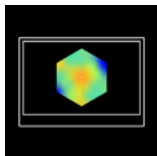


Application Note:

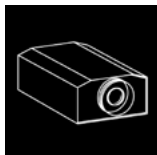
Non-destructive Coating Thickness Measurement on Natural Wood

Key Parameters



Measurement Method

Imaging-based



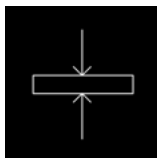
Device

coatmaster 3D Atline



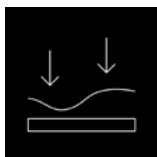
Substrate

Natural wood



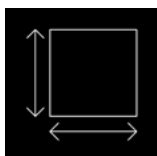
Substrate Thickness

Typically 68 mm to 92 mm



Coating Thickness Range

80µm - 130µm



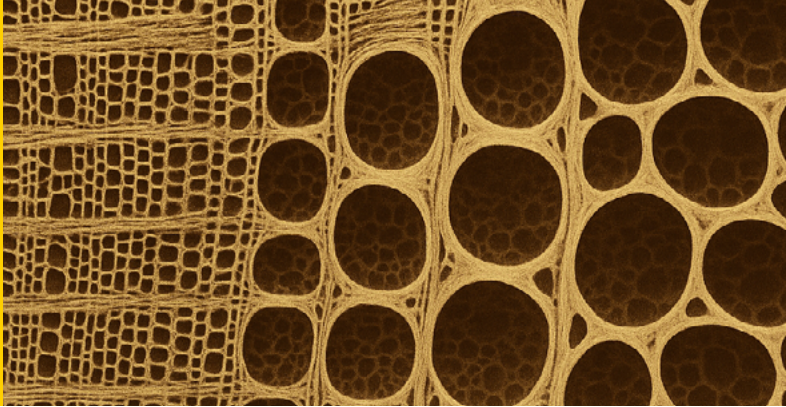
Measuring Area

Up to 2 m²



Objective

This application note demonstrates the use of the coatmaster 3D Technology for fast, non-destructive, and accurate coating thickness measurement on porous, non-uniform substrates like natural wood. The example used is a coated spruce window frame.



The Challenge

Conventional, destructive testing methods are often impractical for quality assurance on natural wood as they damage the material and provide unreliable results. The coatmaster offers a non-destructive solution that precisely measures coating thickness immediately after application—or even before curing.

Destructive methods are unsuitable

Traditional methods like cross-sections damage the final product, making them usable only for spot-checks on discarded samples, not for 100% quality control.

Substrate Variability

Natural wood, such as spruce, has significant local variations in density (350-470 kg/m³) and high porosity (60-70%). This makes punctual (single-point) measurement techniques unreliable, as a single point is not representative of the surrounding area.

Process Control

To optimize the coating process and reduce waste, measurements must be taken immediately after application, often before the coating is fully cured.

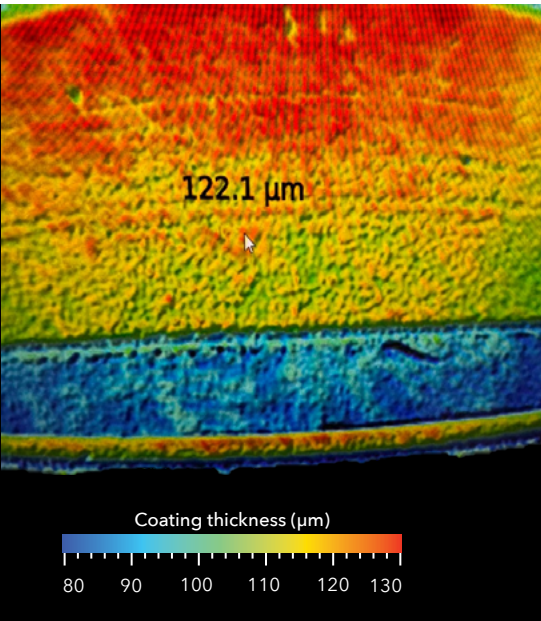
The coatmaster Solution

The coatmaster provides a comprehensive solution that overcomes these challenges. By utilizing advanced imaging technology, it measures the entire surface topography and coating thickness in a single, rapid process.

For the spruce window frame, the coatmaster was configured to measure the coating thickness over a large surface area. The system instantly delivers a high-resolution thickness map, providing far more insight than a few isolated point measurements.

Measurement setup

Parameter	Value
Measurement distance	
Energy	
Measurement area	
Reference device	
Measurement speed	500 ms
Repeatability	1-2%
Local resolution	< 0.1 mm
Tested measurement range	80-130 µm



Conclusion

The coatmaster is an ideal solution for measuring coating thickness on natural wood. Its imaging-based, non-destructive approach provides a complete and reliable quality overview that is impossible to achieve with conventional methods. This enables manufacturers to improve product quality, optimize coating material consumption, and increase production efficiency.