for cutting in systems from 1 – 5 saw-blades. The advantage of the system is its high thickness accuracy. When defining a cut decision in an optimization, it is important to correctly detect the board thickness and separate wane from cup. A correct and accurate cutting decision will result in yield improvements.
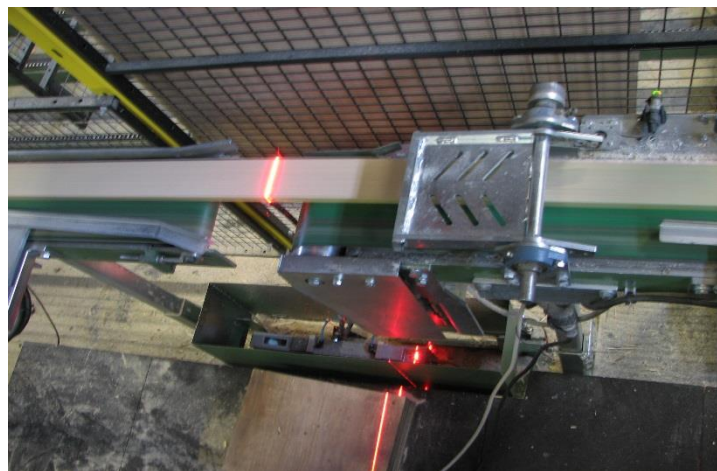
BoardProfiler 3D-LC
Cross-cut saw optimization

The BoardProfiler 3D-LC system optimizes any kind of wood in speeds up to 400 m/min. The geometrical defects of the board, such as thickness, width, wane and shape will be measured according to your specifications. The system handles up to five separate saw blades.

LIMAB BoardProfiler 3D

Technical Specification

Production

Board types	Sawn green or dry
Board thickness	1 … 800 mm
Board width	30 … 600 mm
Board length (typically)	0,2 … 10 m
Line speed	0-2 m/s in transversal and up tp 400 m/min in lineal process

Sensors

Sensors	ProfiCura	PreciCura
Measuring technique	2D laser triangulation	1D laser triangulation
Operating temperature	0°C … +40°C	0°C … +40°C
Data interface	Ethernet	Ethernet
Laser power	Visible red laser < 200 mW, 3B	Visible red laser, Class 2
Power supply	18 … 36 VDC	18 … 36 VDC
Protection class	IP65	IP65
Measurement speed/sec	>3000 profiles	2000 Hz
Thickness accuracy	< ± 0.05 mm @2σ	< ± 0.03 mm @2σ

We reserve the right to introduce modifications without prior notice

LIMAB – the complete scanning solution provider

Our core capability resides in our ability to deliver effective laser scanning systems for our customers. Through our experience and understanding of your needs we engineer and produce the right process measurement solutions that will improve your sawmill production yield.

LIMAB was founded 30 years ago and has a long tradition of developing and manufacturing laser based technology. We supply laser guide lines, laser sensors and complete systems for dimensional and profile measurement in sawmills, panel production and steel mills. Headquarters and manufacturing plant is located in Gothenburg, Sweden. LIMAB has regional offices in the USA, UK, Germany and Finland as well as approved distributors and partners in other regions.

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