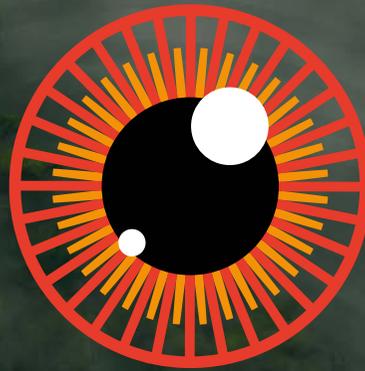


AI-REVOLUTION OF LOG SCANNING



FINNOS

Make the Leap.

FINNOS

Finnos designs, manufactures and installs machine vision and quality control systems for the sawmill industry.

KEY FEATURES

- 100% in-house-development
- Over 50 employees
- 3D & X-ray scanning
- Turnkey solutions
- Headquarters in Lappeenranta, Finland
- Solutions from log sorting to sawline

OPEN & HONEST COLLABORATION

We are a client-oriented, active partner. All of our activities aim to elicit commitment, motivation and development. Our positive spirit reflects on our clients.

CONTINUOUS DEVELOPMENT

Complacency impedes development. We chart, identify and eliminate obstacles that hinder the productivity of our clients. We are always striving towards progress as a company, product and partner.

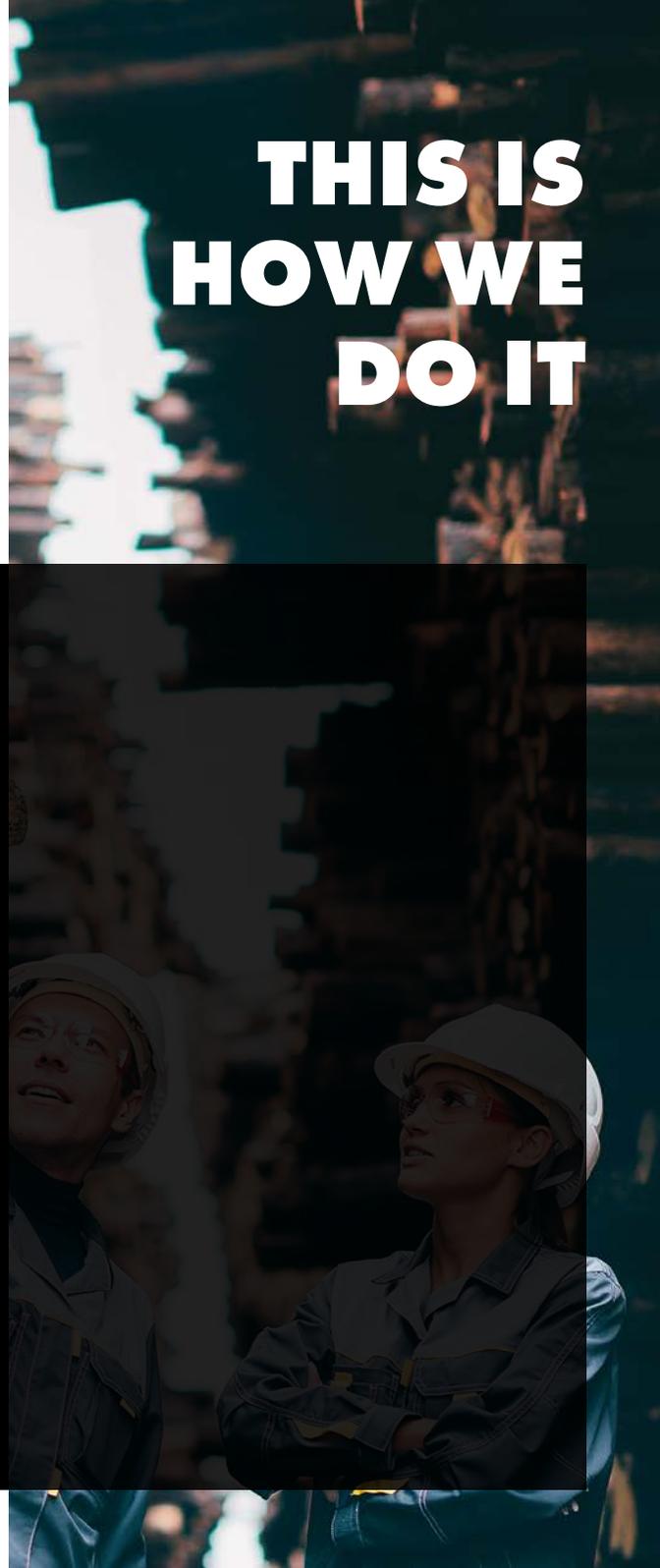
DYNAMICITY & CAPABILITY

Our core principle is to maintain agility and adaptability. Our products and our methods adapt to the evolving needs of our clients.

REFERENCES 2002-2021

- 2002** Stora Enso Honkalahti
- 2003** UPM Korkeakoski
- 2005** UPM Kaukas | UPM Heinola
- 2006** Latvijas Finieris
- 2007** UPM Seikku | UPM Korkeakoski
- 2008** UPM Kajaani
- 2010** UPM Kaukas
- 2011** Kraslesinvest Krasnoyarsk | UPM Korkeakoski | Stora Enso Honkalahti
- 2013** Egger Brilon | UPM Alholma | UPM Korkeakoski
- 2015** UPM Alholma | UPM Seikku | Ormax Monier | Lappi Timber Kemijärvi | Barrus AS
- 2017** Partaharjun Puutarha | JPJ-Wood | Versowood Hankasalmi | Stora Enso Ala (SWE) | UPM Korkeakoski | UPM Kaukas
Stora Enso Uimaharju
- 2018** Mustola Timber | JPJ-Wood (3D) | Metsä Fibre Lappeenranta | Versowood Otava | Pölkky Taivalkoski | Stora Enso Honkalahti
Versowood Vierumäki | Metsä Fibre Kyrö | UPM Säynätsalo I & II | Pölkky Kajaani | Metsä Fibre Merikarvia | UPM Alholma
Pölkky Kuusamo
- 2019** Metsä Fibre Vilppula | Jet-Puu | Luvian saha | Kieppi Sawmill | Metsä Fibre Renko | IPO Wood | Pölkky Kitkawood
