Optimes Line

Versatile and powerful edger optimizer system
for high piece counts

EWD

The SawLine Company™

Versatile and powerful edger optimizer system
For high piece counts

The operator has an overall view of the board manipulation from his noise and dust-protected workplace in the control cabin

Sorting tipple

Positioning by centering arms

Flexible edger with top arbors

The edger optimizer system Optimes^{Line} stands for maximum value yield in the performance class of 30 – 40 – 50 boards per minute. The high flexibility of this system encompasses different mechanized board manipulation solutions, various scanning systems including grade scanning and the selection between different flexible top arbor saw units for almost all requirements.

Lumber infeed to the edger optimizer system Optimes^{Line} is possible from the left or right side and also from both sides.

Edger optimizer system with wide application range
Functions and technical components

The board separation
Boards from the transfer conveyor are separated by an S-shaped unscrambler conveyor. Hydraulically activated flippers kick out the leading board in case of a double occupancy of the conveyor dogs. A faster running cross conveyor pulls the board away after the singulation process.

S-shaped unscrambler

The assessment and board manipulation area
At this position, the operator can influence the further processing of the boards, with the following possibilities:
- Input of a quality/grade information
- Decision for a specific board alignment
- Turning of a board to grade the 2nd face
- Input of a trim back decision
- Selection of the drop-out gate for reject pieces
- Feed back to the board separator to clear the deck

Queuing system with stop hooks

The board trimming
A 0-line trim saw and driven feed rollers allow to automatically trim back the fish tail end of a board 0,5 – 1,5 m upon command to avoid further problems because of the flimsy slab end. For special applications boards can be trimmed to a finished length or for pallet boards cross-cut into several short boards. These short boards are loaded onto the edger infeed after trimming together but then edged as individual boards.

0-Line stop and cross-cutsaw

The board loading and centering on the infeed table
In front of the infeed table, optical sensors measure the contour and a thickness measuring device the thickness of the boards. Thereafter, the boards are automatically positioned either by program default or by operator command in center mode, or skewed according to the optimum board axis or for full taper edging left or right side with the centering units.

Infeed table with row of sensors

The linear transport
Pre-positioned top press rollers and a top hold down chain after the scanners guarantee a precise linear transport of the boards through the scanning system and up to the edger saws. The scanning and optimization results can therefore be executed direct and with absolute precision.

Precision linear scanning

Chain bed with top hold down chain

Scanning-System

Precision scanning in linear mode

The scanning system

The precision scanning system consists of 2 cameras and 4 laser units for an optical scanning of board top and bottom side in linear mode. A turning of the boards before scanning is therefore not necessary.

The geometry scanning of the lumber cross section is done with 800 scans per second and a width resolution of + / -1 mm. The scanning principle is largely not affected by lumber discoloration.
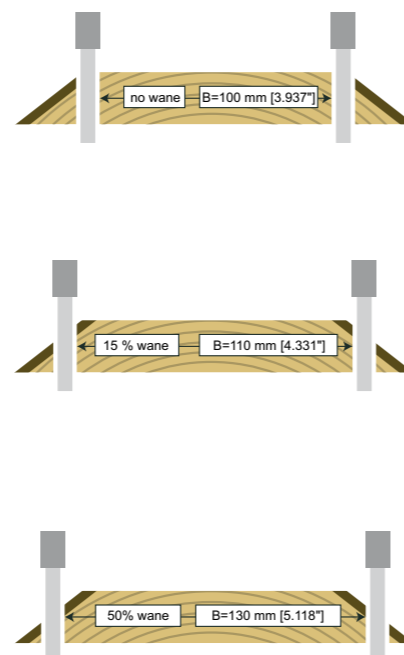
Optionally the scanning system can be fitted with additional units and sensors for an automatic grade detection system.
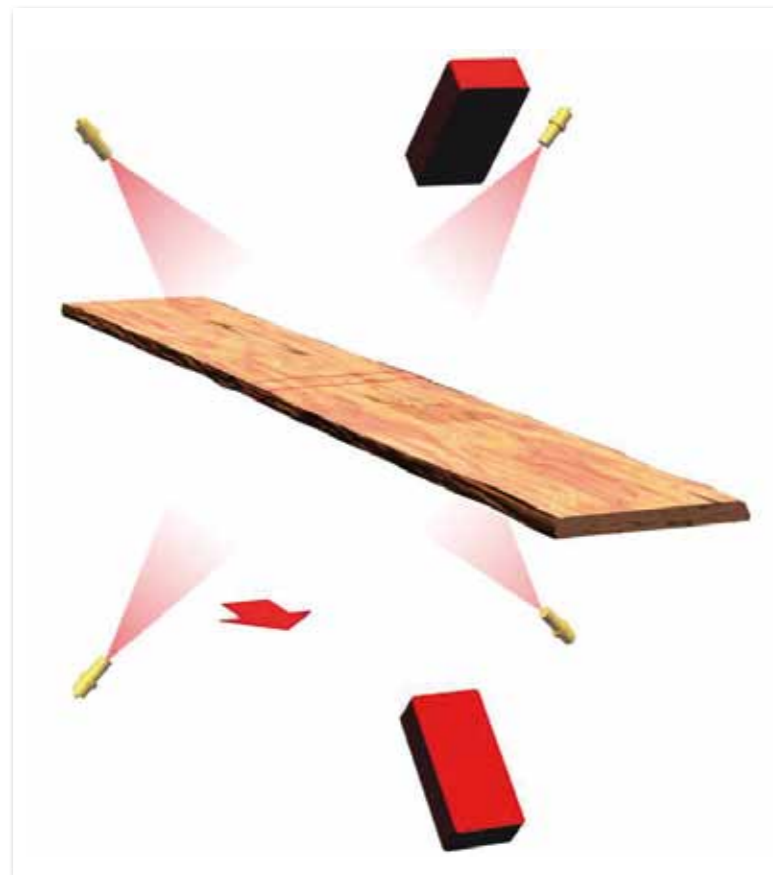
4-Point board scanning system

