



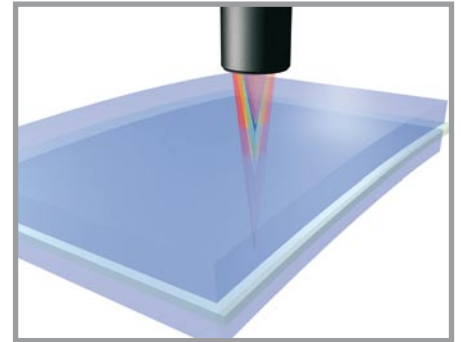
Inspection systems for glass and panes



Thickness and profile inspection of glass and panes

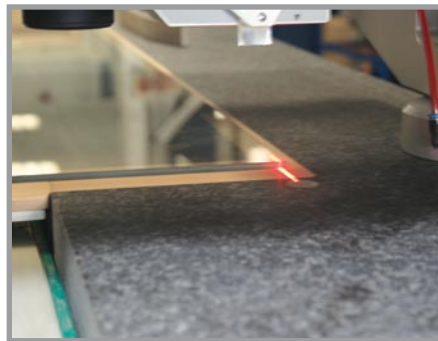
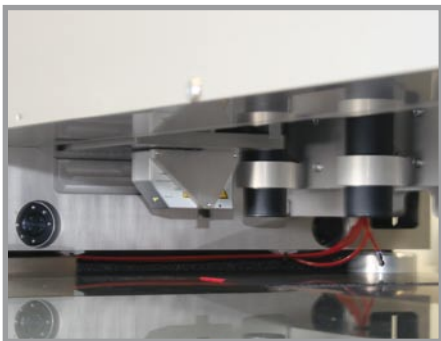
Automated solutions for the glass industry

Measuring and inspection systems from Micro-Epsilon successfully accomplish inspection tasks for glass manufacture and glass treatment. The systems are specially designed for the requirements in the glass industry. A particular benefit is that both the measuring technology as well as the software used come from the Micro-Epsilon group of companies. This unique expertise makes possible solutions in application areas which could hardly be achieved previously. Enormous quality and time improvements in the production line are now achieved in the optical and at the same time non-contact inspection of transparent material, glass or panes.



Confocal sensors for the single-sided thickness measurement of glass

A special feature of the confocal sensors is the capability to measure thicknesses and also layer thicknesses of transparent material with only one sensor and in doing so to achieve accuracies in the micrometre range.



Non-contact measurement and inspection system for flat glass

A system has been developed for the geometric inspection and thickness measurement of flat glass which measures different flat glass parameters with confocal sensors and laser scanners. The confocal sensors arranged in several tracks measure the glass thickness and the undulation of the glass panes in only one measurement process. A laser scanner is included for measuring the glass geometry (dimensions, squareness) and for detection of edge chipping.

Surface inspection

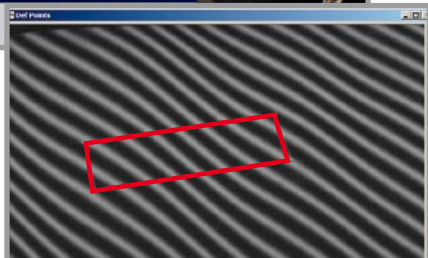
Curvature and structure deviation

reflectCONTROL Robotic for the glass industry

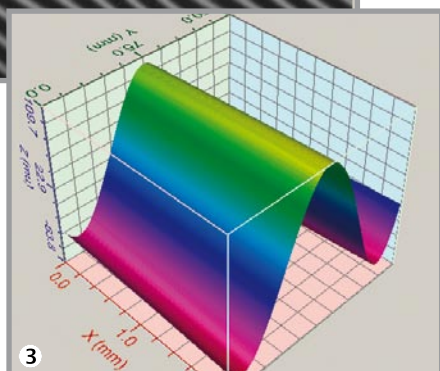
Mounted on a robot, reflectCONTROL is used for the inspection of glass products. The system is based on the deflectometry principle and enables measurement with micrometer precision of surface defects (e.g. craters or inclusions) and the measurement of geometric factors. Short measuring times ensure uninterrupted operation in the line. A particular advantage as compared with other methods is that the system can completely inspect measurement objects in a very short time.



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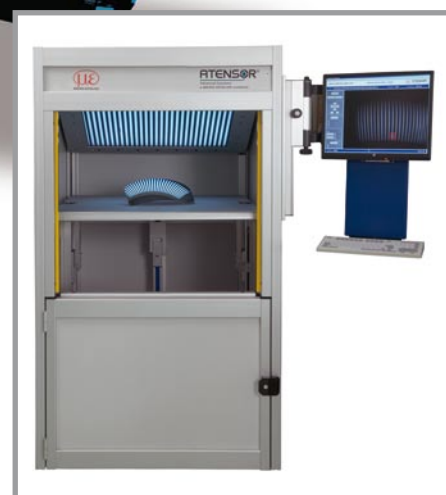


2



3

- 1 Camera records reflected lines on the surface
- 2 Software evaluates camera image and determines deviations
- 3 Output of a 3D profile image; deviations are detected with micrometer precision



reflectCONTROL Compact for the glass industry

As a stationary unit for integration in production lines, the Core version measures surface defects (e.g. craters or inclusions) with micrometer precision and structure deviations and curvature of glass and reflecting parts. Short measuring times ensure uninterrupted operation in the line.

High performance sensors made by Micro-Epsilon



Sensors and systems for displacement, position and dimension

Eddy current sensors
Optical and laser sensors
Capacitive sensors
Inductive sensors
Draw-wire sensors
Optical micrometers
2D/3D profile sensors
Image processing



Sensors and measurement devices for non-contact temperature sensors

Thermal imager
Online instruments
Handheld devices



Measuring systems for quality control

for plastic and film
for tyre and rubber
for web material
for automotive components
for glass and panes