innovision

INDUSTRIAL IMAGE PROCESSING

Product catalogue

GOOD REASONS FOR ...

PRESENCE / COMPLETENESS · SIZE ACCURACY · SURFACES

innovision

- \+ More than **25 years** experience in the sector of **image processing**
- \+ Engineering, control, robots – **all from a single source**
- \+ Solid, broad and international **know-how** from various sectors
- \+ Customer and/or project-specific **vision sensors**, **vision systems** and **PC-based solutions**
- \+ **Reliable partner** for engineering, system integration, consulting
- \+ Service, maintenance, process support and training
- \+ Process automation and process monitoring
- \+ **QA** and **QM** statistics and evaluation tools
- \+ **3D examination**
- \+ **Database integration**
- \+ **Synergy effects** (assembly, construction, software, start-up) through integration into the Pütz Group

PRODUCTION TECHNOLOGY pütz group

- \+ Established in 1988, approximately 90 employees
- \+ Many years of industrial experience
- \+ Central capital base / local flexibility with the greatest degree of freedom and responsibility

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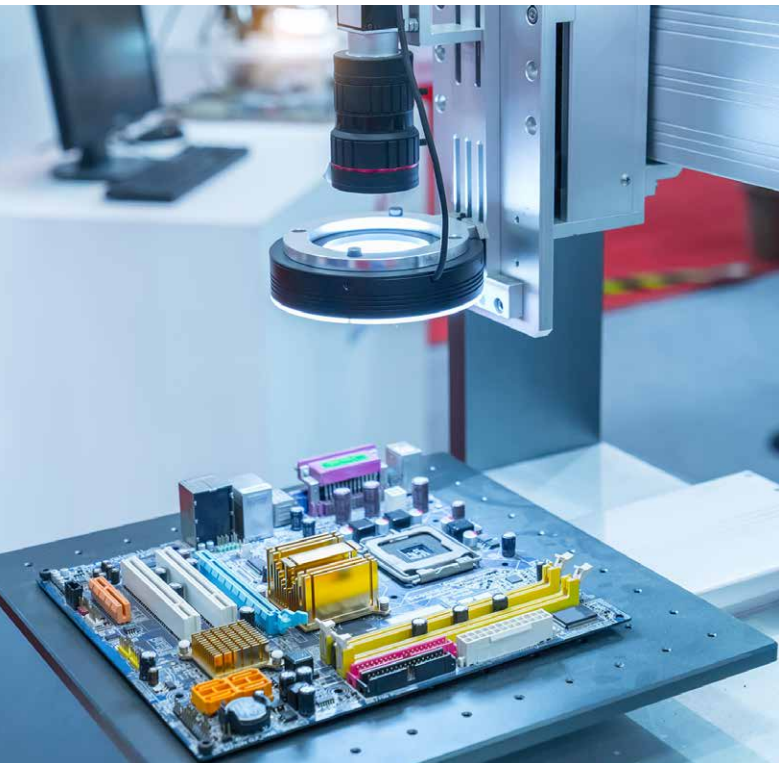
STRONG SOLUTIONS FOR DEMANDING TASKS

Your introduction to Industry 4.0

QUALITY MADE IN GERMANY
Special machines for your production

Companies, including those in the quality management sector, are faced with particular challenges in the age of Industry 4.0. Industrial image processing systems carry out reliable controlling in assembly and manufacture. This puts you in a position to also control complex products, components or assemblies with quite different characteristics quickly and without errors.

In comparison to manual size testing or visual examination by human eye our solutions work more reliably, more evenly, more objectively, faster and more inexpensively.



That's what our industrial image processing systems do:

- ✔ Size testing
- ✔ Surface inspection
- ✔ Checks on presence/completeness
- ✔ 3d examination
- ✔ OCR examination (optical Character recognition)
- ✔ Robot-led optical examination and inspection
- ✔ Automated, optical end-of-line examination and documentation stations
- ✔ Customer-specific tests of all kinds
- ✔ **NEW!** Optical Tests using artificial intelligence

Your benefit:

