

# nLine Pro 360-Ti3

360° Inline Testing Device Incl. Evaluation Software for Optical Inspection of Cable Surfaces

artificial intelligence  
by  
**WAHTARI**

## Areas of application

Artificial Intelligence as the Heart of Automated Defect Recognition in the Cable Production



**Surface Examination**  
breaks, cracks, cuts, holes, dents, pimples



**Controlling Colors**  
monochrome, multicolored, gradient, rotating



**Detecting Inclusions**  
foreign particles, air bubbles



**Diameter Control**  
deviations in diameter



**Check Imprints**  
markings, codes, lettering, serial numbers

## nLine Cable Inspection Solution

Wahtari's nLine cable inspection solutions can analyze a wide variety of product and quality characteristics in individual inspection (test bench) or inline during ongoing production. Deviations are signaled and documented.

The systems are available in different versions and can be adapted to a wide range of requirements. The analysis & evaluation is performed on-the-edge, without connection to a cloud, for the highest performance, lowest latencies and best data security.

The commissioning does not require any technical knowledge. Product features are simply trained according to the "Teach & Go" principle by using a master sample.

## Key-Features



### Teach & Go

few minutes to teach-in the product features by using a master sample



### 360° Analysis

complete detection of the cable surface



### Vibration - insensitive

vibrations of the floor or the cable are no problem



### High Performance

up to 2500m/min cable speed



### Adaptable LED Lighting

adjustable to many cable types



### Dashboard

all data at a glance



### IO / Interfaces

analog & digital signaling



## Technical Highlights



### Low Maintenance

no tools needed  
system signals when cleaning is necessary



### Non-contact Measurement

no damage or influence on the product



### Production Speed

0 - 1667m/min (all test types)  
up to 1667m/min (color analysis)



### Installation Length

max. 500mm incl. rack  
max. 250mm for fixed installation



### Networkable

recipes remotely available



### 24/7 Continuous Operation

> 99,5% availability



### Product Diameter

0,5mm - 25mm  
round, oval and flat



### Installation Depth

max. 500mm



### Random Rotating Products

insensitive to cable rotation



### 100% Control

for highest quality requirements



### Error Length

larger 0,3mm



### High Adjustable

cable passage height  
800-1200mm



### Process Reliable

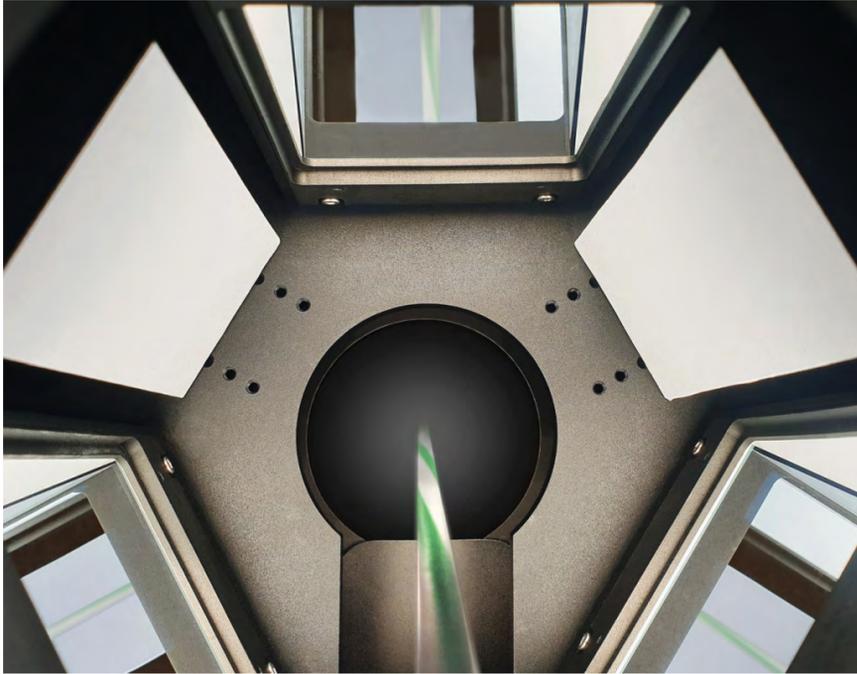
insensitive to water drops and dust particles on the cable surface



### Measuring Range IP67 Protected

measurement of wet media / easy cleaning

## Functionality of the *nLine* Cable Inspection Solution



### Problem

The increasing demands for already high quality standards, by the automobile industry, cause problems for error detection by means of conventional measuring and testing technology. In addition, requirements such as 100% control and traceability needs to be fulfilled.

