

# TN1

New tire reading system by TireTech



## We'll get things moving

Good tires are elementary for safe driving, the consequences of tire failure can be fatal. That is why tire manufacturers require in all phases of production - from the receipt of raw materials to final assembly - absolutely reliable image processing solutions to check the quality of their products during the many individual manufacturing steps and to ensure traceability.

Image processing in the tire industry has an enormous range of applications. In tire manufacturing, tire assembly, logistics and scrap tire disposal, we encounter tires in various states whose characteristics must be automatically detected and recorded.

With our TN1 you receive the image processing system that is precisely tailored to the task at hand. From conventional 2D systems to systems for more complex 3D applications to multifunctional systems that require a combination of 2D and 3D sensor technology - our TN1 is characterized by its modular principle that allows the most diverse imaging processes to be combined.

Based on our image processing software, image data from different hardware and software manufacturers can be reliably read in, processed, evaluated and clearly displayed.

Especially in the tire industry with its high-quality standards and a constantly increasing number of product variants, which poses new challenges for in-house logistics, our system helps with its modularity and flexibility, that things run smoothly for you.



**Sicherung von Qualität und Rückverfolgbarkeit  
in allen Produktionsphasen**



- Recognition DOT number
- Read tire manufacturer and tire size
- Reading QR- and barcode
- Recognition of special imprint
- Diameter and profile check
- Check tread width
- Check surface damage
- Check inside of tire

### 3-D-Laser-Triangulation

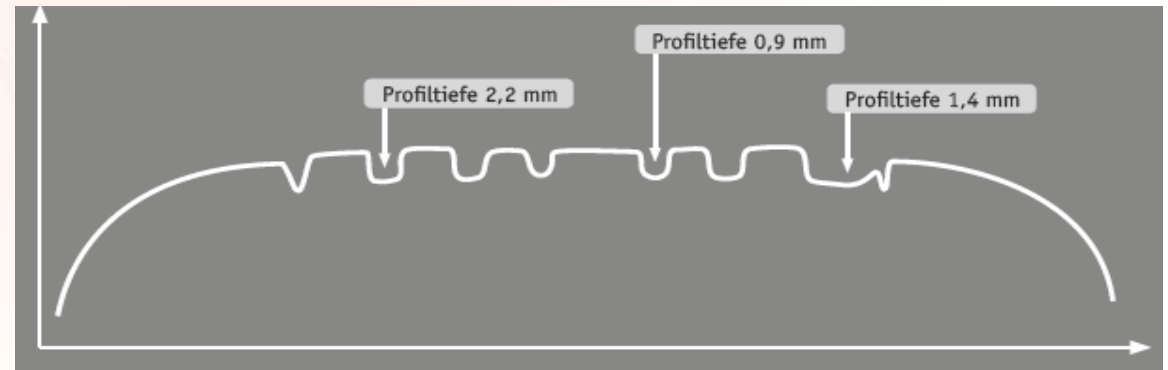
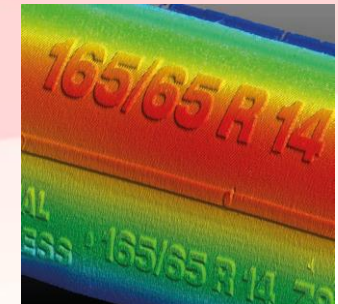
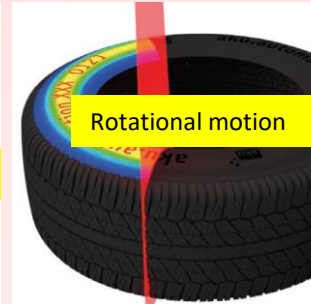
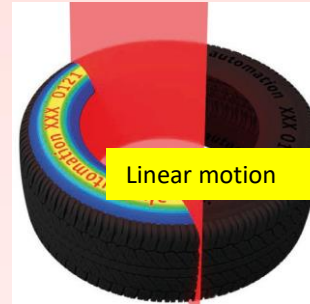
Check multiple object characteristics at the same time.

Triangulation is the measurement of distance by calculating angles. When it comes to speed and versatility, this method is ideal and the ultimate solution for demanding ultimate solution. Laser triangulation is a measurement method on a trigonometric basis, which is continuous and is therefore ideally suited for measuring the distance of moving objects. Laser triangulation is used to determine the object contour, from which object height, shape and volume can be measured, contour errors can be detected, and localized, and different qualities can be classified. Laser triangulation combines several methods at the same time, because in addition to the 3D information 2D data also provide information about brightness and gloss.

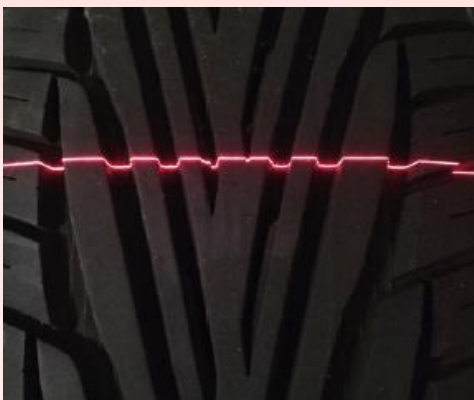


***A camera captures multiple object features to provide even better results for clear decisions.***

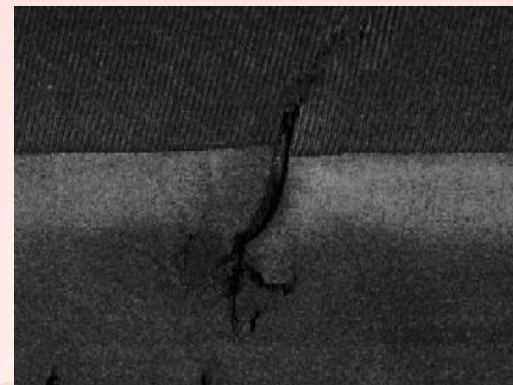
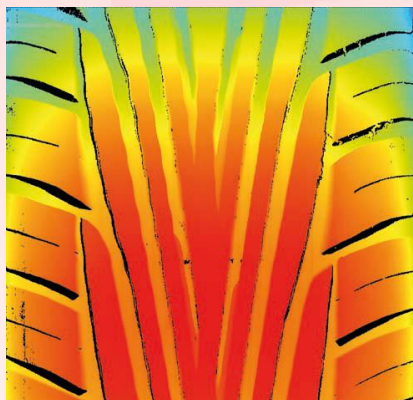
Anwendungsbeispiele:



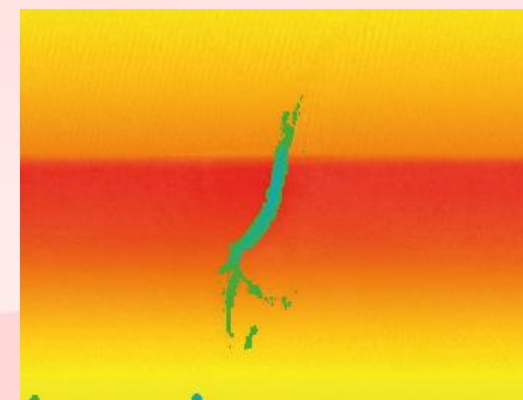
## 3-D-Laser-Triangulation



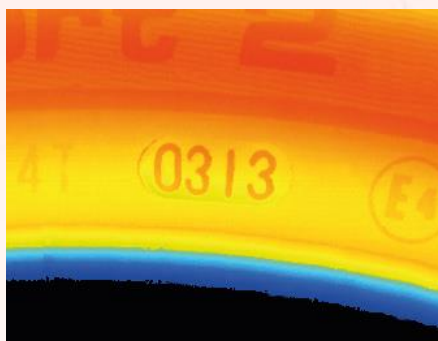
Measuring tread depth



Damage to casing surfaces



DOT number recognition



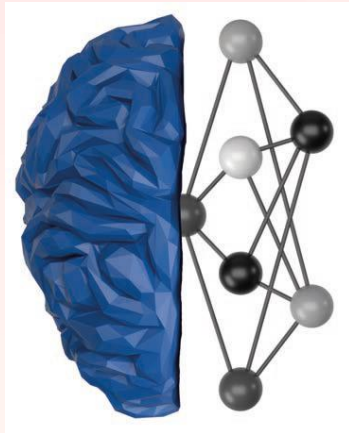
Foreign object detection inside tire





# Deep Learning

Conventional image processing systems and algorithms have been continuously developed over the past few years and are used very successfully. Machine Learning and Deep learning are the new magic formulas that take image processing to the next level. Deep Learning systems are based on the principle of "learning" - after the initial setup, new image data can be precisely assigned to the relevant class. Deep Learning is the best choice for applications where classical image processing is limited and cannot cope anymore with an advanced level of complexity. Different measurement objects, multiple error categories and a wide range of measurement requirements are setting the bar quite high. Different tools are available for the user to resolve the tasks.



**Deep Learning Algorithms,  
the next level in industrial image  
processing.**

## Examples of use:



Anomaly detection



Classification



Objekt-detektion (OCR)

## ID-reading systems

### Reliably detect and identify.

For manufacturers, seamless product tracking by means of codes is of central importance for documentation, also as proof to customers and suppliers. Damaged, soiled, faded or folded codes can therefore not be tolerated. Our selected ID-reading systems offer high performance, powerful reading algorithms and industrial data interfaces such as Profinet, RS-232, Ethernet and digital IOS. The ideal solution for recognizing and comparing clear text. ID-reading systems are extremely reliable in reading everything from simple barcode to the most demanding DPM code. They record dates and batch numbers and simultaneously identify all common 1D and 2D codes.



### Examples of use:



Reading QR-code



Reading barcode



***The versatile ID-reading systems read everything you give them to identify.***

## Line-scan-method

### Captures fast moving objects very precisely.

The basic principle of a line scan camera is its line by line image structure. The scanning always takes place in a linear movement. Either the line sensor is moved over the test object, or the object is moved under the sensor. High-resolution images are assembled from individual lines. Line scan cameras provide precise measurements at high object speeds and processing rates and even enable 360° inspection of round objects.

Due to the very high image quality, line scan cameras are ideal for applications, that require very high standard of image resolution under high-speed processing conditions. Also barcodes, QR-codes or text lines for sorting packages can also be read quickly.

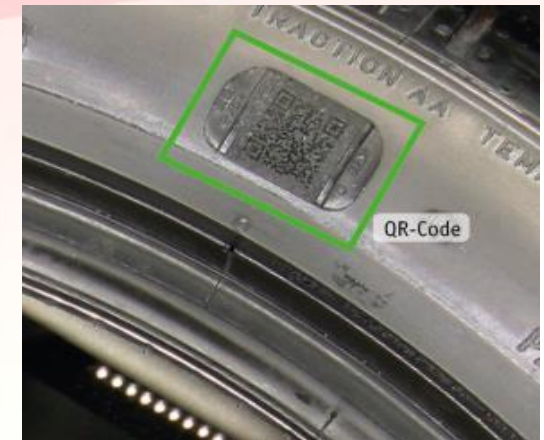


***Precise measurements of moving objects especially at high-speed processing conditions***

### Examples of use:



Detection color point



Detection QR-Code

# Visionmanager

## Image processing in focus.

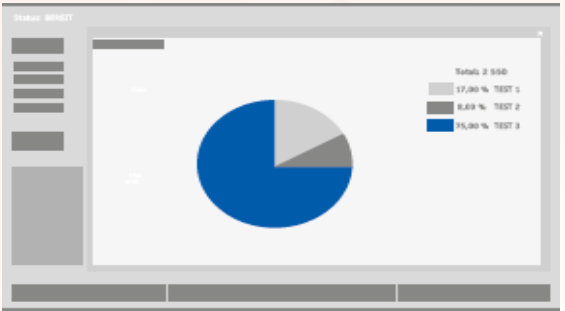
In industrial image processing, innovative vision systems with a developer-oriented design are gaining in importance. So that many applications can be created on a common ground, the development of these systems requires a modular and expandable structure. Additional time and cost savings are at the forefront here. The Visionmanager forms a framework that allows the integration of vendor-independent libraries, components and interfaces. A multitude of process-oriented modules are available and impress with their production-oriented functionality.



Overview



Scripting



Statistik module

## Scalable

Due to its scalability, the software can be precisely tuned to the application. At the same time, it offers the option of meeting growing demands on the increasing requirements on the hardware and software level.  
Adaptable | Future-oriented | Performance-optimized

## Modular

The available modules offer a structure that is functional in itself and can be used again and again. In addition, the user can integrate his own, additionally required modules via defined interfaces.  
Reusability | Further development | Quality gain

## Flexible

Varying tasks and dynamic requirements need a flexible software structure. Adaptations must be feasible at short notice without fundamentally changing the entire existing structure of the software.  
Stability | Availability | Dynamics

## Producer-independent

The variety of tasks requires the use of different image generating techniques. The integration of producer-independent software and hardware components is a fundamental function.  
Powerful | Universal | Self-sufficient



*"With our individual solutions, you achieve more.*

*More profitability, more success."*

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