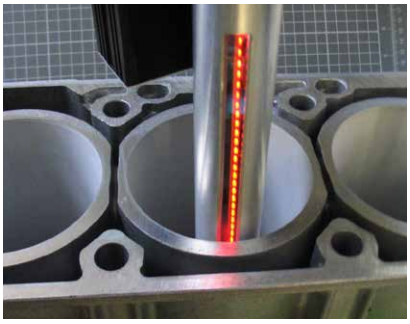
- ⊕ **100% quality and 0 errors** through automated control
- ⊕ **Cost reduction** through less personnel and earlier reworking in the production process
- ⊕ **Shorter lead times** because of fewer errors and more automation
- ⊕ **Cognitive alleviation** of employees
- ⊕ **Better decisions** through automatic documentationand provision on the Internet
- ⊕ **High level of efficiency:** typical return of investment is 1-2 years

STRONG SOLUTIONS FOR DEMANDING TASKS

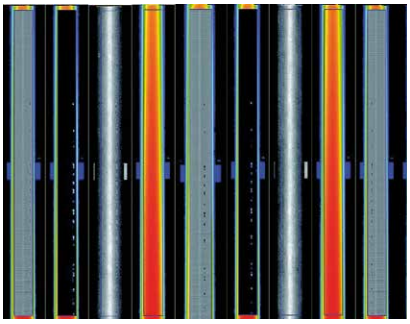
Our services:

- **Selection of suitable components**
- **Integration of vision sensors and programming**
- **design, construction and delivery of testing machines and test cells**
- **Analysis and optimisation of your image processing**
- **design and integration of vision systems** (Smart Camera Solutions and PC-supported)
- **Consulting and Engineering**

Toothbrush handles



Cylinders



3D surface inspection of pipes

EVERYTHING FROM A SINGLE SOURCE

Thanks to our integration into the **PÜTZ GROUP** and the resulting **synergy effects** we are able to offer you solutions beyond simple image processing: from camera integration through the test cell to a complete automation solution.

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OPTICAL TESTS USING ARTIFICIAL INTELLIGENCE

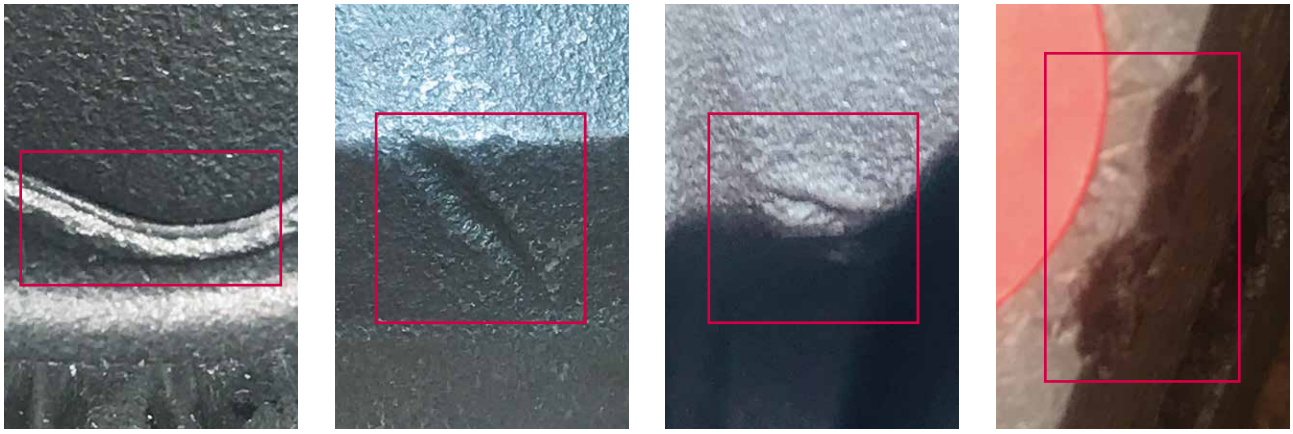
The highest test performance and lowest follow-up costs thanks to self-learning test systems

QUALITY MADE IN GERMANY
Special machines for your production

Does this sound familiar?
You have invested in a new optical testing facility. Over time, more and more new test characteristics or component types are added. Since all of these require new programming, you then need to employ image processing specialists and additional specialist personnel. The resulting follow-up costs are immense! Another unnecessary cost driver is that the false rejection rate for complex tests and components is often higher than expected.

Our self-learning optical test system shields you from this: You will need neither expensive image processing specialists nor additional specialist personnel to extend your range of component types.
Existing production staff can teach the system new test characteristics and component types simply and intuitively, without any prior knowledge. Minimal false rejection rates are guaranteed!

