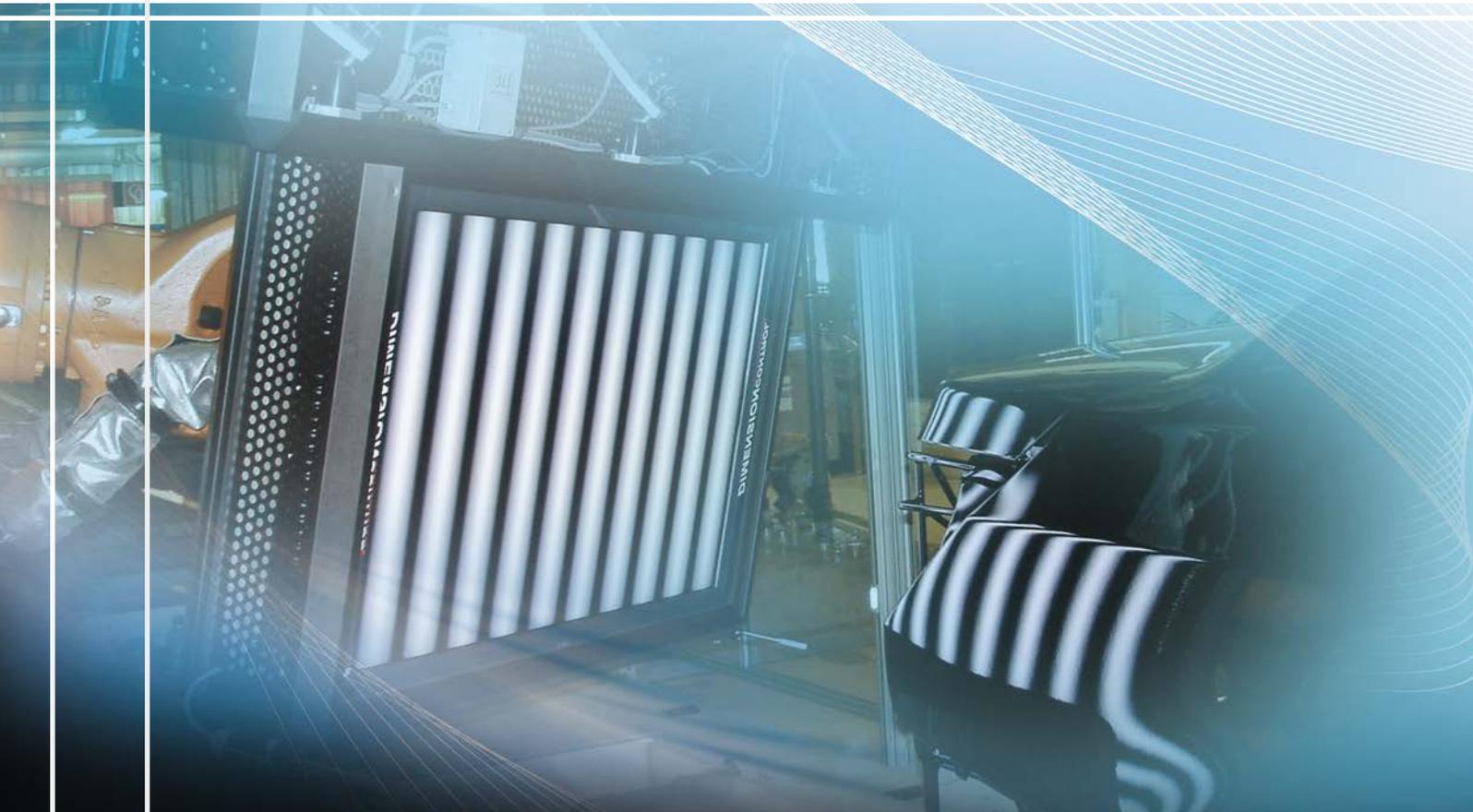




More Precision

reflect**CONTROL** PSS 8005.D // Automated surface inspection





- 100% inspection and defect marking in cycle time
- Color-independent 3D measurements
- Individual paint defect classification fulfills the requirements of the world's leading automotive groups
- Robot-based measurement technology
- Reliable system design and storage of statistical data
- Full integration into existing process lines

reflectCONTROL PSS 8005.D

reflectCONTROL PSS 8005.D is a system for robot-based surface inspection tailored to the requirements of the automotive industry. It is used in paint shops for the overall inspection of the entire car body and ensures reliable paint defect recognition according to the specifications of leading automotive groups. Based on fully automatic defect marking, this cutting-edge system for paint defect inspection stands out due to comprehensive defect statistics of parts and zones. The PSS 8005.D inline measuring system is available in various configurations and can therefore be adapted to different customer cycle times.