Luoman Puutuote | Versowood Riihimäki | ER-Saha | Metsä Wood Punkaharju (3D) | Haka-Wood (3D)
Stora Enso Imavere (EST) | Tervolan Saha | Vara Saeveski (EST)
- 2020** Kontiotuote | UPM Seikku | Versowood Vierumäki (Optimizer) | Mustola Timber (Optimizer) | Stora Enso Alytus (LT)
FM Timber | Metsä Fibre Vilppula (Optimizer)
- 2021** VMG Swoods Export (BLR) | Kotkamills | Holzwerk Schilling (GER) | SIA Vudlande (LAT) | Vida Ab (SWE)
Södra Wood Ab (SWE) | Stora Enso Varkaus | Group Lebel (CAN) | Metsä Fibre Rauma (Optimizer) | Metsä Fibre Rauma

With experience of over 50 installations, Finnos is the world's leading log X-ray system manufacturer among the world. Our delivery process has been tuned to a level, where the system will have immediate benefits right from startup.



**THIS IS
HOW WE
DO IT**

1. PRE-ENGINEERING

Our quality management process includes a phase called pre-engineering in which the content of the delivery is mapped thoroughly in detail before the contract. This ensures that the offered solution meets the customer's real needs perfectly. The surprises derived from silent assumptions will be entirely avoided ensuring fast project throughput.

2. PROJECT KICK-OFF

We are an active partner. Our method of operation is forming a tight-knit project team with your experts. The project team will communicate efficiently, helping the project stay on schedule.

3. CUSTOMIZATION

The software is based on modular interface components. We build the interfaces through close collaboration with the operators in order to ensure user-friendliness. Operators are able to familiarize themselves with the system already during this stage.

4. INSTALLATION & STARTUP

Our systems are delivered completely ready and calibrated. Typically, installation is carried out by over 10 engineers, which makes the process very fast and feasible throughout the year during one long weekend. The system produces financial benefits immediately upon startup.

5. MAINTENANCE

Following the project, we will take care of system maintenance and updates. We also provide optional maintenance, spare parts and 24/7 helpdesk service or software updates.

6. FUTURE

We are an active development partner. All development is customer-oriented. Our objective is to be a trail blazer of digitalization in the sawmill industry, and we are looking to accomplish this with you.

FINNOS FUSION

ADVANCED SOLUTION FOR LOG SORTING

Our flagship product, Finnos Fusion Log Scanner, combines advanced laser and X-ray measuring technologies. Our system is easy to integrate into your production management system and other information systems. With the data produced you will minimize loss and maximize benefits!

Finnos Fusion is the leading X-ray log scanner in the world.

KEY FEATURES

- Our flagship product - 100% customer satisfaction!
- Easy to integrate with other production and information systems
- 4-direction 3D
- Stereoview laser for complete point cloud
- 2-direction X-ray
- Solid container structure (2,5 x 2,5 x 3 meters)
- Vibration isolated frame, thermally isolated and temperature-stabilized
- Radiation shielded and weatherproof
- Delivered fully ready and factory calibrated



USER REFERENCES

"After startup all logs are in correct quality classes"

"Component logs have increased dramatically"

"Very short payback time, less than 6 months from startup"

"Full set of features for timber sorting"

FINNOS SORTING

SOFTWARE FOR
FULL CONTROL

Finnos Sorting software is built with latest web technologies enabling full modularity and customer based tailoring. All tools required for optimal control are integrated into the Fusion Sorting software. No client installation is needed since the software is fully compatible and accessible via cloud service.

KEY FEATURES

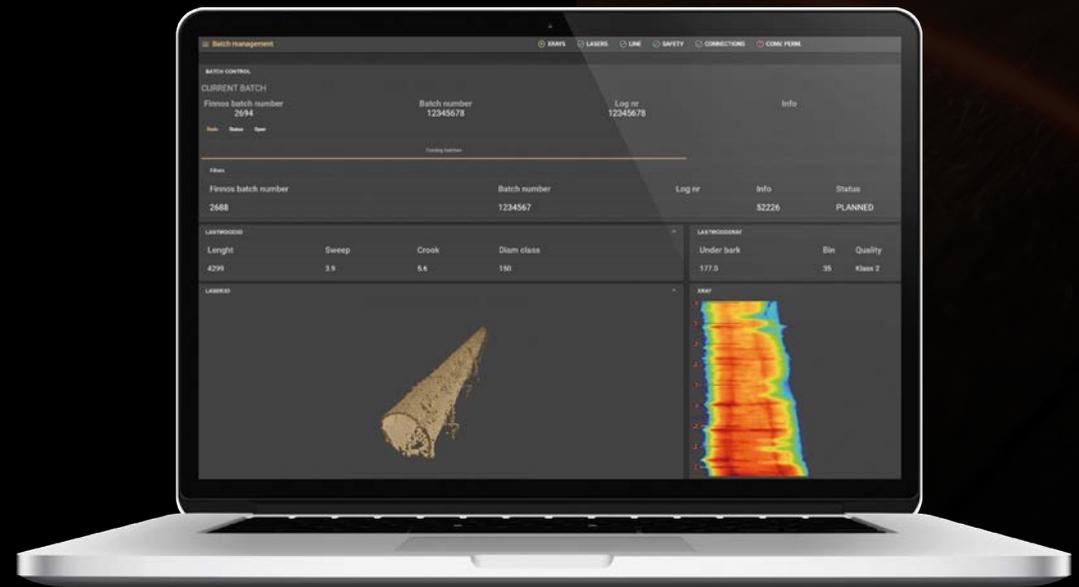
- Integrated sorting simulation tools
- Interactive analysing reports
- Inbuilt interfaces to external systems
- Different user profiles
- Full scale tools for visualization and diagnostics
- Available in needed languages

INBUILT EXTENSION MODULES

- Log yard control system
- Fingerprint technology
- Sawmill production planner
- Log recorder
- Semiautomatic grading
- Cutting pattern simulation
- Cutting pattern based sorting

USER REFERENCES

"Very simple and intuitive user interface with plethora of properties"



FINNOS LITE

MODULAR LIGHT VERSION FOR LOG SORTING

The Finnos Lite scanner is designed for sawmills with slower conveyors and smaller log diameters. It provides a leap towards significant improvements in productivity. The key benefit is significant raw material saving gained through accurate under bark top diameter measurements.