Example:

- Board width depending on the wane allowance
- Board thickness 18 mm
- Inclination of the wane 30°

no wane | B=100 mm [3.937"]

15 % wane | B=110 mm [4.331"]

50% wane | B=130 mm [5.118"]

Scanning-System

Maximum value optimization

The optimization system

The PC processes the scan signals and compares top and bottom board face. The parameters for the value optimization can be easily adapted by either the operator or the mill management to match the actual production needs. Input of product parameters and priorities is done conveniently via the Windows operator interface of the PC.

The optimization software considers in addition to the saw line alignment according to unedged board contour the alignment of the saw lines according to the optimum axis. Thereby a motion control system moves the saws sideways while in the cut. The achievable recovery result can not be matched by any other edger optimizer system.

$$j = z \quad i = n$$
$$Max \left(\sum L_i \times B_i \times D_i \times W_i \right)$$
$$j = 1 \quad i = 1$$

L = Lumber length, B = Board width,
D = Board thickness, W = Lumber value
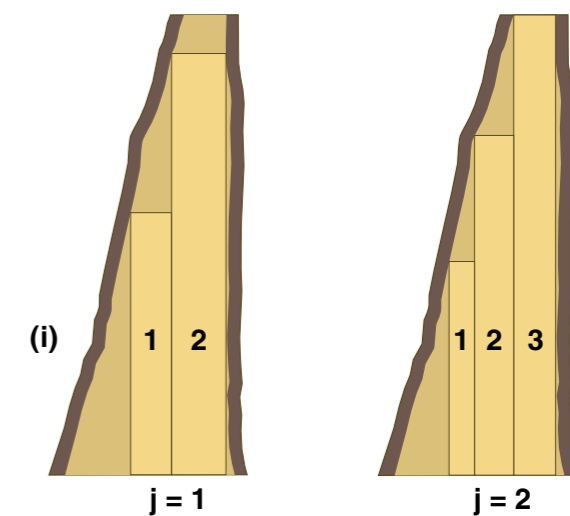
The optimization system calculates the maximum value of the lumber products to be edged from a board trying all possible combinations. The operator can watch the optimization result directly on the PC screen.

