NEW FEATURES &
BETTER PERFORMANCE

ALPHA DIC 2025

The 2025 release strengthens clarity, robustness, and usability. Central to this update are cylindrical coordinates for advanced axisymmetric measurements and the Real-time Spectrum Chart for fast spectral analysis.

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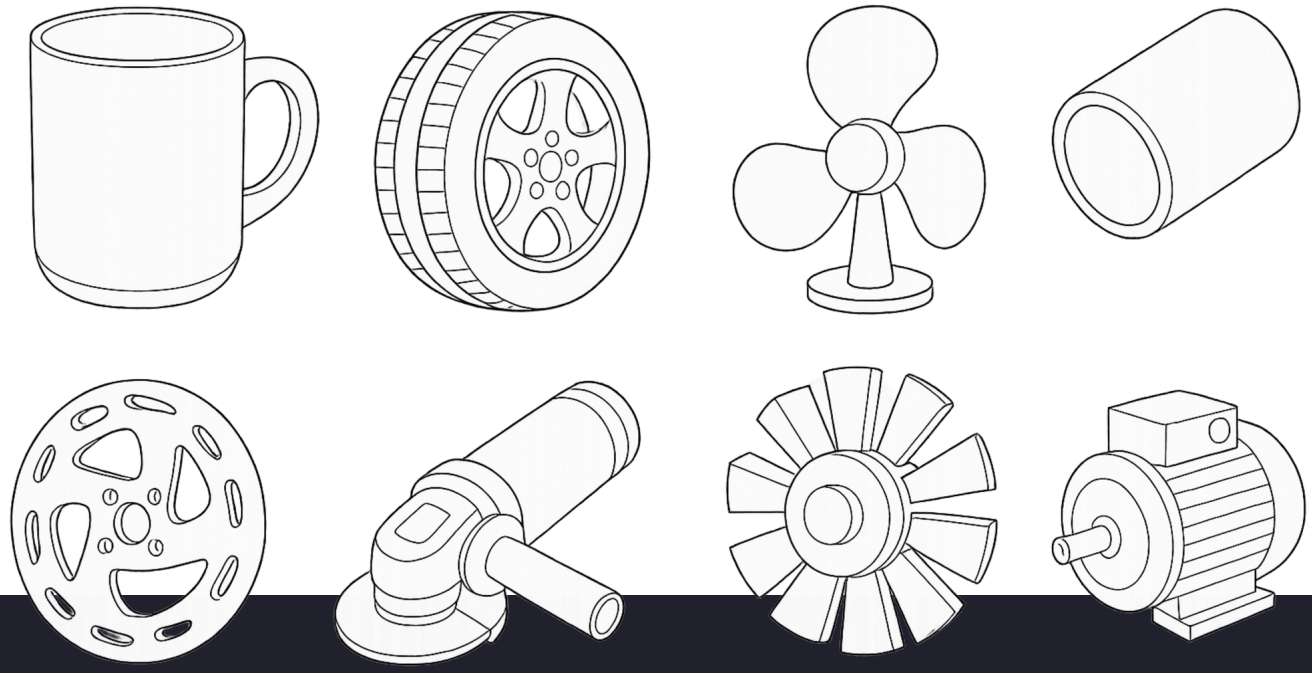
KEY ENHANCEMENTS:

Version 2025 introduces a set of major improvements and new features designed to boost flexibility, precision, and overall usability.

Cylindrical Coordinates
Real-time Spectrum Chart
Expanded Camera Support
Camera Model Management
Crack Probe Linear Strain Threshold
Probe Layout Import

Ideal for deformation measurement of rotationally, cylindrically, and radially symmetric objects:

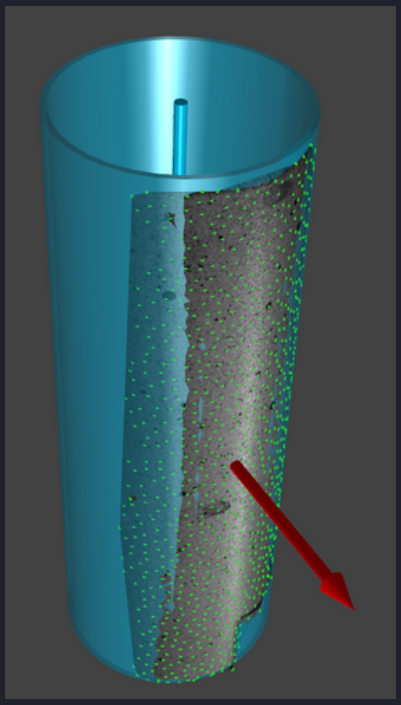


CYLINDRICAL COORDINATES

Cylindrical coordinate system is set by a cylinder with a speckled pattern and a known diameter. A virtual cylinder is fitted to the correlated 3D cloud of points. From the fitted geometry, the cylinder axis and origin are established.

Placing the cylindrical coordinate system reorients the Cartesian coordinate system as well, not affecting the calibration itself.