Application areas

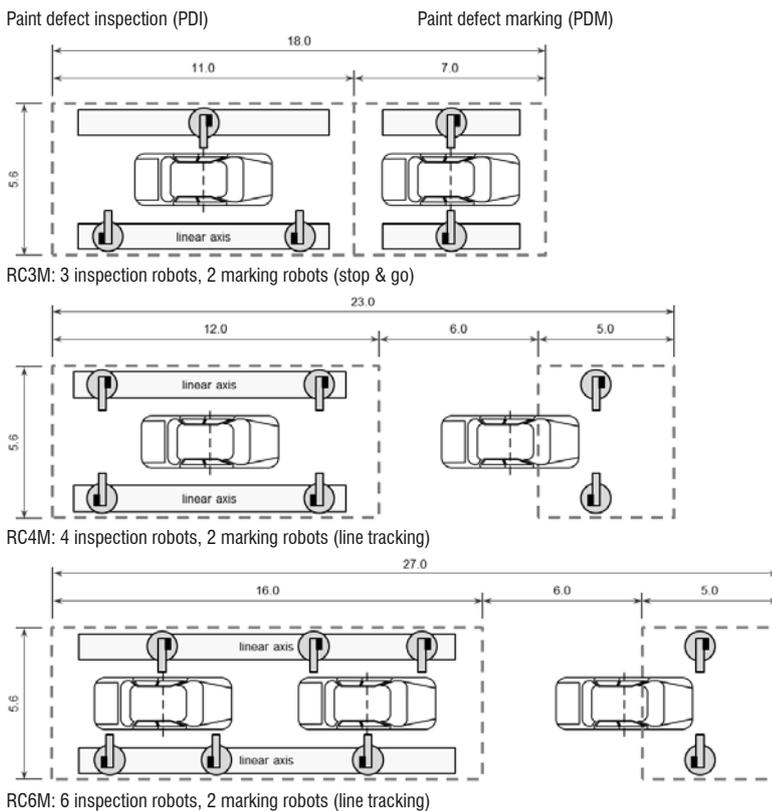
Automotive

- Primer (all shades)
- Base coat (all colors)
- Clear coat
- KTL (E-coat)

Aviation

- Surface coating materials

PSS 8005.D - Structure

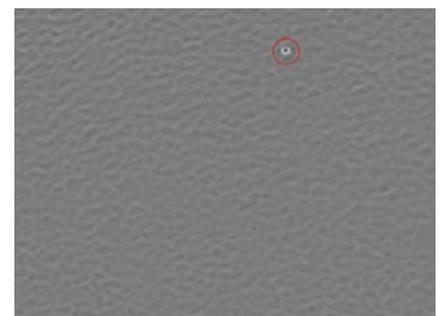


Material parameters

Gloss > 60 GU (at 60°)

Ambient conditions

Illuminance < 150 Lux



Highlighted paint defects

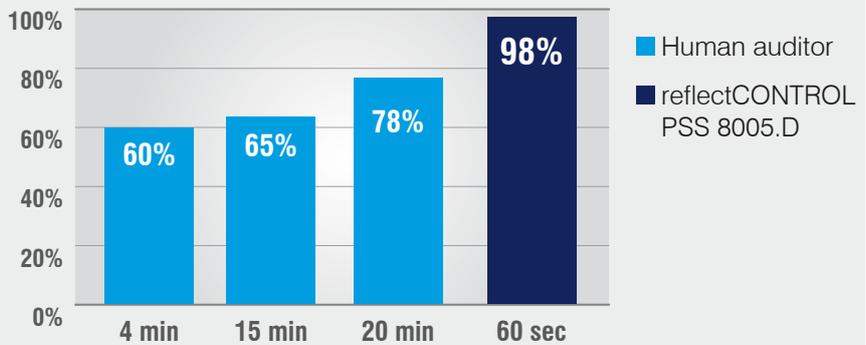
Automated defect detection for all colors. Optimized signal processing algorithms for paint defect detection.