Grade scanning
Maximum value recovery by „grade optimization"

The surface grade scanning system

The board edger and ripping system Optimes^Line is optionally available with a surface scanning system for grade scanning and optimization. On rough-sawn board surfaces the system scans and detects knots in size and position on the basis of the surface structure and discerns then positively from dirt. Data are processed and used for the optimization.
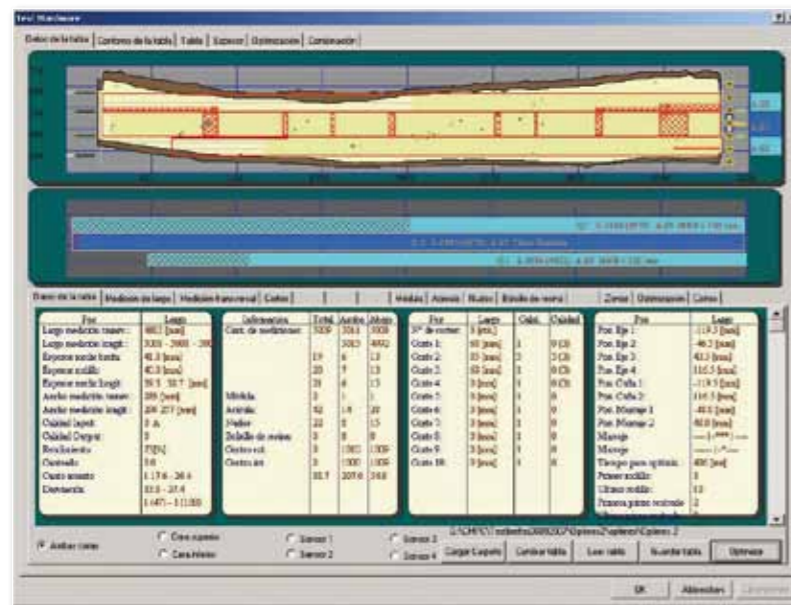
Display of the optimization result for the board, with board contour, position and dimension of the products
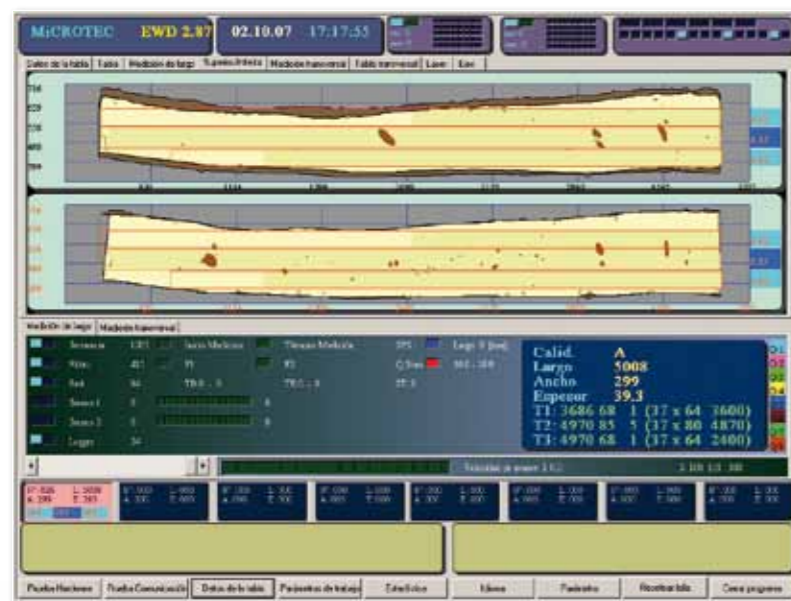
Board top and board bottom surface, with the position of the products, the edging and rip saw lines and the product length

Control and Operation
Components and functions

The electronic control system

An industrial standard high performance PC with Dual-Xeon processors is used for processing of the scan data and the optimization of the edging/ripping solutions. The PC with MS-Windows operating system does the complete processing for scanning, optimization and data management and at the same time offers a comfortable system as operator interface.

The PLC control of all machinery functions is done by a Siemens S7 CPU, which exchanges data with the PC via Ethernet-connection. This ensures a clear separation between data processing and machine controls.

The main parameters of the edging optimization:
- Selection of lumber species and grade
- Input of product dimensions with the respective product value
- Input of allowable wane parameters, allowable wane width and length, separate values for left and right side, per lumber quality (grade) possible
- Input of a product priority
- Automatic detection of square-edged products

All parameters can be changed or updated while the system is operating.

The PLC control manages all machine parameters and controls the complete process of the system. Edger feed speed is automatically controlled, based on board thickness and number of sawlines in the cut. Selection of summer and winter speed tables available.

An integrated diagnosis software and modem or VPN access allow quick help for service calls or for trouble shooting.

The operation

For systems processing up to 30 boards per minute, the operator controls the machine from a working position close to the cross transfer conveyor.

