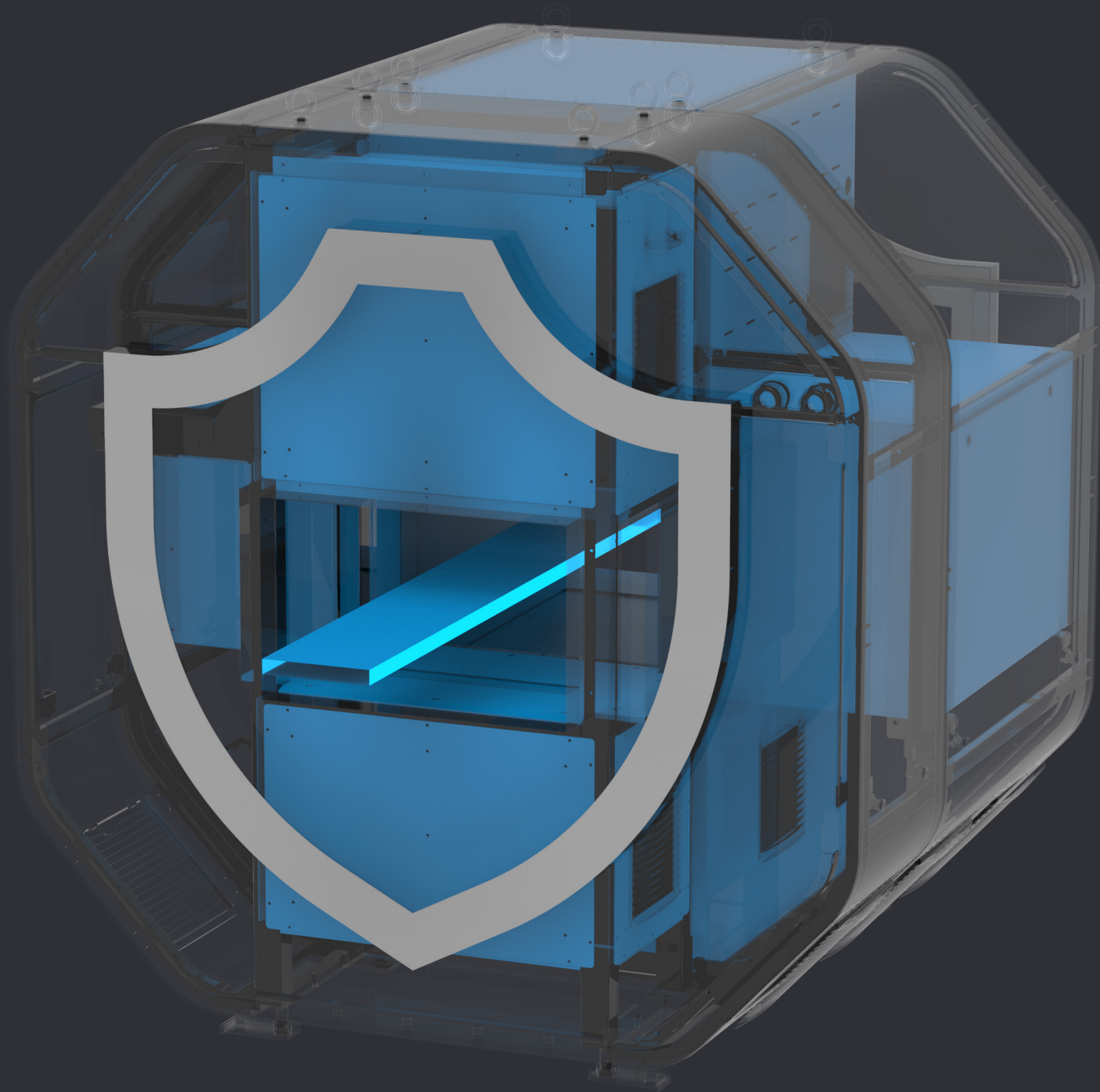




# WS 1000

Lumber Mega  
Scanner



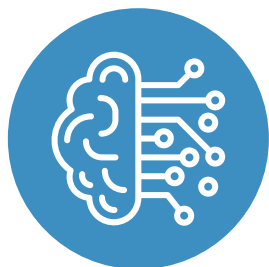


# Company Presentation



## About

**SMARTI Wood Scanning** as part of **TAB SYSTEMS Inc.** is a producer and developer of advanced AI machine vision systems for wood industry. We manufacture lumber and log scanners for cutting, sorting, grading and other multipurpose applications. Our lumber scanners support one-side or multi-side scanning with utilization of in-house developed AI algorithms for accurate defect/feature detection and classification. Optional x-ray scanning combined with advanced AI, furthermore offers insights into lumber structure, strength and hidden defects/features. Log scanners provide 3D scanning with optional x-ray feature for optimized sorting, cutting and grading.