KEY FEATURES

- A smaller, lighter version of our log scanner to meet smaller needs
- Separate 3D and X-ray -modules (2,3 x 1,4 x 2,5 meters)
- 3-direction 3D
- Stereoview laser for complete point cloud
- Radiation shielded 1- or 2-direction X-ray
- Vibration and thermal isolated frame
- Temperature-stabilized and weatherproof
- Delivered fully ready and factory calibrated



The system has two different modules, Lite 3D and Lite XR. Lite 3D is equipped with the 3D scanner and Lite XR is equipped with the X-ray measuring system. Both units can be installed as a bundle or you can later upgrade Lite 3D with Lite XR.

PRODUCT COMPARISON



FUSION



LITE 3D



LITE XR

X-ray directions	2		1 or 2
X-ray penetration	< 600 mm		< 400 mm
Log size (X-ray)	50 - 650 mm		50 - 450 mm
Log size (3D)	50 - 800 mm	50 - 800 mm	
Radiation shielding	Complete	Collimator shielding	Collimator shielding
Scanning frequency	3D: 500 Hz X-ray 1500 Hz	500 Hz	1000 Hz
3D camera system	4-direction	3-direction	
Stereolascamera	✓	✓	
RGB camera system	3-direction available		
Window cleaning	Mechanized	Manual	Not available
Shell type	Steel	Fiberglass	Fiberglass
Frame type	Aluminium	Aluminium	Aluminium
Vibration isolation	✓	✓	✓
Internal temperature stabilization	✓	✓	✓
Total number of 3D cameras	12	9	

FINNOS OPTIMIZER

MAXIMIZING THE YIELD

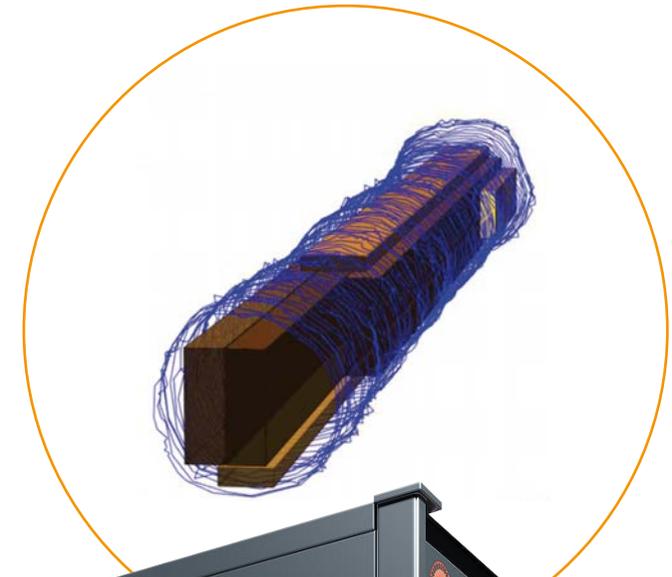
Finnos Optimizer is identical to Finnos Fusion from hardware point of view. The difference is the location of the "money maker". Finnos Optimizer can be placed anywhere before the sawline to do the cutting pattern optimization.

In addition to cutting pattern optimization based on the internal log quality Optimizer is an essential link in fingerprint between Finnos Fusion and Finnos Board Scanner.

KEY FEATURES

- Full cutting pattern optimization based on the internal log quality
- Logs-to-log fingerprint matching between Fusion and Optimizer
- Boards-to-logs matching between Board Scanner and Optimizer
- For each log the internal quality is defined by X-ray
- Available cutting patterns are preset for each quality so that the optimization is performed for the allowed cutting patterns only

Each end product is made from the right raw material



Our transversal board scanner utilizes the most modern scanning technologies boosted with the state-of-the-art Artificial Intelligence (AI) based defect detection. Finnos Board Scanner maximizes the value yield of each board.

