SCANNING TECHNIQUES WITH MULTISENSOR TECHNOLOGIE
By MICROTEC

MICROTEC FACTS:
Founded: 1980
Locations:
Brixen (Bolzano) ITALY
Linz AUSTRIA
Mestre (Venezia) ITALY
Turnover: 21.0M€
Employees 115

Headquarter in Brixen (Bozen) ITALY
Multi Sensor Technologies

Laser Triangulation

Laser triangulation for determination of the shape
Laser triangulation for determination of the shape

Scattering image acquisition to increase the contrast between wood defects and clear wood
### Laser Scattering

Scattering image acquisition to increase the contrast between wood defects and clear wood.

![Laser Scattering images](image)

### X-Ray Imaging

X-Ray image acquisition. A look into the wood.

- **Radiographie**
- **Computer Tomographie (CT)**

![X-Ray Imaging images](image)
### Image processing

Automatic image analyzing into the visible and near visible spectral area

![Image processing examples](image)

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### Dynamic Frequency Analysis

Vibration analyses after mechanical excitation

- **Oscilloscope trace of the vibration signal**
- **Fourier analysis of the vibration signal**

![Dynamic Frequency Analysis examples](image)
Existing scanning techniques in the board sector

The multi sensor technology has been implemented with success in the quality detection of boards.
Radiography
- Insensitive against dirt
- Surface quality not relevant
- Knots detectable by simple image-processing
- Contact less
- Density profile measurement
- Stable and repeatable signals
- High resolution in combination with high speed

Laser Scattering
- Laser Scanning
- 3D Profile
- Shadow scanning
- Laser Scattering
- Grain Angle Deviation Detection
Data fusion in multi scanner applications

X-RAY SENSOR

LASER SENSOR

COLOR SENSOR

X-RAY SCANNER

LASER SCANNER

COLOR SCANNER

OPTIMISATION

DOWN

UP

RIGHT

LEFT

OPTIMISATION
Optical Resistance Measurement

Vibration measurement
Measures dynamic modulus of elasticity
Cross-conveyor (150 boards/min)

GOLDENEYE 706: combination of x-ray and ViSCAN
Existing scanning techniques in the round wood sector

Laser Triangulation

High standard 3D measurement modules
Double triangulation enables shadow free full shape acquisition.

Laser Triangulation

Modular 3D & Color Scanning

Laser Triangulation
Color Image Processing

DiSCAN COLOR
Full shape round wood 3D scanner

DiSHAPE

High resolution 3D reconstruction

Real image 3D reconstruction
Laser Triangulation

Problem-free installation where shape data are requested

Color Image Processing

Combination of full shape and color image acquisition
Image stitching enables a length independent image acquisition in length direction.

3D reconstruction in combination with the color information enables a reality loyalty virtual log representation.
Dynamic Frequency Analysis

Determination of the natural frequency on round wood enables an estimation of the dynamic module of elasticity (MOE) of the end product boards.

Dynamic Frequency Analysis

Contact less vibration measurement after mechanical excitation.
Multi-view beginning enables measurements of quality relevant parameters on round wood using the technique of discrete tomography.

The measurement of the x-radiation weakening enables the recognition of the density profile and in this way a rough density estimation of the further produced boards.
The density profile enables an estimation of the knottiness distribution.

The density profile enables the recognition of foreign bodies.
The density profile enables an estimation of the proportionality of heartwood.

X-Ray Imaging

Radiographie

Computer Tomographie (CT)

The density profile enables an estimation of the bark thickness.
Thanks

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