### Cutting-edge

Class leading AI algorithms and machine vision technology in a quality solution.



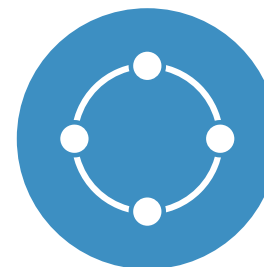
### Competitive

Market leading pricing with quality customer service for entire product/solution portfolio.



### Know-how

Team of experts from machine vision, AI/neural networks, wood industry and other fields.



### Adaptable

Customization options for detection requirements, wood species and machinery control.



### Made in Slovenia

In-house development and production of systems including software along with hardware.

# Philosophy



## Mission Statement

We are on a mission to constantly develop and manufacture advanced wood scanning systems to satisfy the needs of growing wood industry. Cutting-edge machine vision technology, combined with state of the art machine learning and AI algorithms provide an added value for the investment. Our solutions offer unmatched performance with increased yield, productivity and accuracy for cost efficient production process optimization.

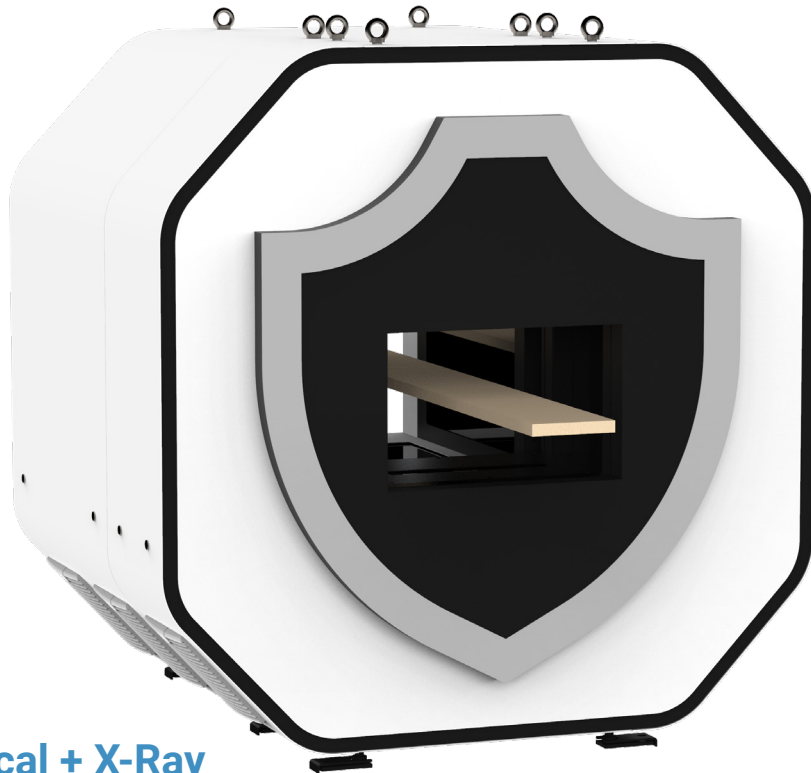
## Vision Statement

To provide scanning solutions for optimized lumber and log processing industry with the use of cutting-edge technology. To offer advanced machine vision hardware and software solutions, supported with AI technology. To contribute to sustainability in business and natural environment by continuously developing next generation technological innovations for production processes in wood industry.