AUTOMATIC DEFECT RECOGNITION USING ARTIFICIAL INTELLIGENCE:

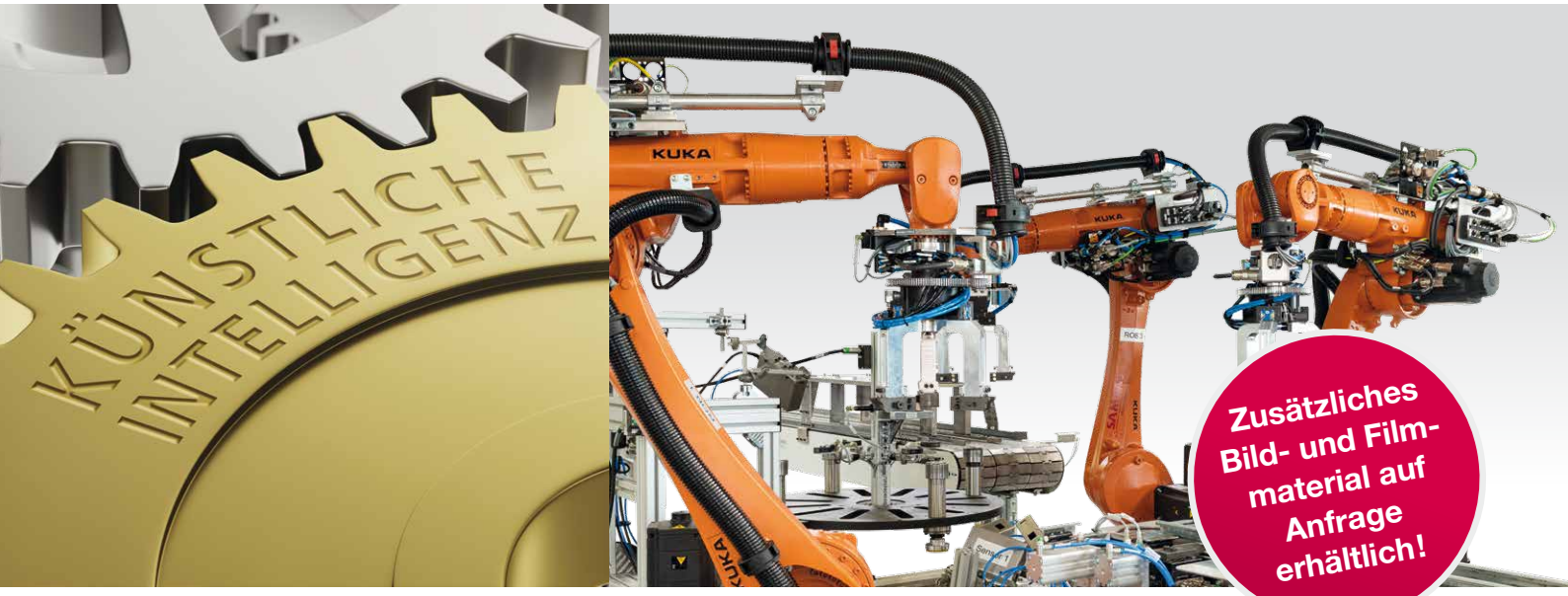


Applications:

- **All defects visible to the human eye:**
  Defects, dents, grooves, or scratches on various (including structured) surfaces
- **Statistical evaluation of the test results**
  for every test characteristic over freely selectable periods
- **Storage and analysis**
  Storage and analysis

OPTICAL TESTS USING ARTIFICIAL INTELLIGENCE

DEPENDING ON YOUR NEEDS, WE WILL SUPPLY YOU WITH **ONLY THE TEST SYSTEM** OR **THE COMPLETE TESTING FACILITY** FROM A SINGLE SOURCE.