### *nLine* 360-Ti3

The *nLine* 360 Inline cable inspection solution was developed specifically for the extrusion industry and enables the inspection of many different product features in a single compact device. Thereby it replaces the existing measuring and testing technology which reduces investment and maintenance costs as well as integration efforts.

Three high-speed cameras monitor the complete cable surface over the entire cable length continuously.

## Easy-To-Use - Plug & Play - Teach & Go

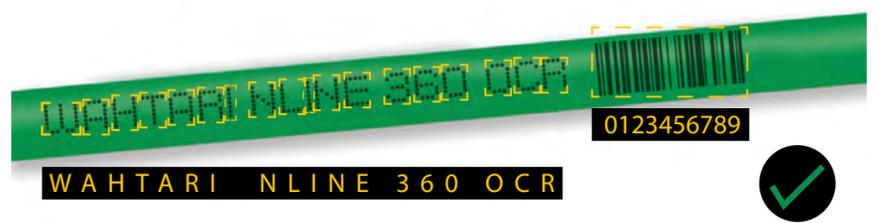
- process reliable error detection of surface defects
- easy handling and adaptation to new products
- incl. recipe management
- German and English menu navigation
- commissioning and cable feeding do not require any additional equipment
- single operation / one-man operation

## Flexible and Worldwide Applicable

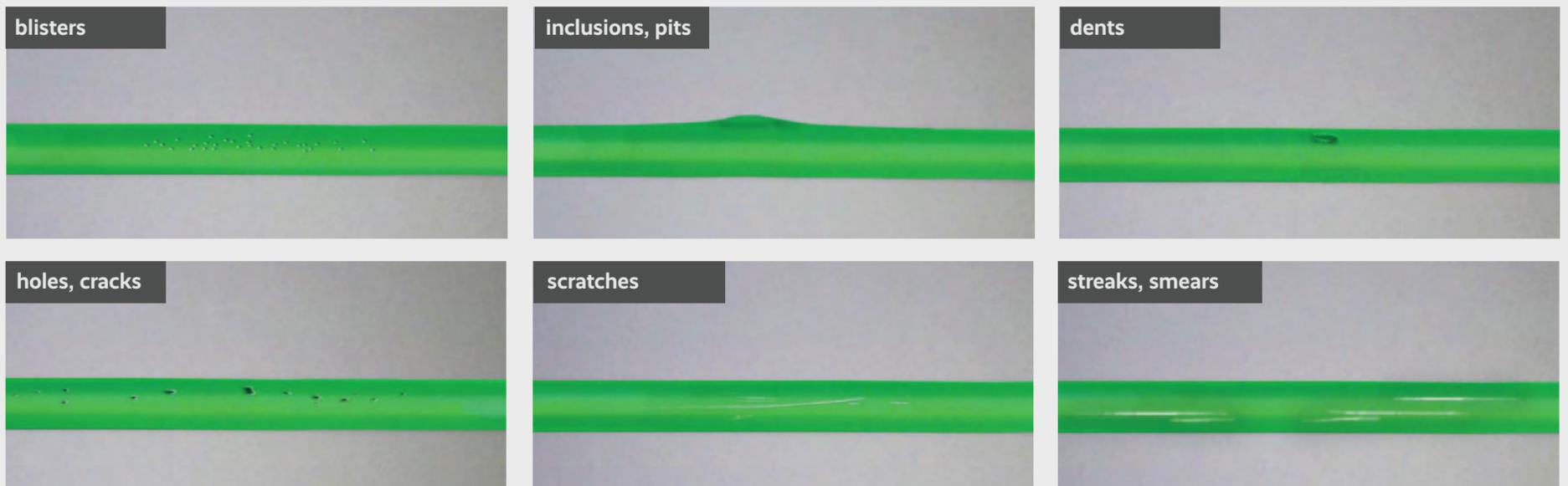
- 110/220V, 50/60Hz input voltage
- compact delivery on pallet
- soft- and firmware updates over the air (online/remote)
- multilingual

## Test Methods / Materials

- color control, single-color / multicolor
- imprints, serial numbers, barcodes, QR codes
- surfaces: smooth, matt, shiny, rough
- insulation material: PU, PVC, ETFE, and many more
- product diameter: 0,5mm - 25mm
- defect size: greater than 0.3mm



