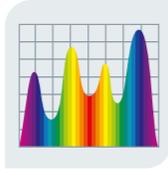


MACHINE VISION SYSTEMS

MORE THAN EYE EXPECT



SPECTRAL ANALYSIS



MULTISPECTRAL ILLUMINATION SYSTEMS



MORE THAN EYE EXPECT

Eyespec is among the major innovation drivers in the field of industrial image processing. For our customers from all over the world and from all kinds of businesses, our engineers develop highly specific and customised solutions for our customers from all over the world, ranging from feasibility studies, through implementation, to validation and documentation. Furthermore, we are proud to offer a standard system for the inspection of sealed seams, called SealSpec.



HANDLING SYSTEMS



PROCESS VISUALISATION



INSPECTION SYSTEMS



INSPECTION AUTOMATION

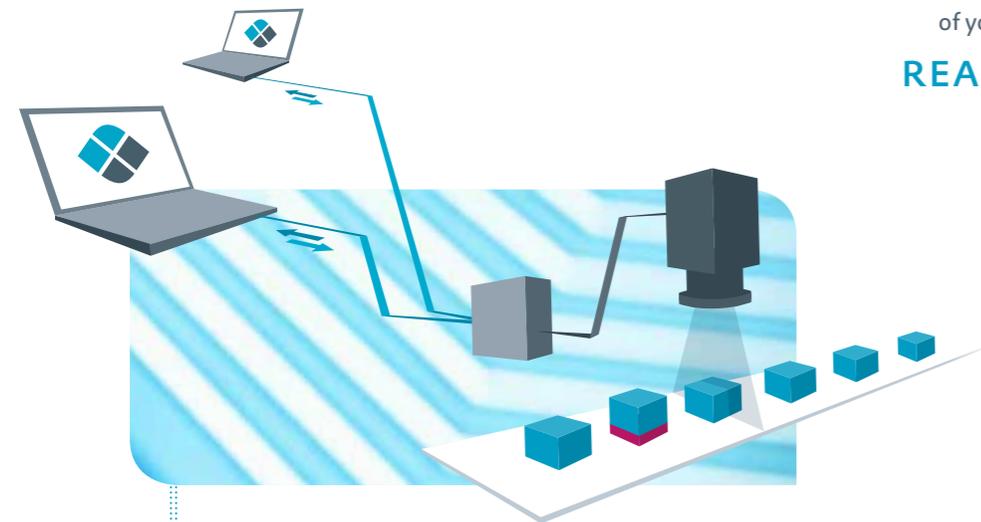
SERVICE

To optimise your processes, we offer an all-round service for your existing inspection systems.



Stand-alone cells or integrated inspection stations, guarantee a 100% control of your production line.

READY TO USE



At the customer's request, we integrate a remote maintenance module which enables short reaction times and high availability of production lines.

REMOTE MAINTENANCE

INTEGRATION

We examine the available installation space at the customer site and develop systems which integrate well into the existing environment.



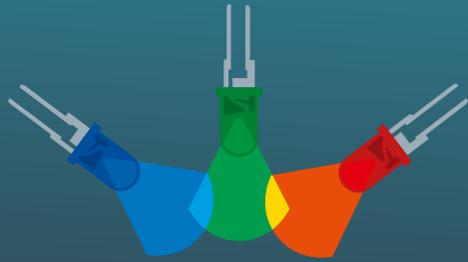
OUR RANGE OF SERVICES

Your productivity is our highest priority. Therefore, we shape our services according to your needs. Short reaction times and effective processes are self-evident and proof of our commitment.



OPTIMISATION

Thanks to our broad range of experience, we can analyse your processes and offer you solutions that go beyond the field of pure image processing.