Our service:

- **Image processing systems**
- **Engineering adaptations**
- **Complete test cells with NOK ejection**
- **Robot integration**

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ROBOT-LED OPTICAL TESTS

For the quality monitoring of large, complex and varied assemblies

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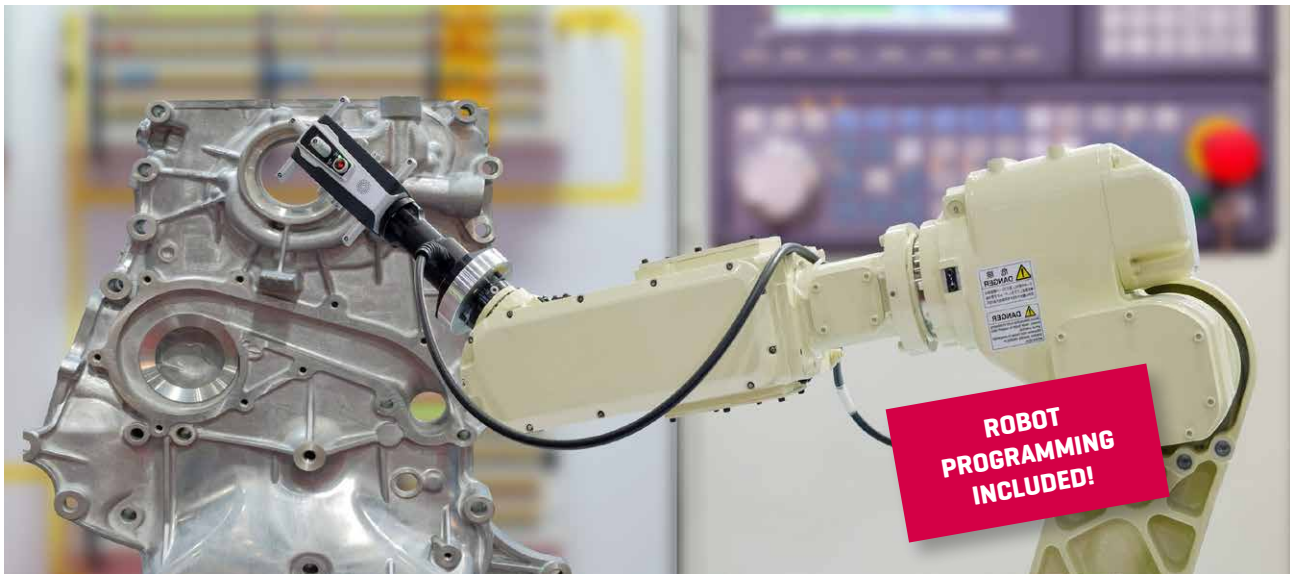

Static test systems with fixed cameras are usually inadequate for the quality monitoring of large, complex and varied assemblies. Modern image processing systems for test systems in modern production are increasingly used directly on the production line.

2D and 3D Robot Vision Systems combine the flexibility of industrial robots with the capacity of image processing systems.

Your benefit:

Surface inspection:

- **100% quality control** for the production of workpieces at consistently high quality, independently of the operator and reliably.
- High-resolution cameral systems examine your workpieces precisely and **recognise the smallest defects.**
- The **high rate of examination** allows self-sufficient or line-integrated, cycle-suitable inspection.

Component examination:

- The control and examination of component specific characteristics with robot-led, optical component examination allows the **fast examination of different test characteristics at different positions on the component.**

ROBOT-LED OPTICAL TESTS

Complex parts and geometrise of different sizes and condition can be identified and examined optically, positions and 3D locations determined and different production types automatically recognised. A camera/ vision sensor/3D measurement head can thus be used **at different testing locations with different camera parameters.**

Example weld testing:

Automated welding is state of the art in many sectors of industry these days. The quality of the welded joints is, however, almost always still evaluated visually by specially trained workers.

Optical, robot-led 2D and 3D weld examinations allow a fully automatic, time and cost efficient weld examination. The necessary personnel requirements are reduced and the natural, human rate of error is ruled out.

Example glue bead examination:

The volumes, application areas and form of glue beads can be determined and measured by robot-led, 3D examination. The glue bead is controlled for height, width and position directly following application **with the same robot**, using a 3D measurement head.

Our service:

- **+ Image processing systems**
- **+ Engineering adaptations**
- **+ Complete test cells with NOK ejection**
- **+ Robot integration**

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3D SURFACE INSPECTION

Optical examination system for the automatic optical control of pipes

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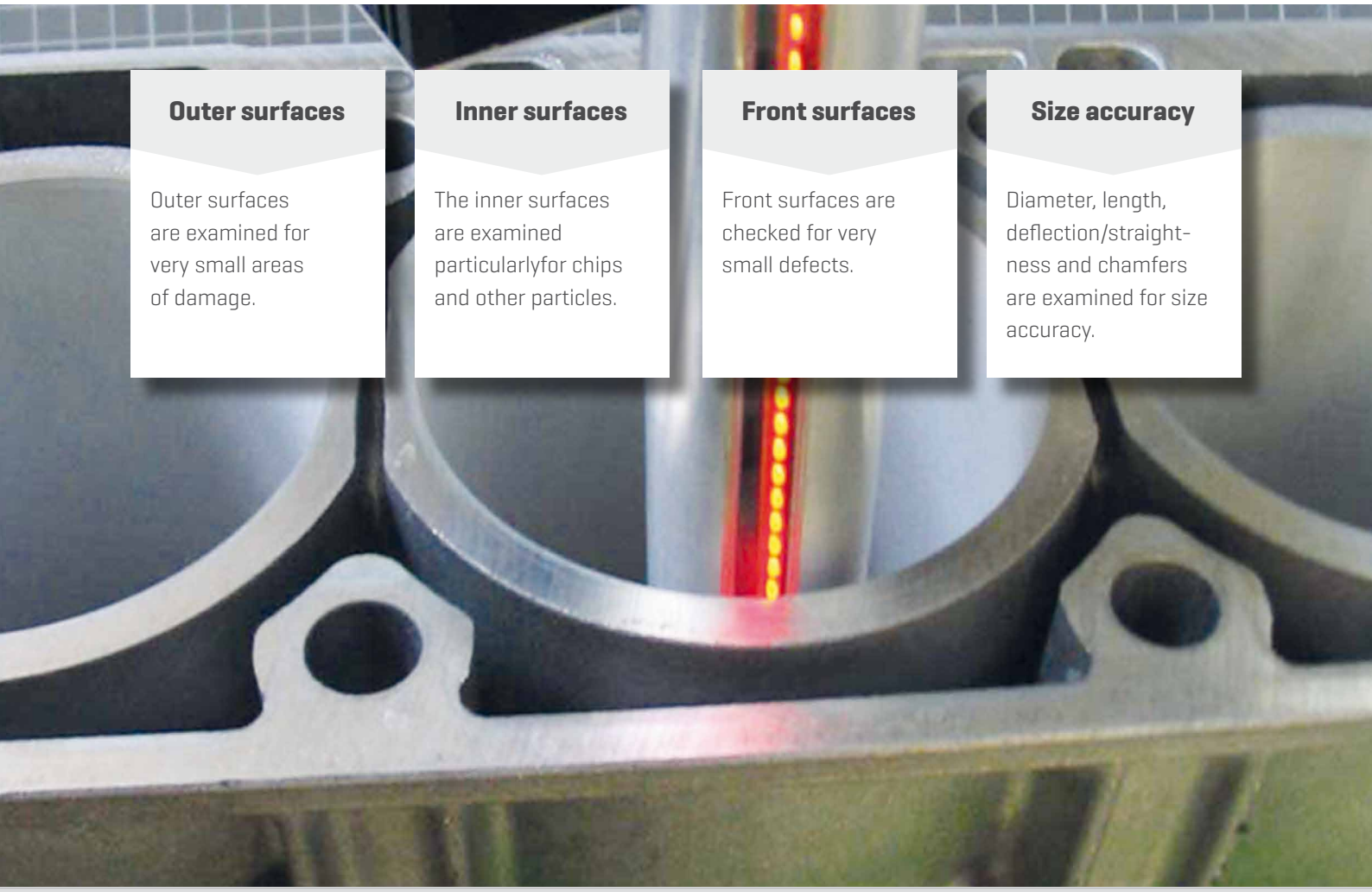


Outer surfaces

Outer surfaces are examined for very small areas of damage.

Inner surfaces

The inner surfaces are examined particularlyfor chips and other particles.

Front surfaces

Front surfaces are checked for very small defects.

