



nWood Solution

Optical Inspection of Tree Logs



Areas of Application

Artificial Intelligence as the Heart of Automated Inspection of Tree Logs



Inspect Degree of Debarking

automatic classification into levels of debarking



Quality classification

automated sorting out of unwanted wood characteristics, e.g. branchiness, bending, tapering, spiral growth, wood rot



Length Measurement

length estimation or assignment to groups



Volume Measurement

volume estimation or assignment to groups



Diameter Control

diameter estimation or assignment to groups.

nWood Tree Log Inspection

The Wahtari tree log inspection solution *nWood* can analyze various parameters and quality characteristics directly in your production line simultaneously. In case of any deviation, certain signals can be sent out (e.g. sorting log out) and operational parameters can be documented. The system exceeds the visual control of a worker both in precision and efficiency as it inspects under industrial conditions, during ongoing production and around the clock. It is easy to use, *Plug & Play* and allows convenient one-man operation. Both analysis and evaluation are performed on-the-edge without cloud or Internet connection. This enables highest speed, maximum data security and lowest latencies. *nWood* is available in different versions and can be adapted to your individual requirements.

Advantages of the nWood Inspection



High Precision
clear identification even in difficult situations



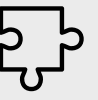
Extreme Performant
recording and evaluation in real time



Easy Adjustment
adjustable to new product features



Edge Computing
no connection to a data center due to onboard detection



Seamless Integration
easy integration into your system (PLC)



Consistent Quality Inspection
thanks to consistently working system

Technical Highlights



Teach & Go
efficient AI



Low Maintenance
no tools necessary



Production Speed
up to 120m/min belt speed



Adaptable LED Lighting
LED or IR



Process Reliable
insensitive to industrial influences, e.g. waterdrops or dust particles



100% Control
for highest quality requirements



24/7 Continuous Operation



IP67 Protected Camera Housing



Rentable
no high industrial costs



Industrial Interfaces

Functionality of the *nWood* Solution Based on the Example of Debarking



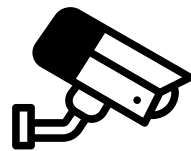
Problem

For further processing, the bark of logs must be removed since bark does not consist of the same fibrous material typical for wood. Process-related, the bark is not removed completely when passing through the decortication drum for the first time. Therefore, most logs need to undergo a second, visual inspection by a worker subsequent to the first decortication process.

This labor-intensive and physically demanding process, in which employees have to remove only partial decorticated logs manually, can be automated by the intelligent camera system by Wahtari.