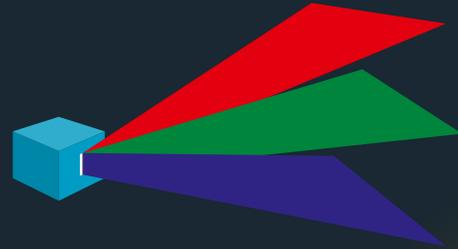
USE OF LED ILLUMINATIONS

- Lower power consumption
- Longer life span
- Easier to focus beams
- Spectral diversity



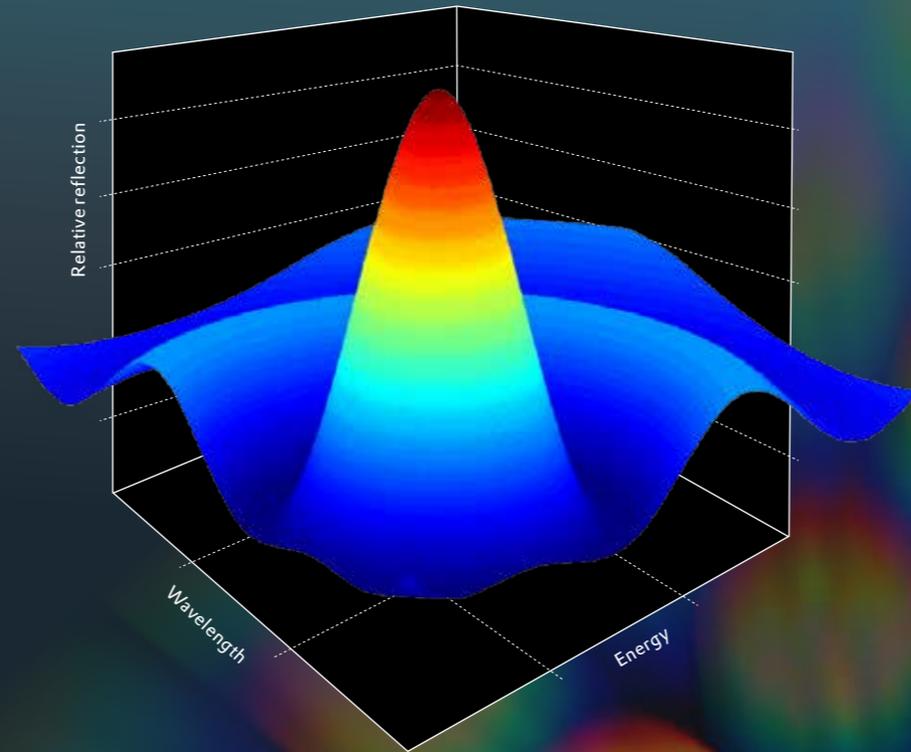
SPECTRAL EFFICIENCY

- Adaptable emissions for the particular inspection task
- Use of the characteristic spectral range



BEAM FOCUSING

- Adaptive illumination of relevant areas
- Intensity control by focusing



MULTI- AND SINGLESPECTRAL CONCEPT

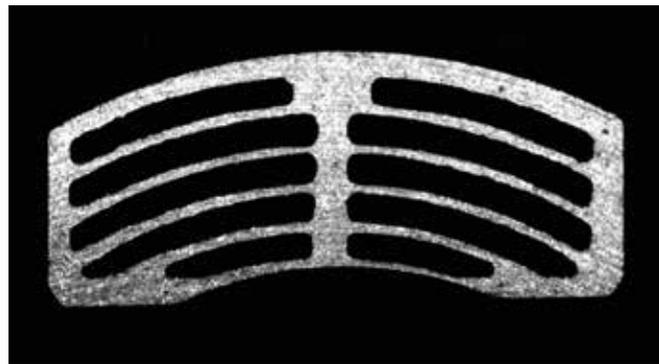
SPECTRAL ANALYSIS

Requirements and job definitions in the field of industrial image processing have increased greatly in complexity during recent years. There is a growing demand for systems which can contrast and detect more product qualities than traditional image processing setups ever could. One approach to this issue, is the concept of multispectral image processing systems. EyeSpec has concentrated on the development of spectrally selective inspection systems for use in optical quality control. While other systems address this problem by using special image sensors to create a multi spectral feature space,

the typical EyeSpec solution first determines the spectral product characteristics, then customises the equipment and finally processes this preoptimised input in efficient algorithms. By using spectral wavelengths from UV to SWIR separately or in combination, we are able to enhance process safety and the scope of inspection significantly. The result is a system which is based on the particular physical properties of your product and which uncovers characteristics that are invisible to the naked eye.