The control of the complete system in the performance class 40 and 50 boards per minute is done from an operator cabin, protected from noise and dust.

The ergonomic, comfortable operator cockpit is an integral part of the system.

Combination edger/gang circular saw BNK
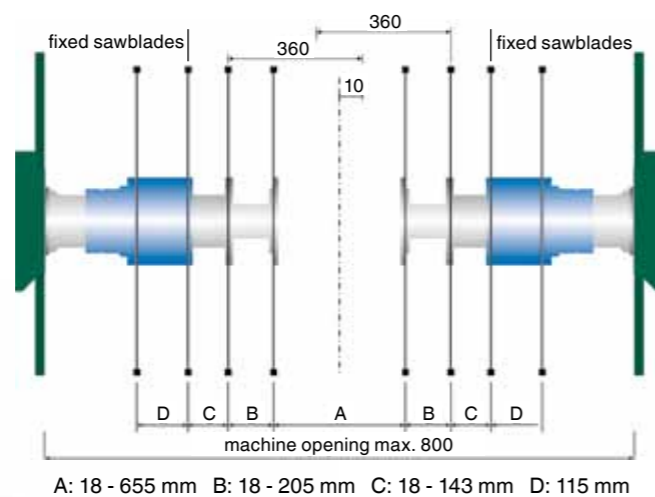
For sawing heights from 17 - 225 mm

BNK 6, Outfeed side

The edger/gang BNK is fitted with two top-mounted, moveable saw arbors. They hold each one saw box saw, one telescopic moving saw and one saw sleeve of 115 mm useable length.

The saw arbors are adjustable in height to adapt the machine to different modes of operation. They can be lifted to even clear the lumber. The width adjustment is done by servo-hydraulic setworks.

The machine design provides full clearance to the bottom for the discharge of sawdust, with most of the machine components installed outside the edger side walls.

Saw set distances of the edger/gang circular saw BNK 6

A: 18 - 655 mm   B: 18 - 205 mm   C: 18 - 143 mm   D: 115 mm

Combination edger/gang circular saw BKO

For sawing heights from 17 - 120 mm

BKO 3, Outfeed side

The edger BKO is a top arbor machine with 2 moveable stub saw arbors, each holding one saw blade. Additionally 1 or 2 moveable saw sleeves can be installed and moved on the saw arbors (BKO 3, BKO 4). With one rip saw head per side and movement via telescopic saw arbor, in total 6 moveable saw heads are possible (BKO 6). The saws are set with servo-hydraulic setworks.

The top arbor design provides optimum sawing conditions for highest feed speeds.
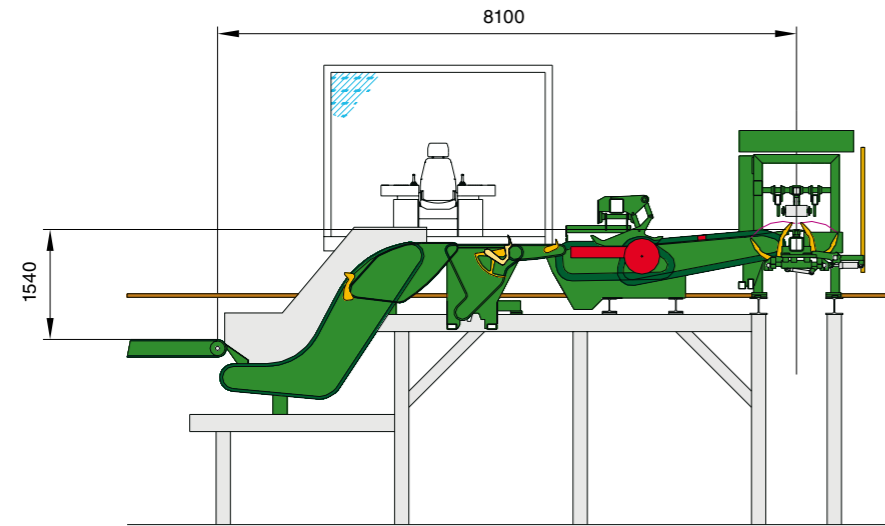
The machine design provides full clearance to the bottom for the discharge of sawdust, with most of the machine components installed outside the edger side walls.