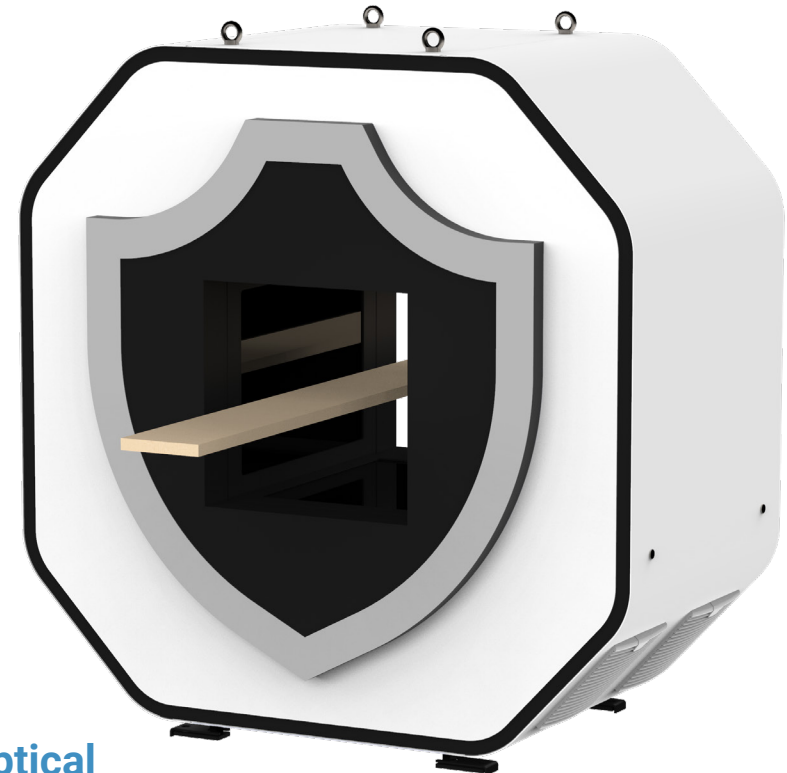
# Applications

## Cutting Optimization, Sorting and Grading

SMARTI WS 1000 is a high performance wood scanning system for various applications in wood processing industry. Machine can be used for optimized cutting, sorting and grading of lumber in manufacturing processes. Scanner supports conveyor belt speeds of more than 500 m/min and can work with any desired wood species. With in-house developed AI technology defects and features are visually detected from all sides of the boards in real time. X-ray scanning is optional to detect defects and features of lumber in its core, while also grading the strength. Optimization of cutting, sorting and grading is carried in accordance with standards or customized rules. Scanner is applicable for a wide variety of lumber processing purposes and final products.



Optical + X-Ray



Optical

# Production Optimization



## Increasing Yield and Performance

Installation of SMARTI WS 1000 ensures faster production with maximum yield outputs. Defect/feature detection accuracy on lumber increases manufacturing and end product quality. Elimination of errors in cutting, sorting and grading applications allows for completely automatized and optimized wood processing industrial lines. With increased manufacturing capabilities and quality gains, the scanner delivers value for its initial investment. Four side and x-ray scanning combined with in-house developed AI technology assures continuous workflows capable of controlling and backing any manufacturing line efficiently. Customer support for all our products and solutions is guaranteed to enable uninterrupted production process.



# Detection Options



## Defects

- Knots
    - Sound knot round
    - Sound knot splay
    - Sound knot spike
    - Dead knot round
    - Dead knot splay
    - Dead knot spike
  - Knot hole
  - Pith
  - Bark pocket
  - Resin pocket
  - Resin streak
  - Rot
  - Resin
  - Wane
  - Bark beetle
  - Lineatus
  - Cracks and splits
  - Lack of material
- Discolorations
    - Blue stain
    - Brown stain
    - Red stain
    - Yellow stain
    - Mold
    - Machine burning
  - Planning errors
  - Machine marks
  - Saw step
  - Dirt
  - Fibre fracture
  - Compression wood
  - Fibre deviation
  - Custom defect options

## Texture/grain Orientation

- Radial
- Semiradial
- Tangential

## 3D Measurement

- Length
- Width
- Height
- Volume

## X-Ray (optional)

- Lumber density and grading
- Internal pockets
- Internal knots
- Internal holes
- Custom defect options