MULTISPEC

Based on the spectral analysis information, our engineers develop illumination units adapted to your needs. From singlespectral LED units to multispectral high performance modules, we can offer solutions which perfectly meet your requirements. The MultiSpec illumination concept sets new standards for intensity and image frequency. In combination with our innovative trigger module this enables the implementation of the fastest multispectral line camera setups.

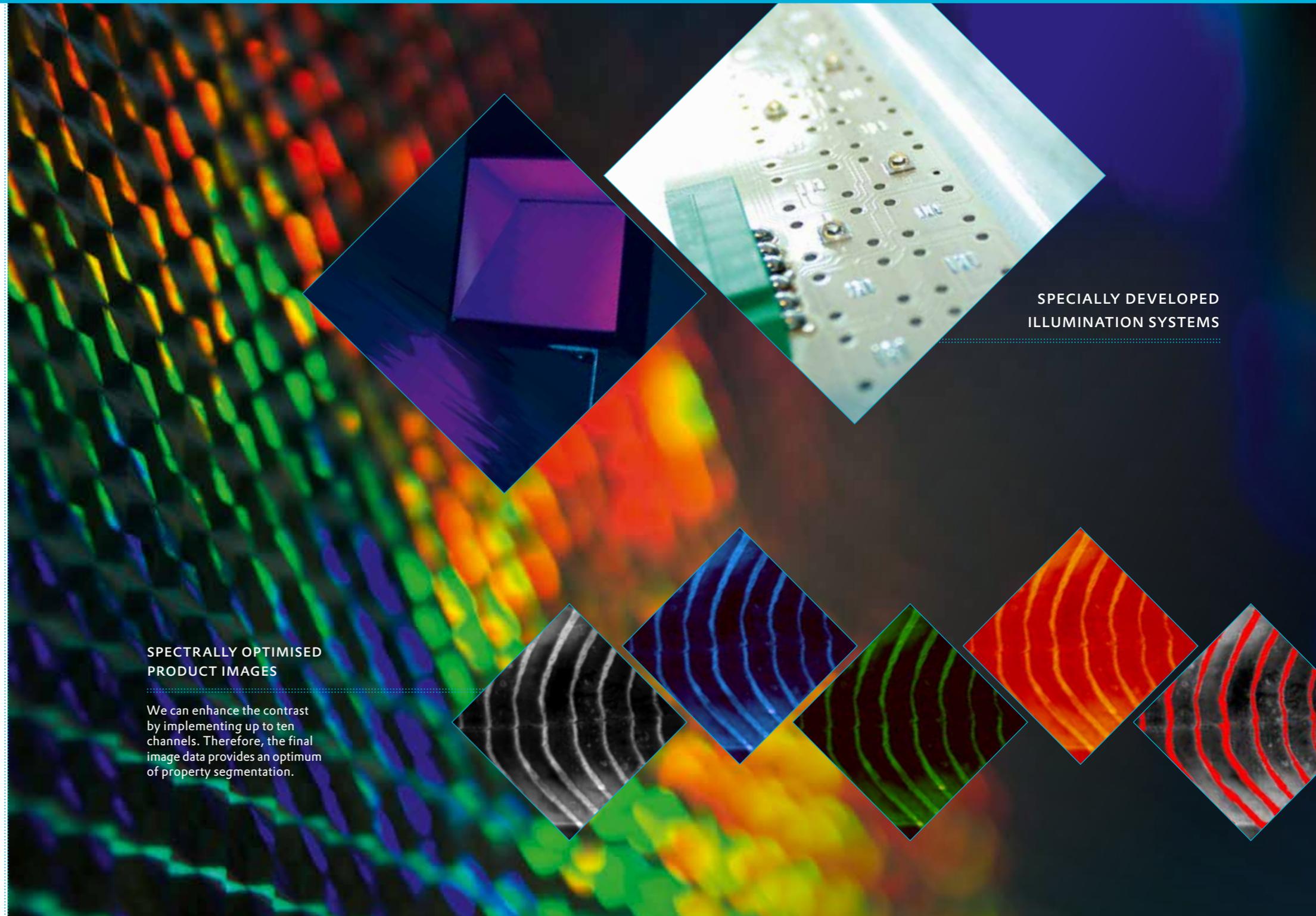


Spectrally optimised line camera image of a brake pad.
The single components of the brake pad are depicted in contrast.