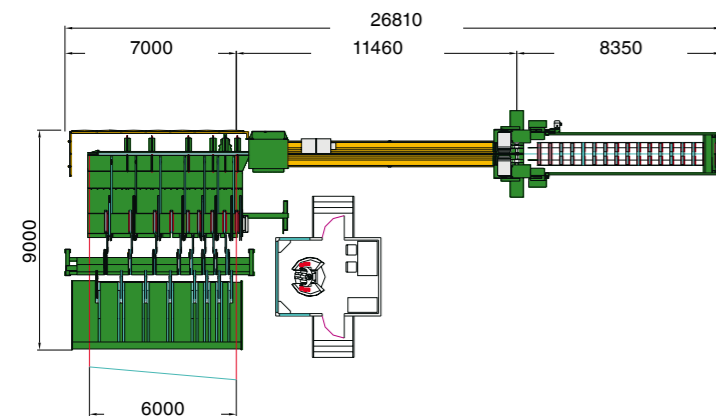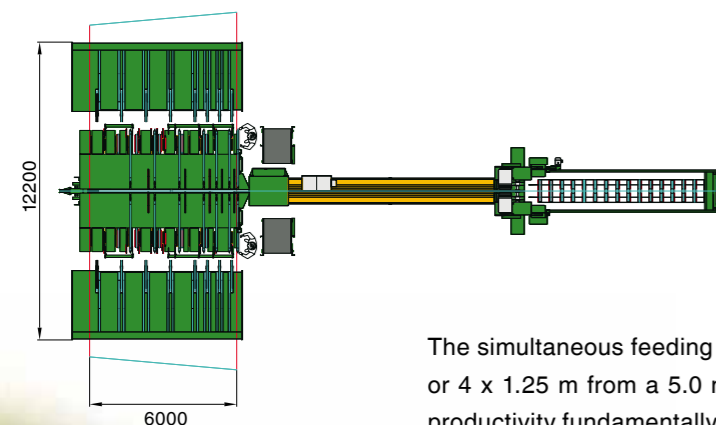Saw set distances of the edger/gang circular saw BKO 4
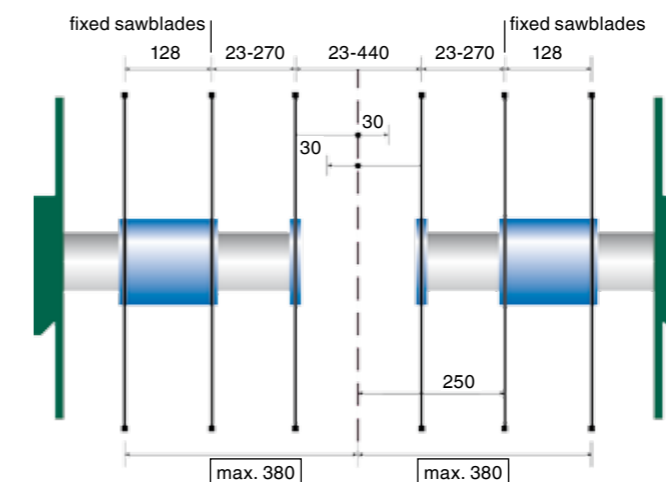
Machine layout

Lumber infeed from left or right side or from both sides possible

8100

1540

Optimes Line – BKO with infeed system from the right side

26810
7000   11460   8350
9000
6000

Optimes Line – BKO with infeed system from both sides

12200
6000

The simultaneous feeding of trim boards, i.e. 2 x 1,25 m from a 2.5 m board, or 4 x 1.25 m from a 5.0 m board is possible. This increases recovery and productivity fundamentally when short lumber is the final product.

Technical data and details

for the performance classes 30 –40 –50 Boards per minute

The machine enclosure

The optimizing edger system Optimes^Line is from scanning to the end of the edgings separator completely housed in. This complete enclosure increases safety and avoids unnecessary dust and noise emissions.

Edging system Optimes-		BNK	BKO	BKO
Piece count max.	pcs/min	30	40	50
Board length	m	1,2 - 6	2 - 6	2 - 6
Board width unedged	mm	70 - 750	70 - 650	90 - 500
Board thickness	mm	17 - 225	17 - 100	17 - 60
Feed speed	m/min	20 - 240	50 - 300	80 - 360
Main drive motor size max.	kW	2 x 132	2 x 90	2 x 90

Due to constant product improvements or developments the illustrations and specifications contained in this brochure are subject to change without notice.

Custom-made solutions
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Custom-made solutions

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Edger Optimizer Technology

CircularSaw & Profiling Technology

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