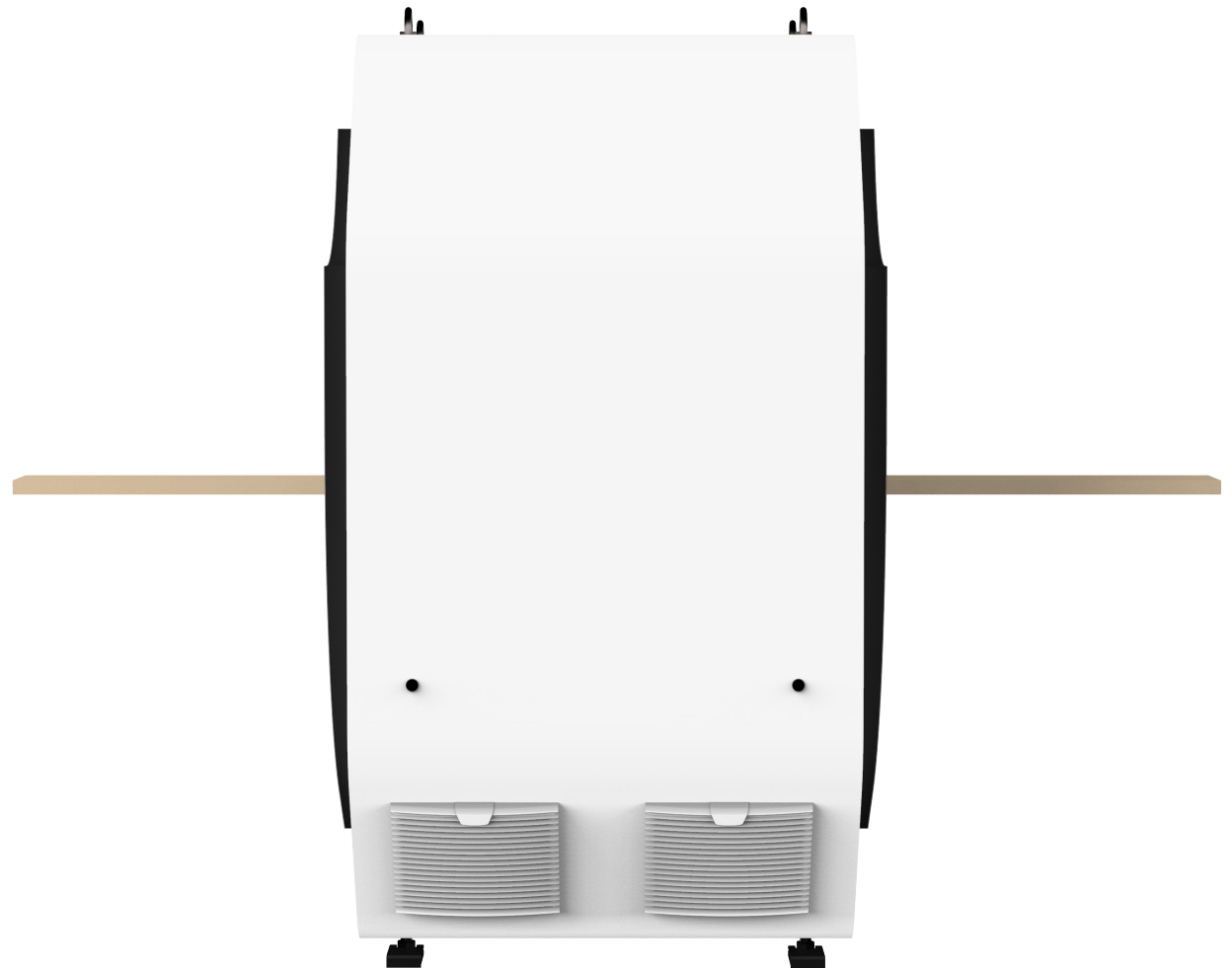


# Technology



## AI and Machine Learning

SMARTI WS 1000 incorporates in-house developed AI technology to provide accurate defect/feature detection on lumber. Machine learning is supported with controlled data inputs in a process called annotating or teaching the machine. For each wood species AI model is generated with respect to the defect/feature inputs. With such principle all softwood and hardwood species can be supported with planned or unplanned surfaces. Annotating process can be done in-house or at the customer's location by our experts. The process is based on annotating or imputing individual defects/features by marking them on scanned boards. Large enough dataset is a basis for machine learning to produce accurate and efficient AI models for detection.





# Software Interface



## UI With Extensive Features

User friendly interface is available via touch screen terminal for controlling the scanner. Boards are displayed in real time with all defects/features detected when they are being scanned. Information about single board and about current production batch is presented on the home screen. In SMARTI user interface there are classifications to work sets and batches. Work set is a set of rules for cutting, sorting and grading for defects/features detection that are set by the user or pre-set to support desired standards. Batch represents boards that are scanned with a set of rules for specific work set from the point of starting to stopping the production. Users can view individual boards scanned in a historical database and create various reports. Statistics and simulations are provided as standard. Simulations allow for adjusting batch settings and seeing would-be outputs on already scanned boards. The feature allows for experimentation without harming real production yields. Software also allows for different user rights in order to control and protect manufacturing process.