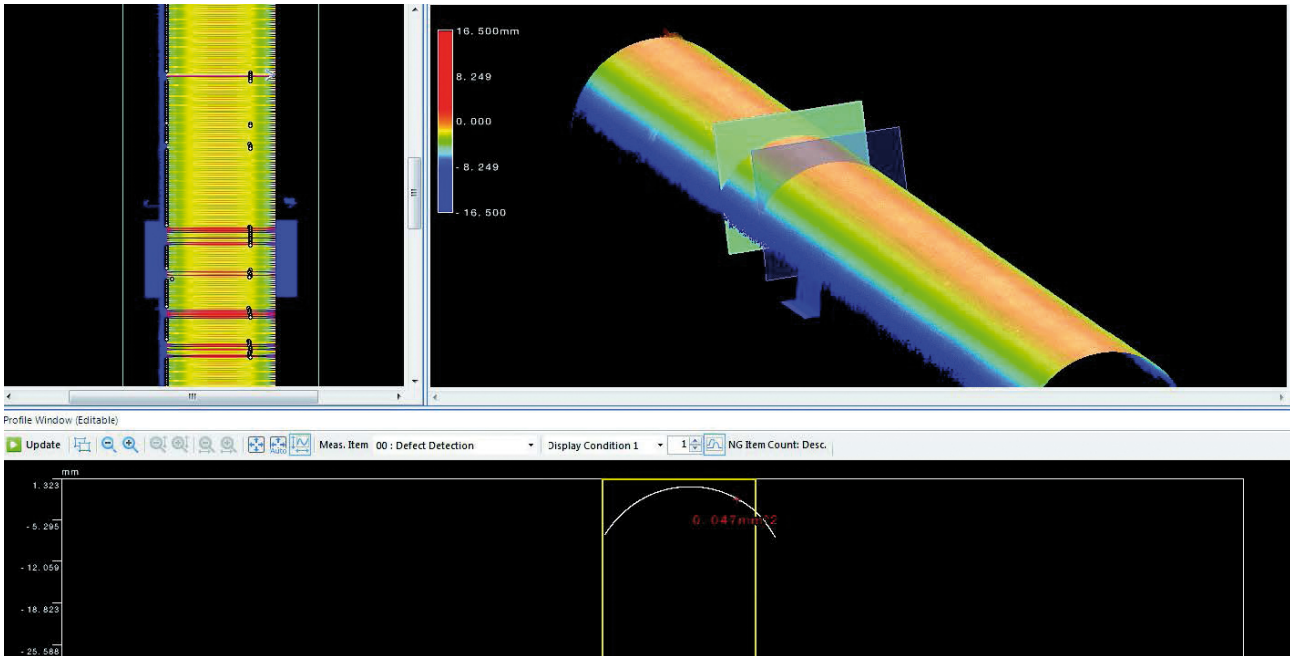
Size accuracy

Diameter, length, deflection/straightness and chamfers are examined for size accuracy.

Example applications:

- **Test characteristics of the outer surface of the pipe:** dents, kinks, striae, scratches and other defects
- **Test characteristics of the inner surface:** chips and other particles
- **Resolution/accuracy** from 0.01 mm
- **Surface test characteristics** from 0.05 mm
- **Dynamic Verification:** test results for various scenarios are verified and feed into the next test in real time
- **Statistical evaluation of the test results** for each test characteristic across freely selectable periods of time
- **Storage and analysis** of fault images

3D SURFACE INSPECTION



The damage was recorded to the sensor at 3 different positions.