## Supported Error Types



## 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.

### Product-Code *nLine* Cable Inspection

**T** Teach

**i** Inspect

**3** 360° View

## For Production-related Use in the Extrusion Sector

Rough production conditions have no negative influence on the inspection quality:

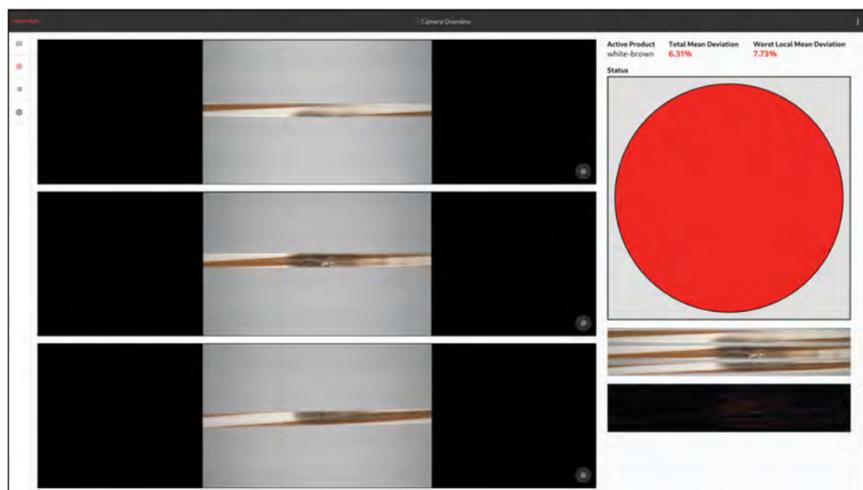
- room temperatures from 0° - 45C° & air humidity 0 - 90%
- different sources of disturbing light (position of the sun, xenon flashes)
- increased dust particle content and vibrations of passing logistics transporters

## Display options / Error output

A clearly visible light signal informs the employee about the current test and operating status.

- Red, for faults, alarms and any errors
- Yellow, device is ready but not active
- Green, device is active and error-free, test is running

Operation and monitoring via touch screen.

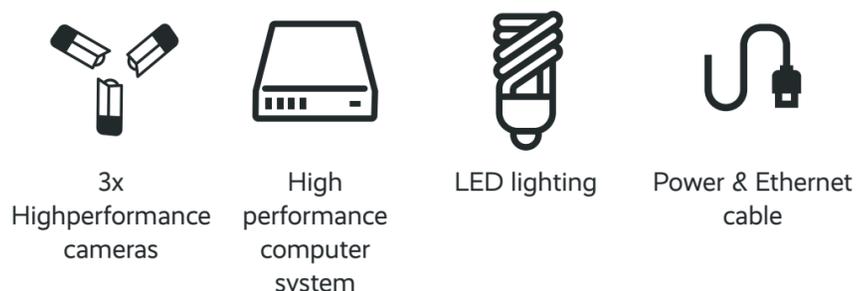


## Advantages of the nLine Inspection Systems

- High Precision**  
clear identification even in difficult situations
- Easy Adjustment**  
problem-free training of new product features
- Seamless Integration**  
easy integration into third-party applications via API
- Extreme Performant**  
recording and evaluation in real time
- Edge Computing**  
no connection to a data center due to onboard detection
- Relieve Employees**  
more capacity for other tasks



## System components



## Easy integration also into existing system concepts

nLine can be integrated into existing system concepts. As a mobile version mounted on a height-adjustable rolling frame or as a compact, stationary version (fixed installation). The uncomplicated commissioning requires little technical know-how. Numerous interfaces and industry standards, such as OPC UA, allow easy integration into existing system concepts while ensuring minimal latencies. Signals, e.g. for the control of signal transmitters, can be directly output via an analog signal. This simplifies the programming of system controls and complex cabling.

## nLine in Your Company

Interested? How to get your cable inspection solution:

- 1) Initialisation meeting: Clarify the general conditions
- 2) Decide on a nLine standard product or we create your individual solution

## Wahtari as AI partner

- Experience the possibilities of the nLine cable inspection solution, during operation, in your company.
- Find out which solution is suitable for your situation.
- We support you with competent advice.

Wahtari's AI-based image processing solutions have already achieved significant successes with numerous customers that were considered unattainable with traditional approaches. With our AI hardware and software know-how, we look forward to supporting you too!

## 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