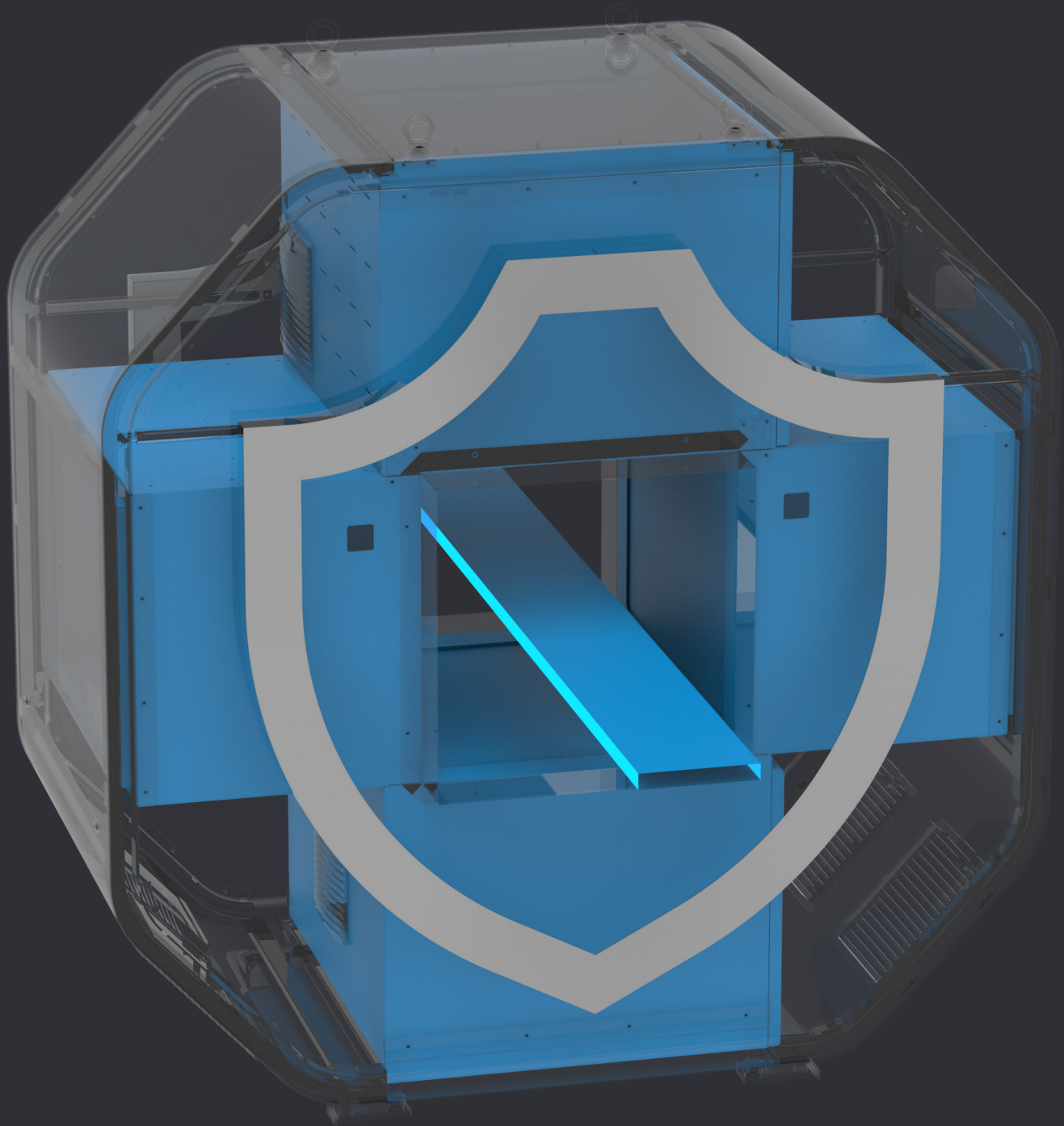
# Industry 4.0



## Machine Connectivity and Architecture

SMARTI WS 1000 is an intelligent machine capable of controlling manufacturing lines. Cutting, sorting and grading according to set work set parameters is output of the scanner. The machine can control mechanization in order to support autonomous and automatized production. Multiple sorting lines and saws can be controlled directly or signals can be provided to accommodate for smart manufacturing. Software architecture allows for setting up multiple scanners in one or multiple physical locations that can be managed via one central hub. Users can keep track of their production efficiently and with ease. This delivers exceptional value for data manipulation and decentralized machine control. Connectivity options are eliminating the need for third party management software solutions and therefore saving costs. Scanners are enabled to be controlled from anywhere and at any time.







# Advanced AI Wood Scanning Solutions

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