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PC-BASED TEST SYSTEMS

Control of completeness, size accuracy and surfaces

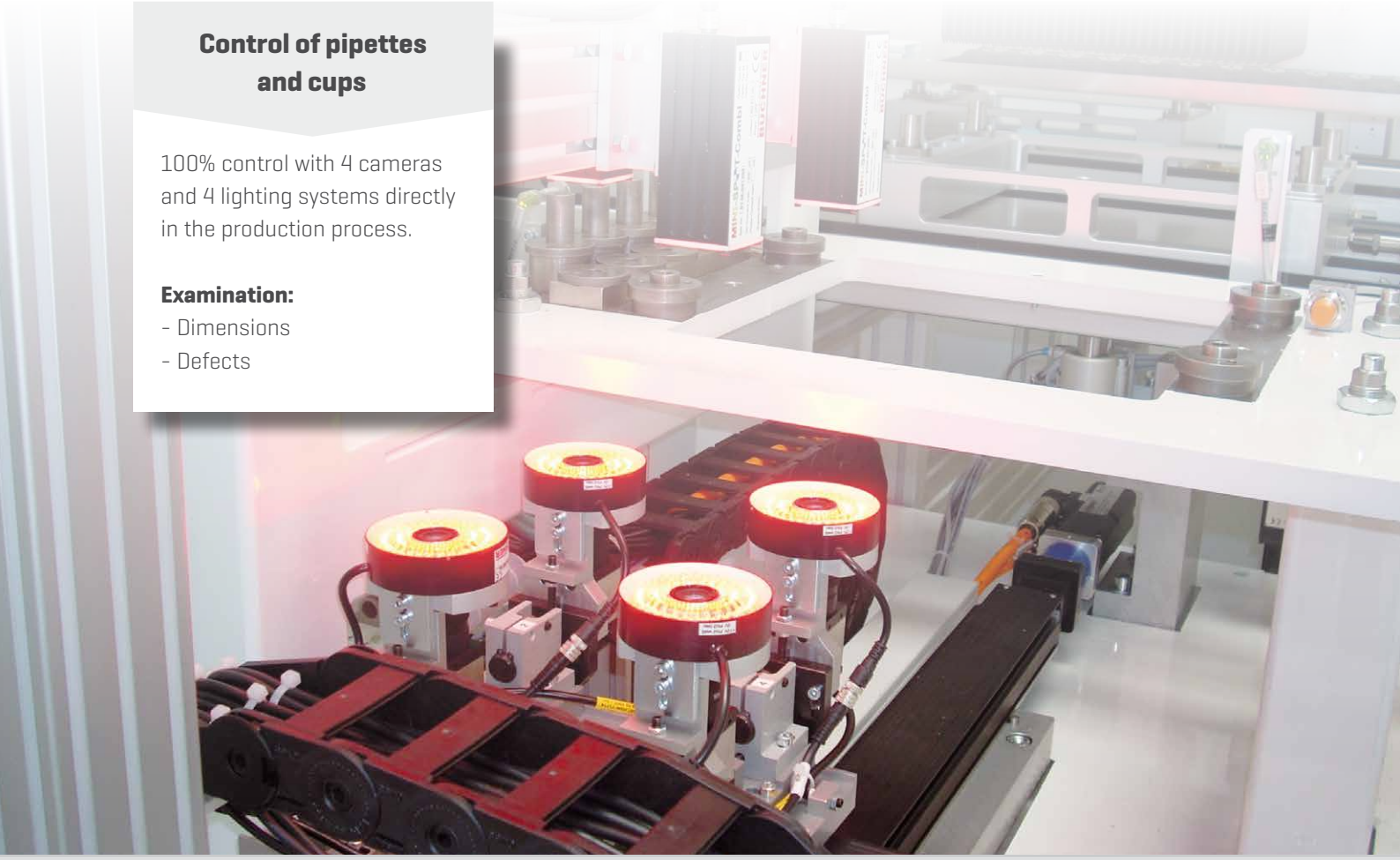
Apart from the completeness and presence of test characteristics it is also possible to examine dimensions, surfaces (e.g. oil leakages) and colours. Cameras are placed depending on the task and controlled in such a way that the correct view is always provided.

QUALITY MADE IN GERMANY
Special machines for your production

Control of pipettes and cups

100% control with 4 cameras and 4 lighting systems directly in the production process.

Examination:
- Dimensions
- Defects



Application examples:

- Instrument panels and transmissions
- Plastic casing and loudspeakers
- Engines
- Syringes
- Pipettes
- Toothbrush handles

PC-BASED TEST SYSTEMS

Application examples:

Control of injection syringes

Inline examination:
- Dimensions
- Defects

Control of automobile engines with severalcameras and special lighting

Examination
- Completeness
- Oil leakage

Control of toothbrush handles

Examination
- Dimensions
- Surface defects
- Contours

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END-OF-LINE PICTURE AND DOCUMENTATION STATION

Automated outgoing goods inspection

for ensuring a complete quality documentation and quality control in production.

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Special machines for your production

Your benefit:

- **Avoiding unjustified complaints**
- **Quick amortisation,** especially with high product values
- **High flow-rates and cycle times possible**
- **Fast and easy retrofitting into existing production lines**
- **Operator independent, fully automatic and complete documentation and archiving** according to customer-specific batch numbers with constantly high quality of pictures/photos and data

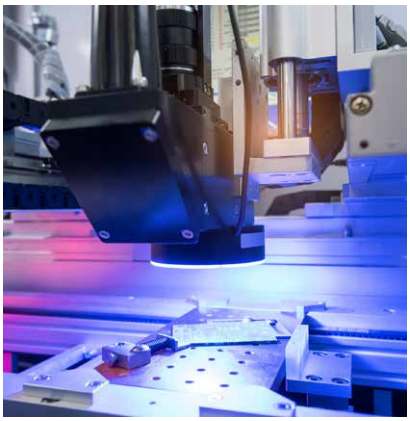
Optional extension – testing station:

- **Avoidance of claims** by final inspection of outgoing goods
- **Statistical Evaluation** for QS/QM according to customer specific OK/NOK criteria
- **Communication with PLC, superior control and Manufacturing Execution Systems (MES)**

END-OF-LINE PICTURE AND DOCUMENTATION STATION

Strong arguments:

- ✔ Automised documentation
- ✔ High flow-rates and cycle times possible
- ✔ Consistent, user-independent documentation
- ✔ Easy retrofitting into existing lines



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PRESENCE / COMPLETENESS · SIZE ACCURACY · SURFACES

MORE THAN 25 YEARS OF EXPERIENCE

QUESTIONNAIRE
FEASIBILITY CHECK FOR AN IMAGE PROCESSING TASK:

Your contact details:

Company	
Street / house number	
Postal code / city	
Contact person	
Position	
Date	

Send the completed form to:

info@innovisionsystems.de

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1. Task description:

Brief description of the task:

Project name:

- ◯ Size accuracy testing
- ◯ Surface inspection
- ◯ Control of presence/completeness
- ◯ Measurement
- ◯ Colour recognition
- ◯ Character recognition
- ◯ Positioning
- ◯ 3D examination

Test characteristics:

- ◯ One character
- ◯ Several characteristics / Quantity:

Area of application:

- ◯ Production
- ◯ Laboratory

Kontrollart:

- ◯ 100 % testing
- ◯ Sample testing

2. Test conditions:

Machine cycle:		Parts/minute:	
Max. test duration/cycle time:		Seconds/part:	

Timing sequence of object feed:

- ◯ Object can be stopped
- ◯ Object cannot be stopped

Object feed:

- ◯ individual
- ◯ in groups
- ◯ overlapping
- ◯ touching

Positioning:

- ◯ always positioned in the same way
- ◯ not positioned

Positioning precision:

horizontal		+ mm		- mm
vertical		+ mm		- mm
Angle		+ °		- °

3. Parameter of the test object:

Name of test part:

Product name:

- ◯ included
- ◯ not present

Number of variations:

Quantity:

Object size:	Smallest object:		Largest object:	
Diameter		mm		mm
Width		mm		mm
Length		mm		mm
Detail sizes		mm		mm
Tolerances		mm		mm

Object surface:

- ◯ glossy
- ◯ matt
- ◯ smooth
- ◯ rough
- ◯ structured
- ◯ varnished
- ◯ printed

Test detail:

- ◯ glossy
- ◯ matt
- ◯ varnished
- ◯ smooth
- ◯ rough
- ◯ printed

Object colour:

- ◯ light
- ◯ dark
- ◯ single colour, colour:
- ◯ several colours

Background colour for the object:

- Colour:
- ◯ freely selectable

Object material:

- ◯ Plastic
- ◯ Metal
- ◯ other:
- ◯ opaque
- ◯ transparent
- ◯ translucent

Object pollution:

- ◯ none
- ◯ Dust
- ◯ other:
- ◯ Washing water
- ◯ Oil
- ◯ Chips

Original samples:

- ◯ included
- ◯ will be provided
- ◯ not present
- ◯ OK parts, pieces:
- ◯ NOK parts, pieces:

4. Environmental conditions:

Light conditions:

Screening off of extraneous light:

- ◯ possible
- ◯ not possible

Soiling:

- ◯ none
- ◯ light
- ◯ heavy

Vibrations:

- ◯ none
- ◯ weak
- ◯ strong

Temperature variations

- ◯ none
- ◯ present from ____ to ____ °C

Humidity variations:

- ◯ none
- ◯ present from ____ to ____ %

Voltage spikes:

- ◯ none
- ◯ present

5. Operational environment:

Experience in the operation of image processing:

◯ none	
◯ little	
◯ Image processing has been used since:	

Image processing is to be used:

◯ as individual measurement station	◯ in the production line
Planned quantity:	
Planned date of acquisition:	
Planned date of initial operation:	

Send the completed form to:

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