Few System Components



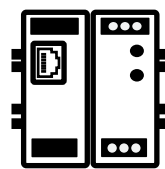
intelligent
camera



high performance
computer system



LED lighting

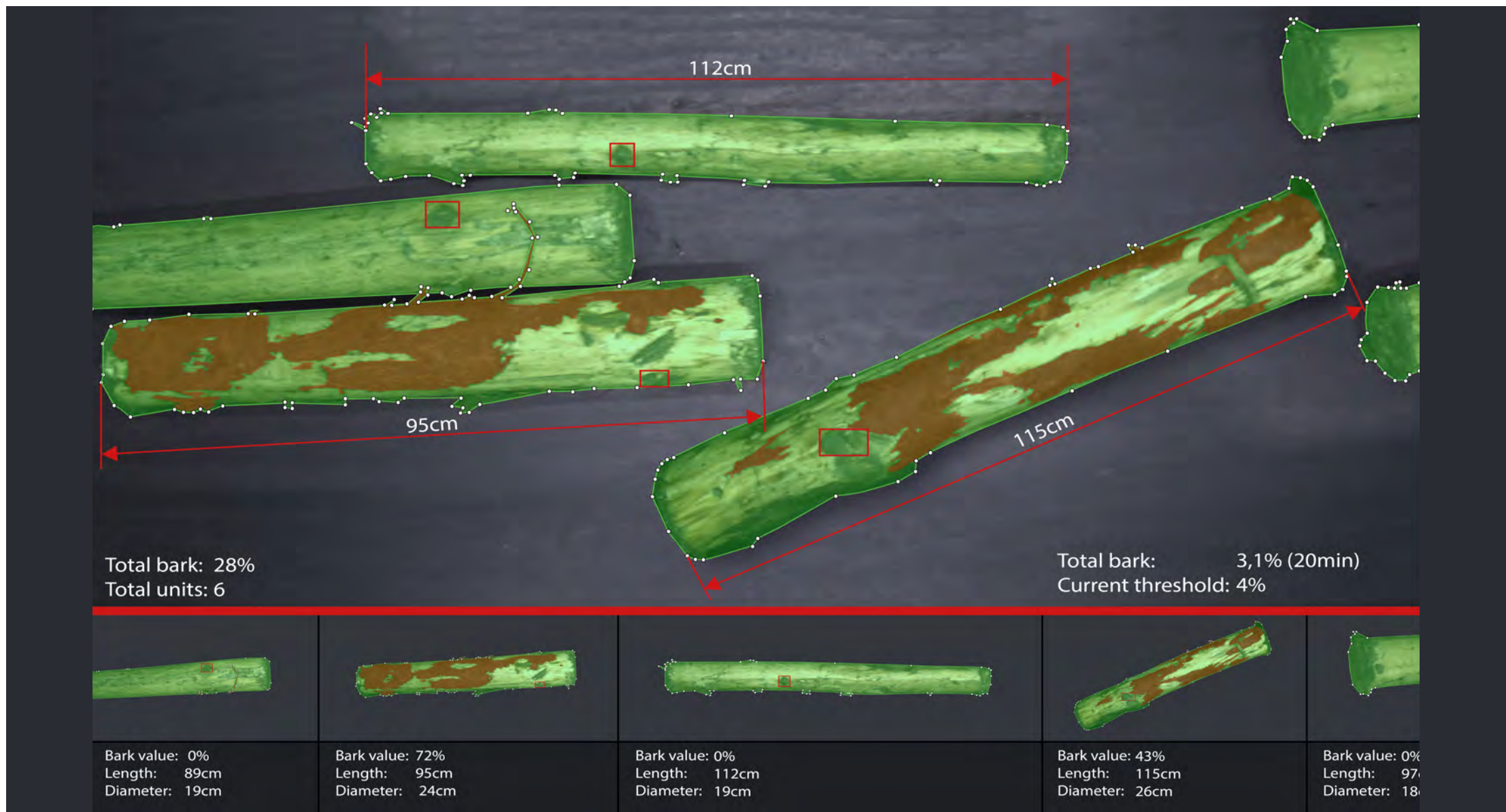


DIN rail module for
Profibus, Profinet,
OPC UA & IO

Easy Integration Into Existing System Concept

The smart camera can be installed on existing infrastructure, own masts or walls thanks to its integrated mounting bracket. Once installed, the camera needs to be adjusted, e.g. for viewing angle, zoom and focus.

The uncomplicated commissioning requires only little technical Know-how. Numerous interfaces and industrial standards, such as OPC UA, Profibus and Profinet, allow an easy integration into existing system concepts while ensuring the lowest possible latencies. Signals, e.g. for the control of locks, can be send directly via an analog signal.



nWood Solution by Wahtari

Wahtari's AI-based camera system offers a fully automated, complete solution for optical inspection. With a detection accuracy of over 98%, Wahtari *nWood* reliably identifies even small bark remnants during operation and sends signals to your system control in real time. A controllable lock diverts defective logs to another pass through the debarking drum.

The intelligent camera is suitable for indoor and outdoor operation and can withstand temperatures between -20° and +50° Celsius. At belt speed up to 200m/min, *nWood* records parameters such as debarking degree, size, contours, length and diameter of logs and piles simultaneously. Individual logs can be distinguished. Weather-related wood discoloration does not affect the detection.

The technology is based on deep neural networks, which are trained project-specifically for the recognition of the residual bark content by using image recordings of the processed logs. Once the desired recognition rate is achieved, no further training is required.

The artificial intelligence runs "on-the-edge" on site without internet or cloud connection - for the highest speeds, lowest latencies and greatest possible data security.

Strong Hardware Platform

US3TM
VISION

GEN<i>i>CAM

intel[®]

nvidia[®]



Industrial IO

PROFI[®]
BUS

PROFI[®]
NET

OPC UA

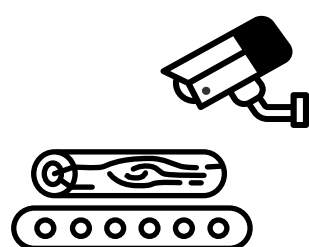
Flexible and Worldwide Applicable

- 110/220V, 50/60Hz input voltage
- soft- and firmware updates over the air (online/remote)
- multilingual

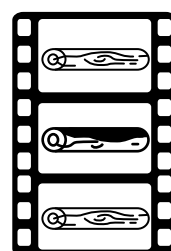
nWood in Your Company



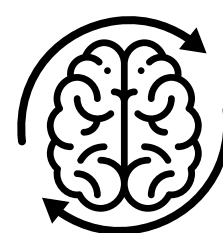
Initialization Meeting
clarifying the framework
conditions



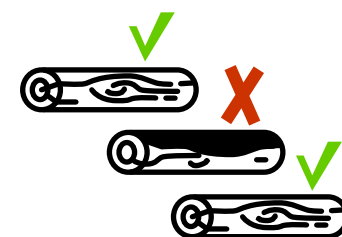
Integration of a Wahtari nCam
films products in a real
environment



AI training
reference images are used to
develop an AI model



Training of the Wahtari nCam



Final AI model is loaded onto
AI system and is executed

Sustainable Innovation with Wahtari

To enable companies to realize the full potential of today's AI technology and prepare for future AI developments, Wahtari has created a comprehensive AI ecosystem of hardware and software.

Wahtari's portfolio offers everything, ranging from individual consulting to modular hardware and software components and versatile, cross-sector end-to-end solutions.

AI Partner Wahtari

We deliver ready-to-use AI systems that are customized to the conditions in your company. Our optimized pipeline enables us to realize projects for any budget.

We support you in taking advantage of the opportunities offered by the latest technological developments and setting yourself apart from your competitors.

About Wahtari

- experts for AI-based image recognition
- experience from many different industries
- latest technologies
- hardware and software from one hand

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