reflectCONTROL PSS 8005.D

reflectCONTROL ensures advanced defect detection on shiny surfaces such as paint, metals, glass and many more. The phase-shifting deflectometry principle enables objective inspection processes regardless of human factors such as tiredness or lack of concentration. Smart image processing algorithms convert the measured data into three different channels: local curvature, reflectivity and base intensity.

By evaluating these channels, the automatic defect recognition detects anomalies in shape, reflectivity and contrast. Subsequently, the defects are reconstructed in 3D.

Defect detection rate



Automated surface inspection

The reflectCONTROL PSS 8005.D inspection system for painted surfaces and defect marking recognizes almost 100% of all relevant defects. It is suitable for any paint color and adapted to the requirements of 24/7 operation.

Automated inspection vs. human inspection

To date, visual surface inspections and quality control processes have been carried out by auditors. However, only 65% of all defects can be detected by visual, human inspection processes. The more time invested, the higher the detection rate. Even under offline conditions, not more than 78% of all defects can be found.

reflectCONTROL PSS 8005.D - Performance

	RC2M	RC3M	RC4M	RC6M	RC8M
Net inspection time (sec.)	110	73.3	55	36.7	27.5
Cycle time (sec.)	128	91.3	73	54.7	45.5
Units* per hour	28	40	50	66	79

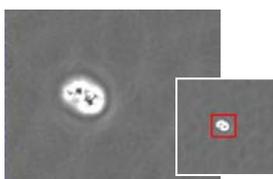
*Car bodies, visible surfaces

reflectCONTROL - Defect classification

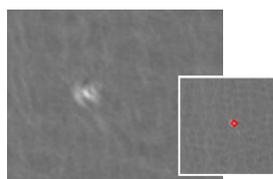
Primary zone

Category 0	(no defect)	<0.3mm
Category 1	(small)	0.3mm – 1.0mm
Category 2	(medium)	1.0mm – 2.0mm
Category 3	(large)	>2.0mm

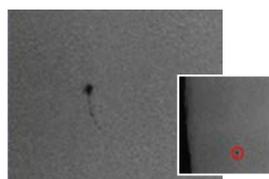
Typical paint defects detected by reflectCONTROL



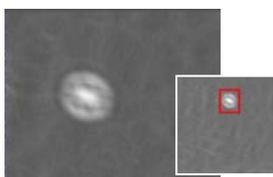
Inclusion



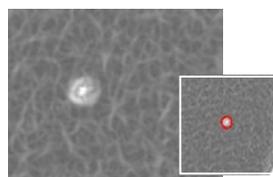
Inclusion in the base coat



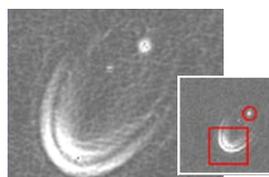
Hair



Contaminations



Craters



Drops

Paint defects

Most paint defects are inclusions in the base and clear coat. The reflectCONTROL surface inspection system detects any defect that causes anomalies in shape, reflectivity or contrast.

Defect classification

All defects are classified according to size and OEM standards. Depending on the customer's demands, this evaluation takes into account car body parts and zones. The defect classification may vary depending on the respective zone. In the spot repair area, special marking stations highlight the relevant defects. The reflectCONTROL system also detects hair, dirt, craters, drops, polishing defects, runs, fat edges, contact points and many more.

Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



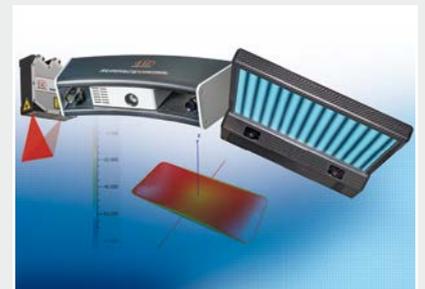
Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection