Perfection for mirroring components
3D surface inspection with SpecGAGE3D

ISRA
VISION
3D-Shape

Surface inspection for mirroring components

SpecGAGE3D-3D sensors measure reflective surfaces of curved and planar objects quickly, highly accurately, and extremely cost-effectively. All SpecGAGE3D systems work on the measuring principle of deflectometry, in which a reflected stripe pattern from several cameras is captured and then evaluated. Errors are detected and – once known – classified straight away.

Precision down to the micrometer range and the automatic CAD comparison make SpecGAGE3D an ideal tool for industrial quality and process control. Development laboratories and quality assurance thus have an instrument for improving production processes – helping to avoid production errors, save resources, and reduce production costs

	SpecGAGE3D-planar	SpecGAGE3D-XL	SpecGAGE3D-robot
Measuring principle	Phase-measuring deflectometry	Phase-measuring deflectometry	Phase-measuring deflectometry
Measuring field (standard)	300 × 200 mm^2 (flat object)	600 × 400 mm^2 (flat object)	200 × 300 mm^2
Lateral resolution	approx. 240 µm	approx. 240 µm	> 50 µm
Measurement time	typ. 3-15 sec	typ. 3-15 sec	> 1 sec
Evaluation speed	typ. 3-10 sec	typ. 3-10 sec	
Standard cycle time	typ. 6-25 sec	typ. 6-25 sec	
Accuracy of elevation map	+/- 10 µm on 10 × 10 cm^2	+/- 10 µm on 10 × 10 cm^2	
Cameras	2 (4) × 1,3 MP CCD		4 × 5 MP CMOS
Outer dimensions W × H × D mm^3	860 × 834 × 600 mm^3	1696 × 1819 × 1210 mm^3	520 × 480 × 100 mm^3

All SpecGAGE3D units provide

- Camera configuration adaptable to the measuring task
- Fast integration into production lines with standard software interfaces
- Ready to measure in challenging production environments – No moving components, robust against vibrations
- 100 % in-line measurement
- Manual or automatic loading
- Semi-automatic or fully automated measuring process
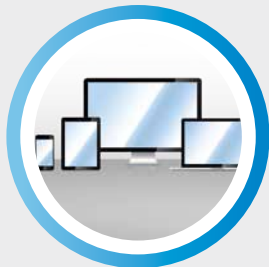- Clear OK/NG decisions

Applications

SpecGAGE3D is applicable for all glossy surfaces such as:
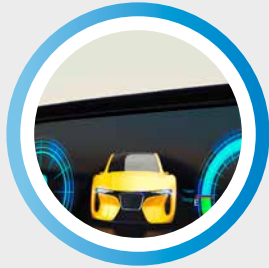
Automotive display
SpecGAGE3D inspects the **light guide**, the **display**, and the **cover glass** of automotive displays.
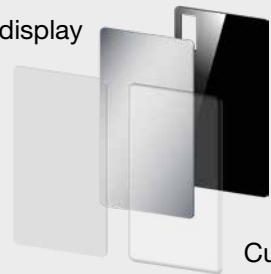
Light guide
Display
Cover glass

3C
Cosmetic inspection for glossy **backs**; form control and defect detection for **displays** and flat or curved **cover glasses**.

Assembled display
Enclosure
Cover glass
Curved cover glass

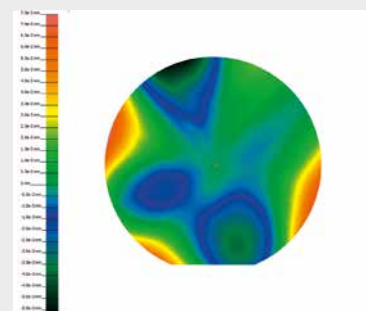**Car Exterior/Interior**
Cosmetic inspection of add-on parts, such as **B-pillars, trims**; inspection & form control of **headlights, mirrors, bumpers, sunroofs**.
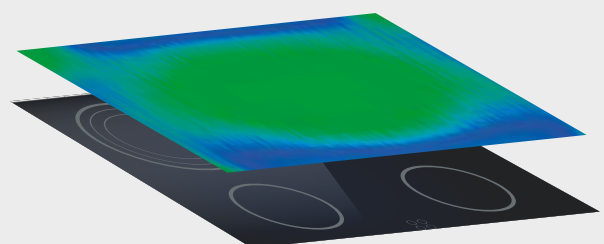
Semiconductor
Topographic measurement of **bare** or **sapphire wafers**: Precise height measurement for wafer shape inspection.
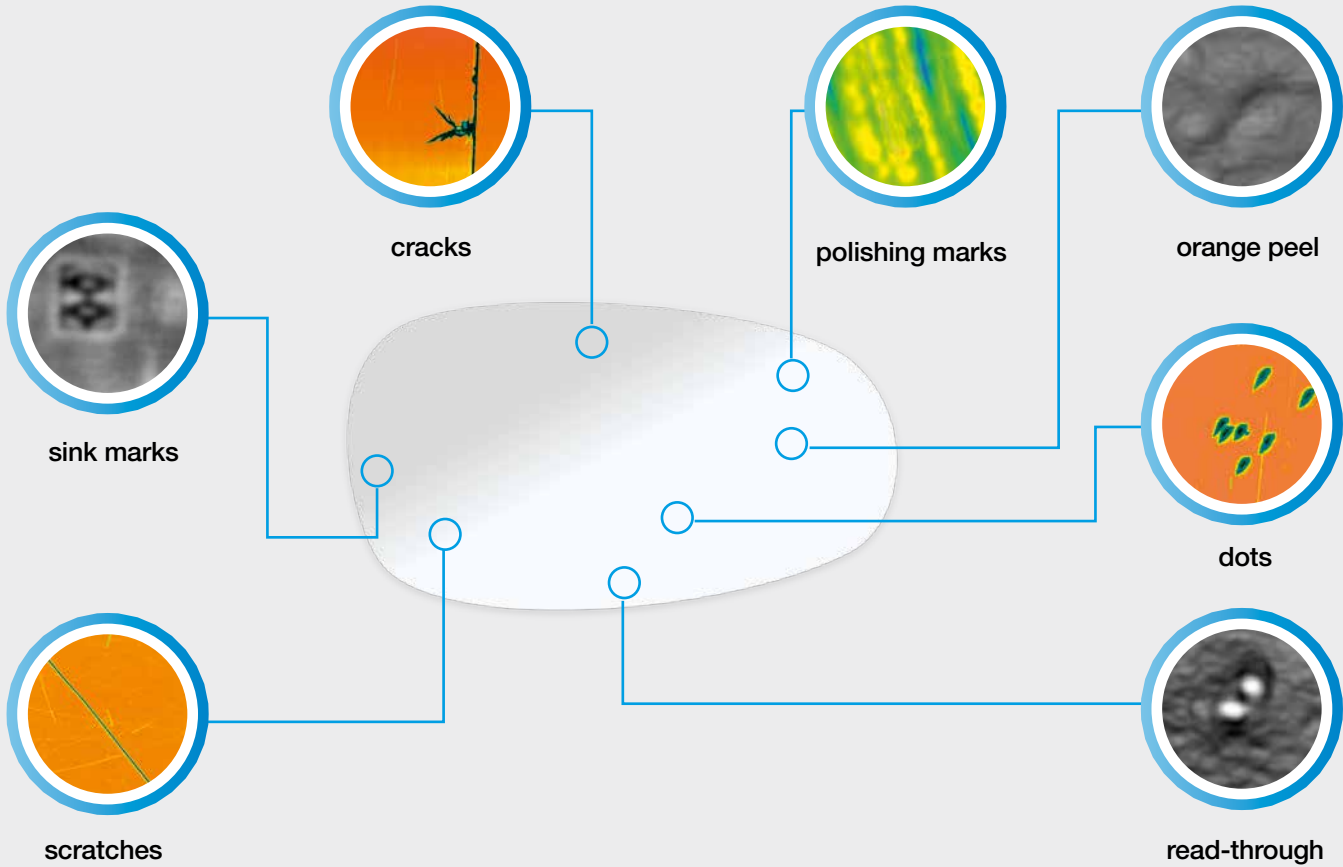
White goods
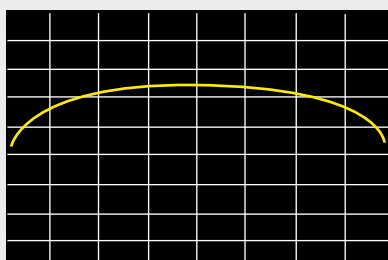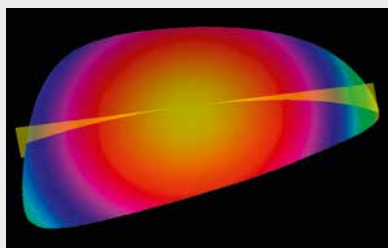Defect detection and cosmetic inspection of **coated or painted high gloss fronts, cooktops, glass ceramics**.

Form control & defect detection in one measurement

Typical cosmetic defects

cracks

polishing marks

orange peel

sink marks

dots

scratches

read-through

Form control / CAD comparison

Geometrical information regarding shape / flatness / radius / CAD comparison

Features

Evaluation channels

Based on the measurement principle of deflectometry, **SpecGAGE3D** evaluates multiple channels in only one measurement run:

- Curvature: Local defect detection, e.g. inclusions, scratches
- Waviness: Local distortions, e.g. orange peel, readthroughs
- Height: Form deviations in the micrometer range

Channels

- Height map
- Curvature
- Slope
- Contrast

Waviness: Orange peel & read-throughs

Curvature map: Local defects

Height map: Global Shape

Height map 3D
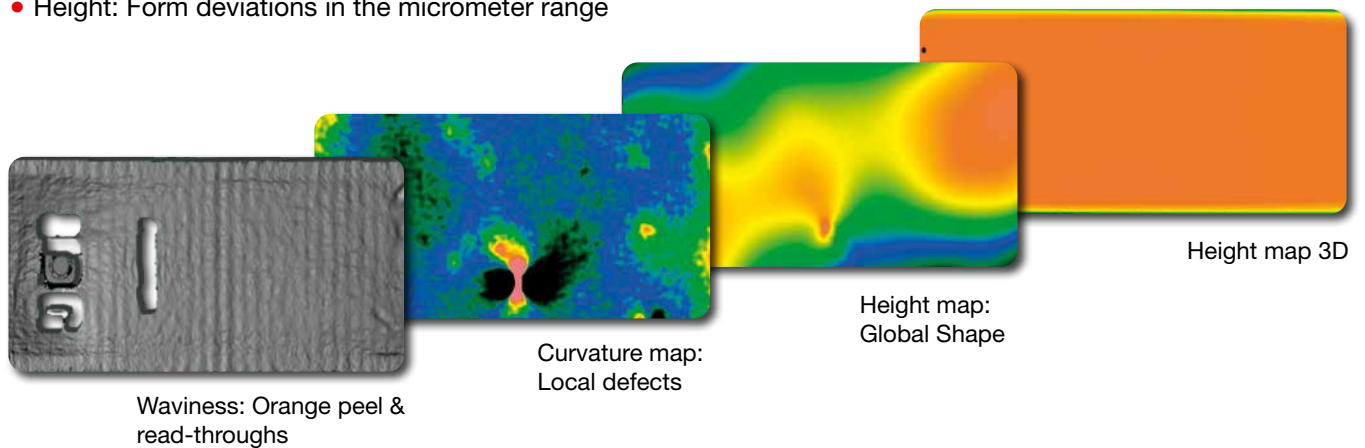
Measurement approach

Multi part-inspection

- Simultaneous inspection of several slightly curved components
- Series measurement of components in trays
- No individual withdrawal and positioning of volume products

Large part-inspection

- Automated inspection of complex parts
- Multi-camera system for best coverage of all surface areas
- Optimization for complex geometries possible

Benefits

- Fast capturing of form and defects: Only one measuring tool for two measuring tasks
- 24/7 objective & constant control besides manual evaluation
- Traceability: Detect production deficiencies over time
- Fast and precise CAD comparison
- Flexibility in part sizes, shape, and variety

Innovations for Automated Optical 3D-Quality Control
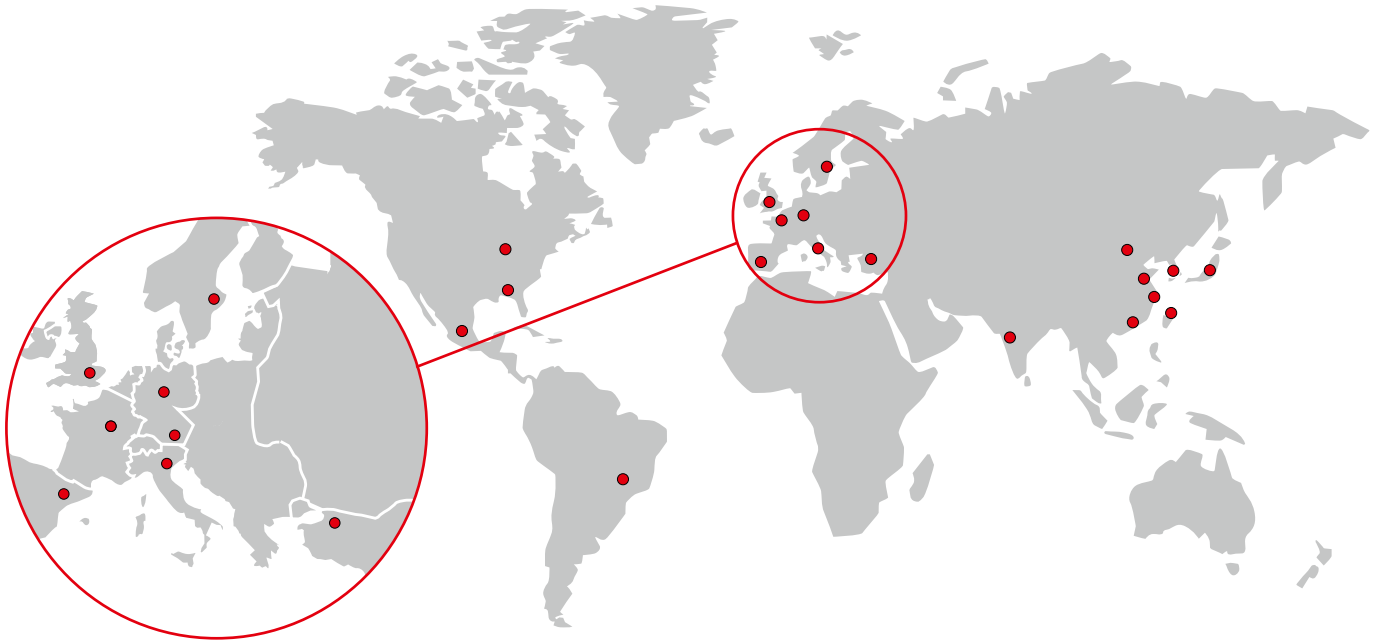
Automation at its best

ISRA VISION has been a leading supplier of high-performance quality inspection, robot guidance and production logistics systems for more than 30 years.

Our systems are used around the world in many different industries and applications. Our mission is to offer a comprehensive portfolio of standard solutions, covering all requirements along the process chain.

ISRA's experience and technological competence in the field of industrial image processing has been proven by thousands of successfully installed systems worldwide.

Benefits at a glance

Customers opt for ISRA's solutions for the following reasons:

- Our development activities are consistently aligned with our customers' requirements.
- We are continuously expanding our knowledge and expertise in all core areas of industrial image processing.
- Our customer relationships do not end with the delivery of new products. The Customer Support Center provides comprehensive support for the use of your systems and helps you to increase your productivity – be it via our telephone hotline, remote service, on-site service, or our maintenance services.
- More than 900 employees at our sites in Europe, North and South America, and Asia are committed to your success.

ISRA VISION

Germany
Tel.: +49 (9131) 977 959 0
Tel.: +49 (6151) 948 0

Belgium
Tel.: +49 (2408) 927 00 0

Spain
Tel.: +34 (93) 839 70 32

France
Tel.: +33 (0) 1 39 09 32 00

Italy
Tel.: +39 (02) 61 79 91

UK
Tel.: +44 (1442) 261 202

USA
Tel.: +1 (770) 449 77 76

Brazil
Tel.: +55 (11) 347 611 32

Turkey
Tel.: +90 (212) 285 97 45

Russia
Tel.: +7 (921) 055 63 30

P.R. China
Tel.: +86 (21) 685 002 88

Japan
Tel.: +81 (45) 534 99 11

Korea
Tel.: +82 (31) 806 973 00

Taiwan (R.O.C.)
Tel.: +886 (3) 250 01 48

India
Tel.: +91 99 33 39 96 42

Optimize your ROI with the technology leader ISRA
info@isravision.com   www.isravision.com