Our board scanner connected with our log scanners enables the usage of fingerprint technology.

FINNOS BOARD SCANNER

KEY FEATURES

- Transversal **non-turning** scanner
- Full quality scanning
- Scanning 100 % all four sides of boards
- State-of-the-art AI technology in defect detection
- High resolution color cameras
- LED lights
- Speed up to 240 pcs. / min.
- Optimization result ready in less than 1,5 seconds
- Constant quality
- Value yield over 96%
- State-of-the-art AI technology in defect detection

**It's like magic.
But real.**



LOG YARD CONTROL

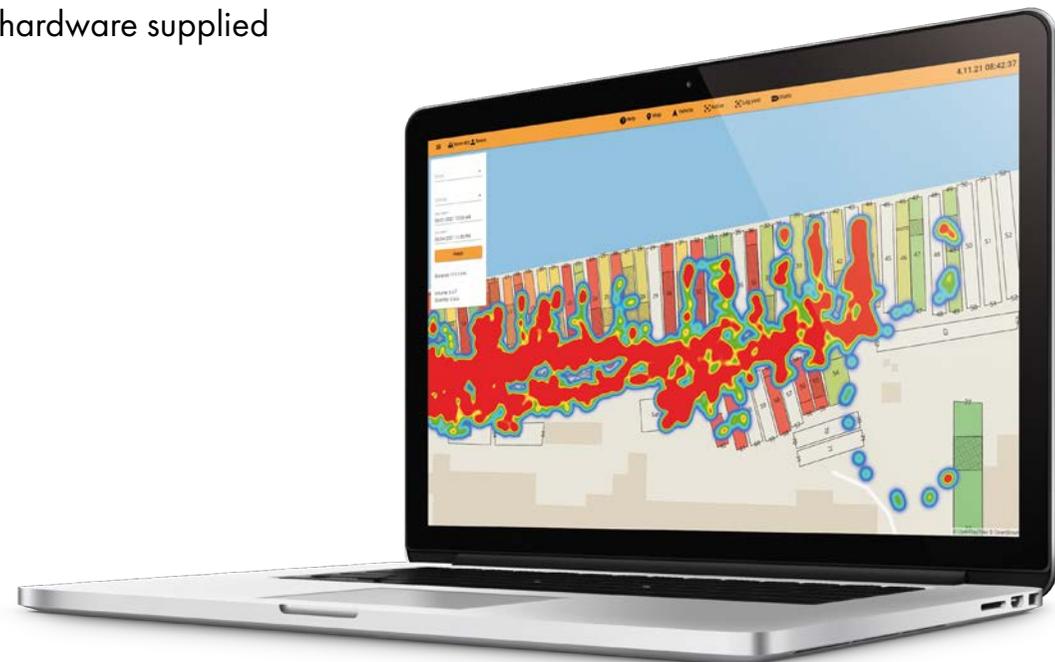
SIGNIFICANTLY IMPROVES THE LOG YARD OPERATIONS

Log Yard Control is a navigation system to support wheel loader's operators as well as a tool for inventory management. The software is based on a map and table view of the log yard, which shows e.g., the fill-level of bins and log stacks as well as any alarms due to erroneous stock movements.

KEY FEATURES

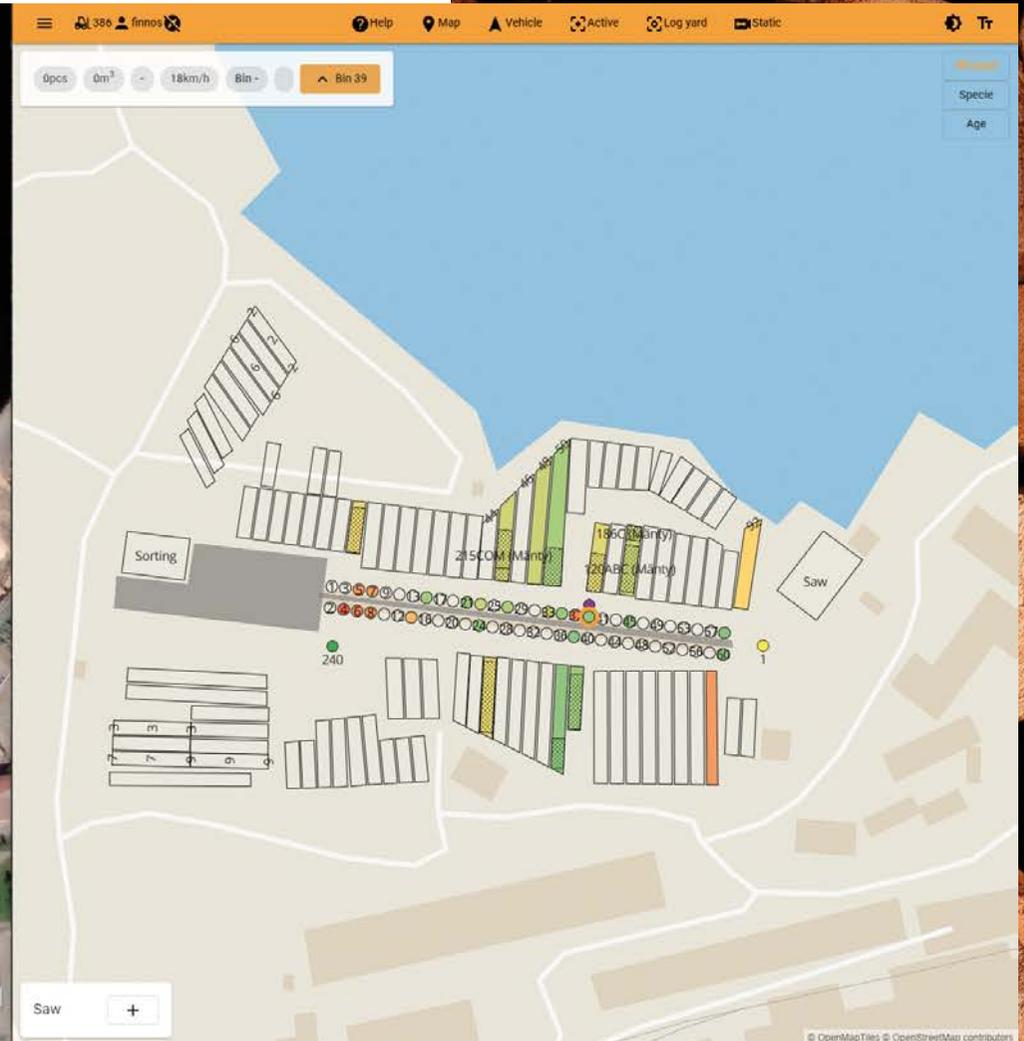
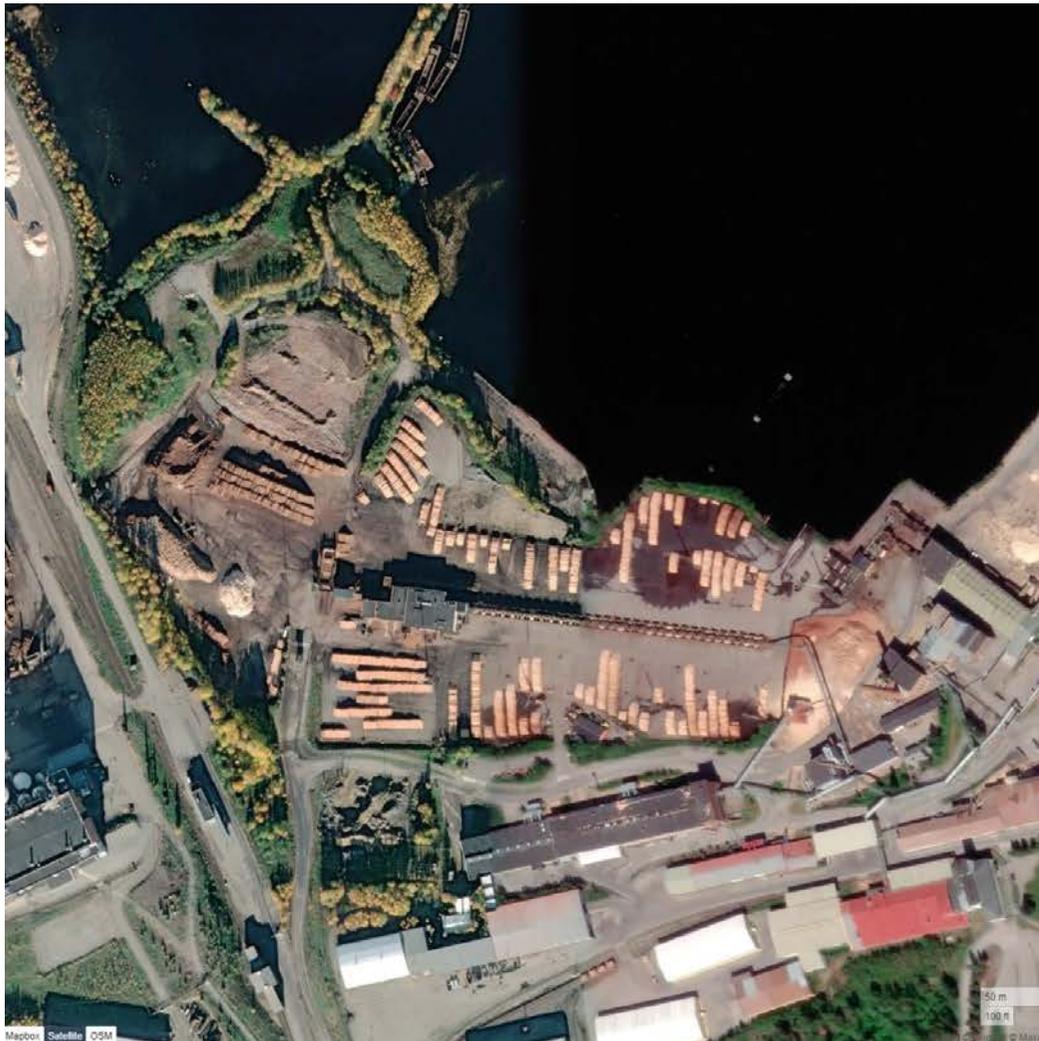
- Map and grid view of the log yard
- Realtime bin fill-level monitoring
- Realtime stack fill-level monitoring
- Log inventory based on:
 - age
 - quantity in pcs. and m³
 - species
- Video feed from saw infeed
- All needed hardware supplied from Finnos

Log Yard Control provides route optimization based on the wheel loader's driving analysis and automatic recognition of loads. All of these features significantly improve the operations of a log yard.



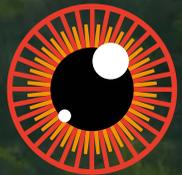
The Log Yard Control system is a versatile and easy-to-use tool for improving the efficiency of log yards.

LOG YARD CONTROL



STORY OF FINNOS

Finnos was established in 2016 to continue the pioneering X-ray technology development of its predecessor, Bintec, which had been established in 1988. Bintec supplied X-ray systems in Finland, as well as Europe, Baltic countries and Russia.



FINNOS

Make the Leap.

www.finnos.fi

Finnos was established in the beginning of the era of digitalization of the sawmill industry, assuming a pioneering role within the sector. We stand apart from the competition with our expertise in various measurement technologies and software solutions.

Our innovative solutions utilize data collected during sawmill process with our systems or other existing systems. This data fusion method brings added value to our clients in the form of raw material savings and more accurate sorting. This is why our flagship solution is called FUSION; it incorporates several measurement technologies.

Finnos has grown from a group of seven to over thirty professionals thanks to a combination of rigorous product development and a rare level of expertise.

We provide turnkey solutions to the sawmill industry, from log sorting to sawline. We consult, manufacture, develop and maintain. Our guiding principle is to transform the structures of global sawing industry and generate hysterical business growth for our clients.

Join the success story!

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