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INLINE STRESS INSPECTION OF GLASS



UNCOVER THE INVISIBLE – POLARIZATION SOFTWARE SOLUTIONS FOR MEASURING STRESS IN GLASS

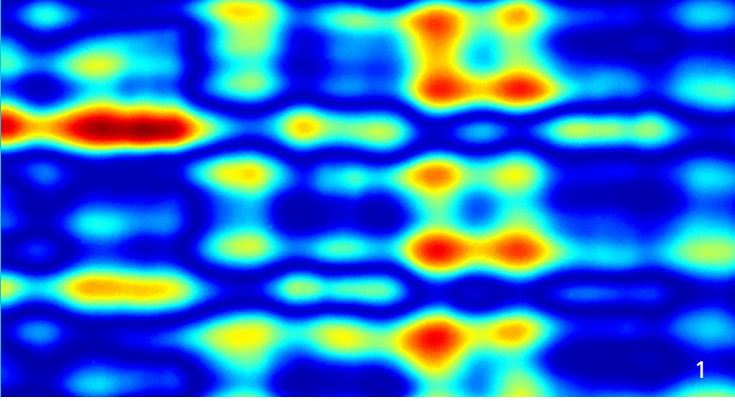
Undetected mechanical stress reduces the quality of glass products, which leads to increased rejects, additional costs and could even pose a risk to consumer health and safety.

100% Inline Stress Inspection

Using polarization imaging, our software library calculates stress images in real-time and displays precise magnitude and orientation: retardation and position of any residual stress in the glass are determined.

This allows immediate identification of any nonconforming products as well as defining precise quality values with your customers:

- Precise retardation and Apparent Temper Number (ATN) readings
- Orientation-independent analysis of stress in glass
- Computation of angle of stress
- Exemplary applications: stress inspection of container glass and flat glass (annealed and tempered)

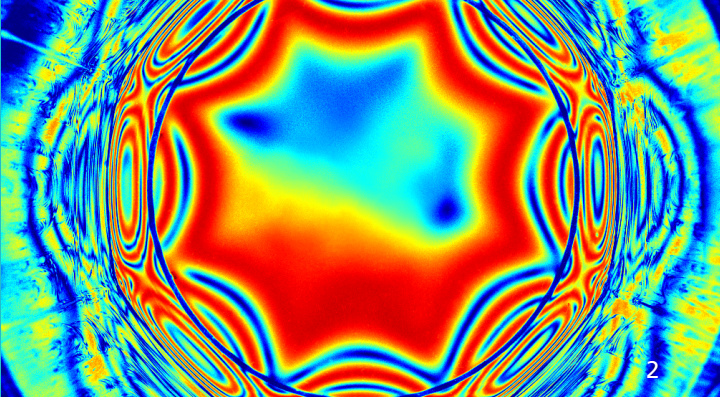


General Software Features:

- Camera calibration functions, e.g. gain/offset, polarization calibration
- Computation of polarization parameters (e.g. Stokes values, DOLP, AOMP)
- Visualization of the polarization measurements in false colors
- Computation of intensity image

Measuring Stress in Glass:

- Additional calibration for more accurate stress measurements, including wavelength dependencies and non-ideal polarization filter properties
- Computation of retardation as the magnitude of stress
- Computation of angle of stress and direction-independent magnitude of stress
- Calibrated and verified numeric measurements
- Computation of the Apparent Temper Number (ATN)



Software specification:

- Library with C interface, self-contained, no external dependencies
- As a single Windows .dll or integrated in MVTec Halcon™ as an extension
- Utilizing full bit-depth of the raw images (if available) for more accurate measurements
- Utilizes the camera raw images as input (resolution-independent, works with full images, ROIs, future 12MP sensors and beyond)

Individual installations are single-machine licensed and dongle-protected.

- 1 *Toughened safety glass*
- 2 *Tempered container glass*
- 3 *Inline stress inspection of container glass*



3

Your advantages at a glance:

- 100% inline residual stress inspection
- Lower scrap rates and reduced production costs through streamlined inspection process
- Beyond-state-of-the-art inspection methods, e.g. high-stress inspection for tempered glass
- Easy to integrate into existing inspection systems and into standard Machine Vision systems

Fraunhofer IIS – the application experts in polarization imaging:

From advanced calibration assistance to system optimizations, customer-specific system and software development, we provide a full range of services from a single source.

Together with Sony, we bring the most recent Polarsens™ imaging technology to your application.

Our real-time capable techniques are compatible with all Sony Polarsens™ polarization cameras:

- Polarization images in a single acquisition
- Robust and industrial-suited
- Available from a number of different manufacturers

Polarsens

www.iis.fraunhofer.de/imaging-solutions

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