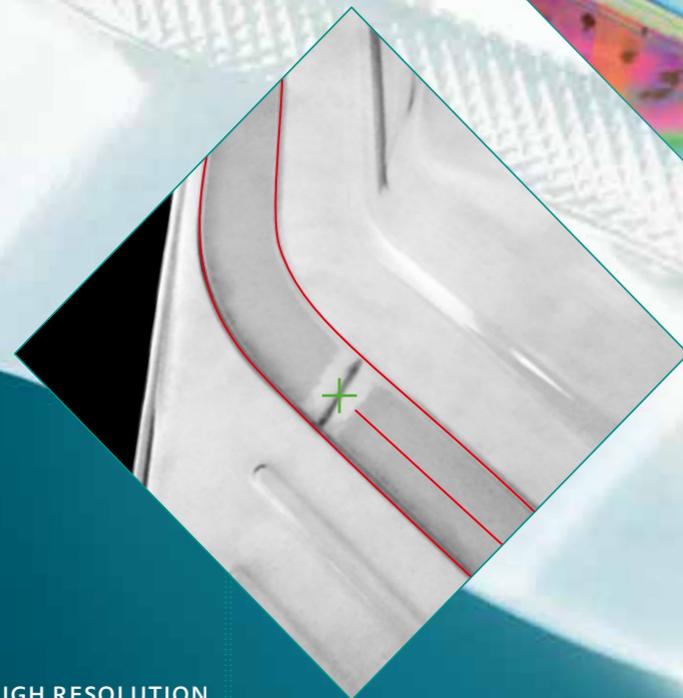
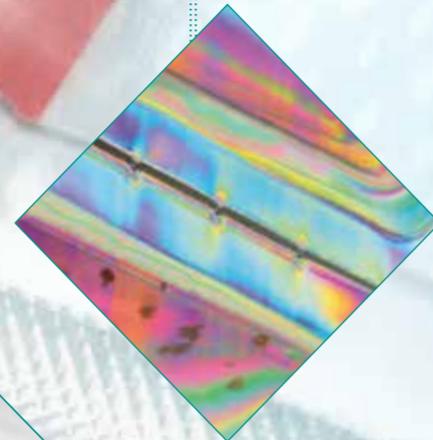
SPECTRALLY OPTIMISED PRODUCT IMAGES

We can enhance the contrast by implementing up to ten channels. Therefore, the final image data provides an optimum of property segmentation.

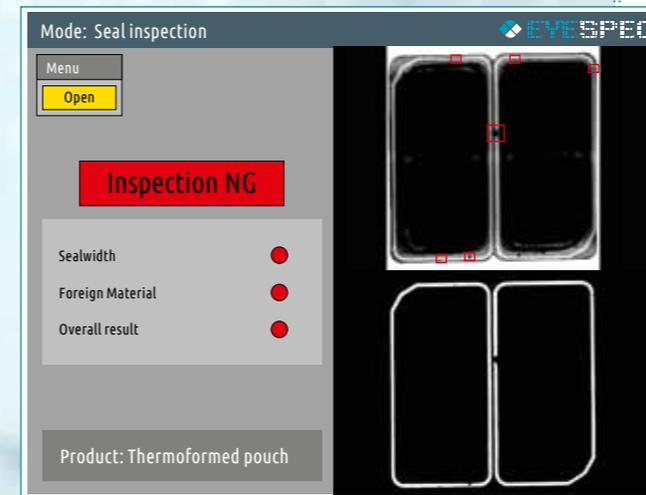
SPECIALLY DEVELOPED ILLUMINATION SYSTEMS



SPECTRALLY OPTIMISED
MULTISPEC ILLUMINATION



HIGH RESOLUTION
AT REAL PRODUCTION SPEED



INDIVIDUAL HMI

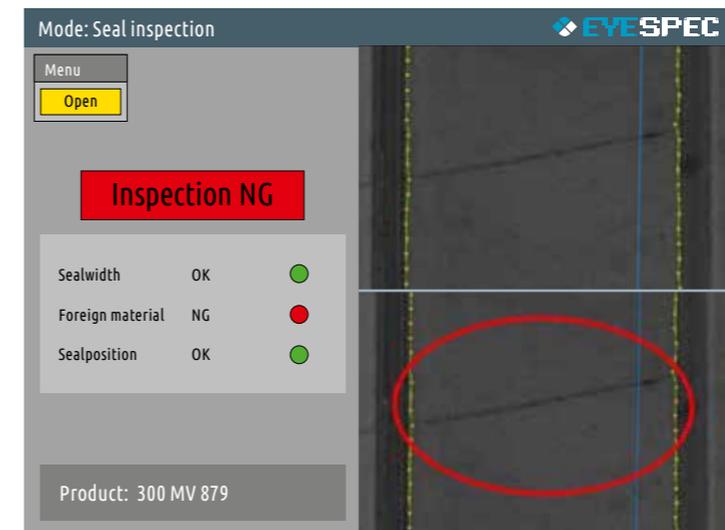
Detection of flaws, seal
seam position and width
in real-time.

SEALSPEC

SealSpec is our standard system for the inspection of sealed seams. It is able to detect even the smallest flaws in seal seams. The systems are camera-based, and can be placed at any point in a seal seam process. The spectrally-optimised illumination contrasts perfectly with the seal seam and provides a segmentation base for flaw detection. The advantage of the SealSpec system is obvious: Compared to traditional IR- or other, optical coherence-tomographies, extremely high seal seam resolution is possible. The data is processed in real-time at production speed, which enables highly efficient inspection cycles. Typical product characteristics for inspection are correct width, absolute position and common seal seam flaws.



The seal seam locks this packaging. Especially in medical or food production, small inclusions of air in the seal seam can cause leakage and spoil the contents.



Our systems can detect a multitude of product flaws and visualise them for you. The course of a seal seam is automatically tracked, so even flexible geometries can be analysed safely.

SEAL SEAM INSPECTION

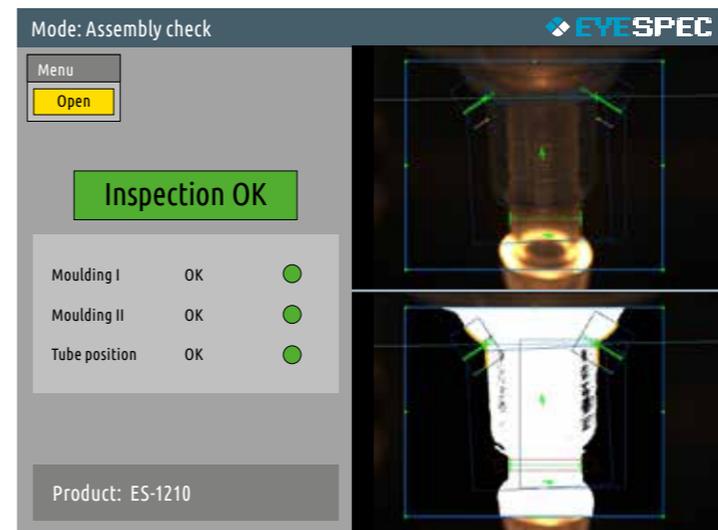
The seal seam is dynamically tracked using a specifically developed algorithm. This algorithm guarantees that only the seal, not uncritical areas, are tracked. Leading companies from the fields of medical and pharma technology, as well as representatives of the food sector, trust our inline seal seam inspection systems, avoiding expensive customer complaints and high rates of pseudo-waste.



Plastics



If the functionality of your products is affected by die-casting flaws, it is unacceptable. We can inspect complex geometries and detect the smallest irregularities in the form or surface.



As well as surface flaws, we can also check the dimensional accuracy of critical products. We can lower your costs by passing positively-tested products on to your subsequent production and rejecting.

PLASTICS

Packaging is an important factor in the presentation of products. We offer solutions for the whole range of die casting and shaping processes.

Using trend-setting technologies, we ensure that your requirements are fulfilled. This area typically includes inspection for over- and under-molding, codes and labels.

Metal



These pictures show the inspection of turbocharger turbines in regard to cutouts and correct rotating direction. Disturbing reflections can be masked out by using our spectrally selective setups.

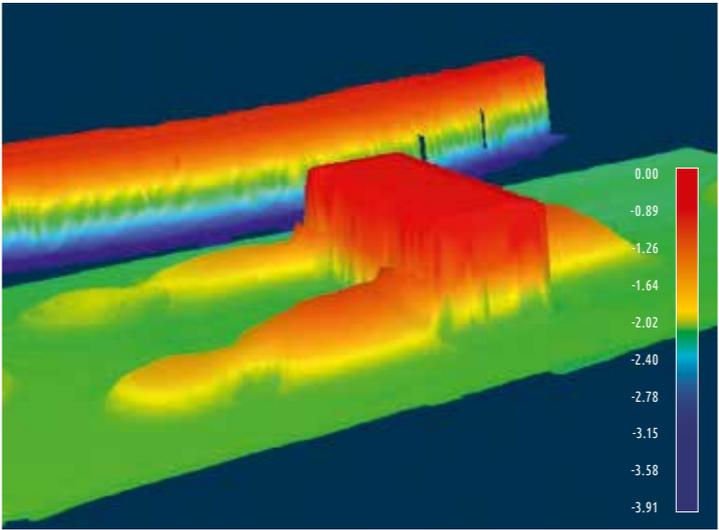


We create user interfaces according to your needs. Process data and statistics are clearly represented.

METAL

Metallic surfaces have a vast diversity of structures. The spectrum ranges from raw die cast surfaces, to highly polished seal faces. Traditional image processing setups often reach their technical boundaries when attempting to inspect these surface structures. Our special expertise in spectrally optimised illuminations, shape-from-shading and 3D, can overcome these limitations and take your processes further.

3rd Dimension



This example shows the implementation of laser triangulation and pattern projection used for the inspection of soldered joints. Short cycles and highly precise 3D accuracy are guaranteed.

Mode: Assembly check EYESPEC

Menu

Inspection NG

Fuse	NG	●
Transistor	NG	●
Alignment	Ok	●

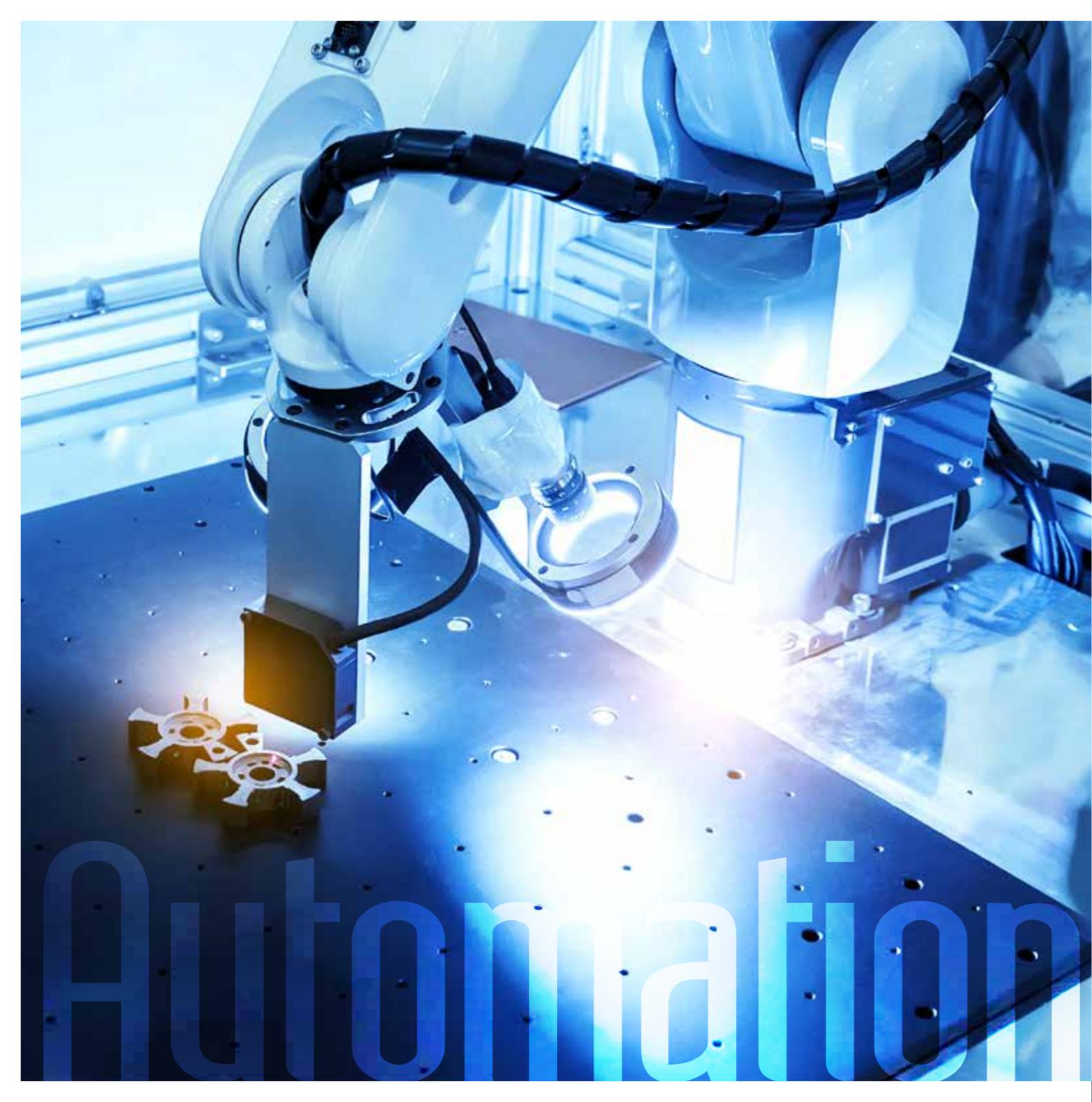
Product: Fuse assembly 5

Two 3D surface plots showing component heights on a PCB. The plots are color-coded, with red representing the highest points (35.000) and blue representing the lowest points (-35.000). The plots show a large rectangular area with a central peak and a smaller peak to the right. A vertical color scale on the right side of the plots indicates the height values.

Our system can also check the correct mounting and positioning of components. Grey-value images from which DMC or OCR can be derived, can still be used.

THIRD DIMENSION

The market for 3D inspection systems is continuously growing. We have specialised in two techniques: laser triangulation and pattern projection. Using these methods, 3D topologies can be checked with resolutions in the micrometer range. Typical applications are inspections of electronic components, welding and sticking processes, and mounting jobs.



Precise inspection parameters require precise handling. The selection of the appropriate handling platform is always done according to the required accuracy of the system. This approach ensures a sensible tradeoff between economical and technical aspects.



Our ranges from simple handling tasks, to complex clean room routines, which meet the highest demands for accuracy and efficiency.

AUTOMATION

EyeSpec offers ready-to-use systems in which pure image processing is perfectly combined with handling solutions. From simple conveyor belts to robotic platforms, we develop well-conceived setups which can harmoniously be integrated into your production processes.

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OUR CUSTOMERS

We are very proud of the fact that many leading mechanical engineering companies have placed their trust in us. Our customers represent the entire supply chain in branches such as automotive, medical products, food and electronics.

"The EyeSpec team showed a commitment in the implementation of time-critical projects which cannot be taken for granted. This cooperation is a testament to technical know-how, pleasure in accepting challenges and successful implementation."

DIPL.-ING. MATTHIAS WALTERS
Teamleader Engineering

Prinovis

"We have realized many technically demanding projects in cooperation with EyeSpec. EyeSpec provides a good support and can be recommended without restrictions."

MARIO BOBERTZ
Senior Engineer Equipment & Projects

ETHICON
PART OF THE JOHNSON-JOHNSON FAMILY OF COMPANIES

OUR PARTNERS

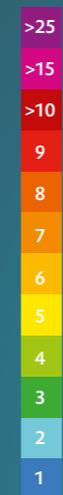
"The longtime partnership between Keyence and EyeSpec is based on cooperative trust. The combination of core competences provides a valuable benefit for our customers."

ANDREAS WÖRZ
Authorized officer
Sales manager
Machine vision

KEYENCE

PREFERRED

SOLUTION NETWORK PARTNER



USA
[ALABAMA, TENNESSEE]

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on the basis of a decision
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