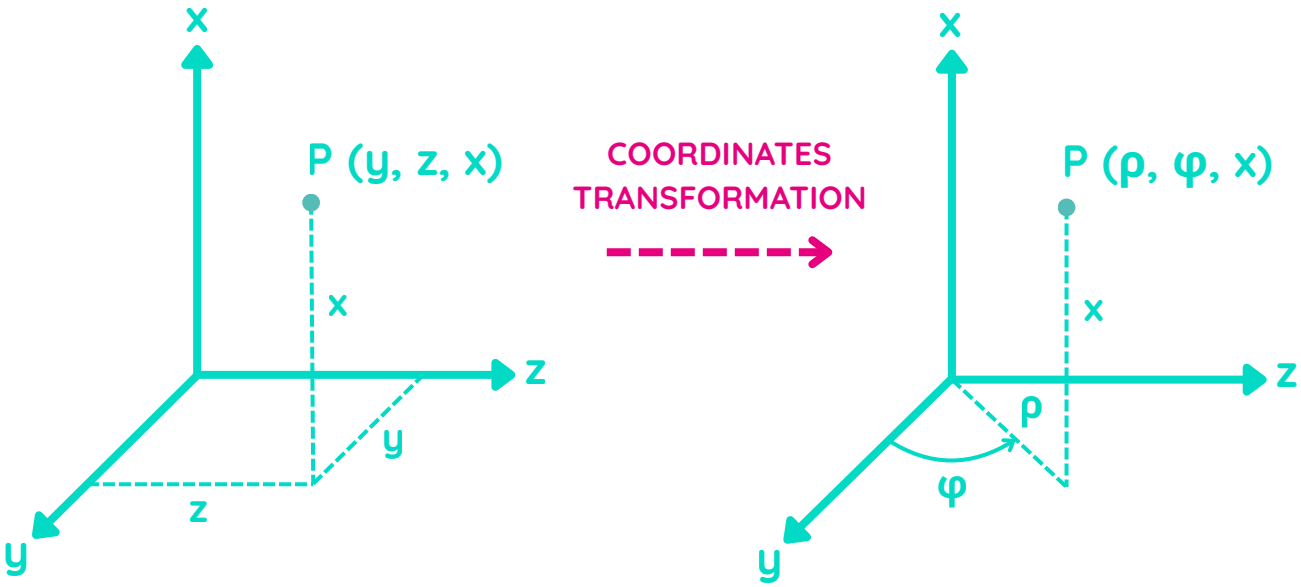
Cylindrical Coordinates can be applied to Point Probes and DIC Areas, either as absolute values or changes in the coordinates (3D only).



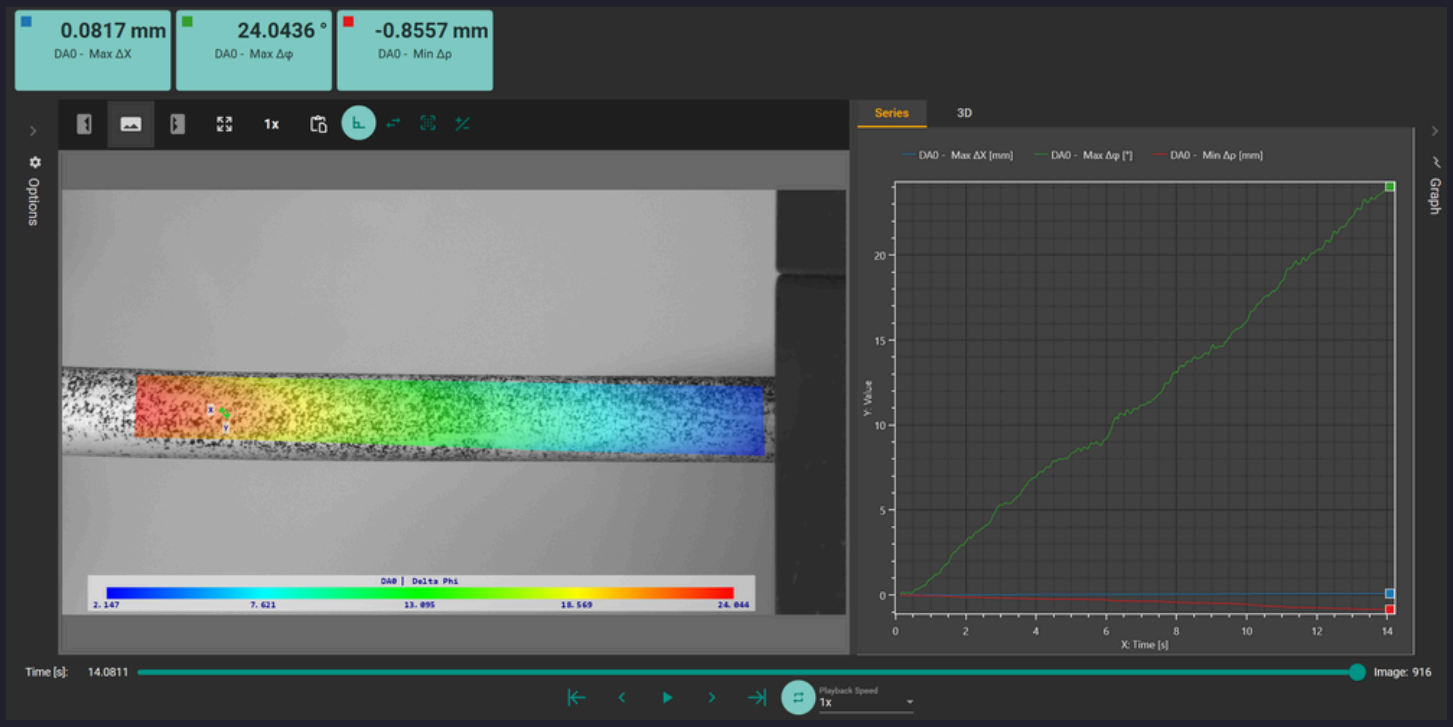
Cylindrical coordinates set-up

DIFFERENCE BETWEEN CARTESIAN AND CYLINDRICAL COORDINATE SYSTEM

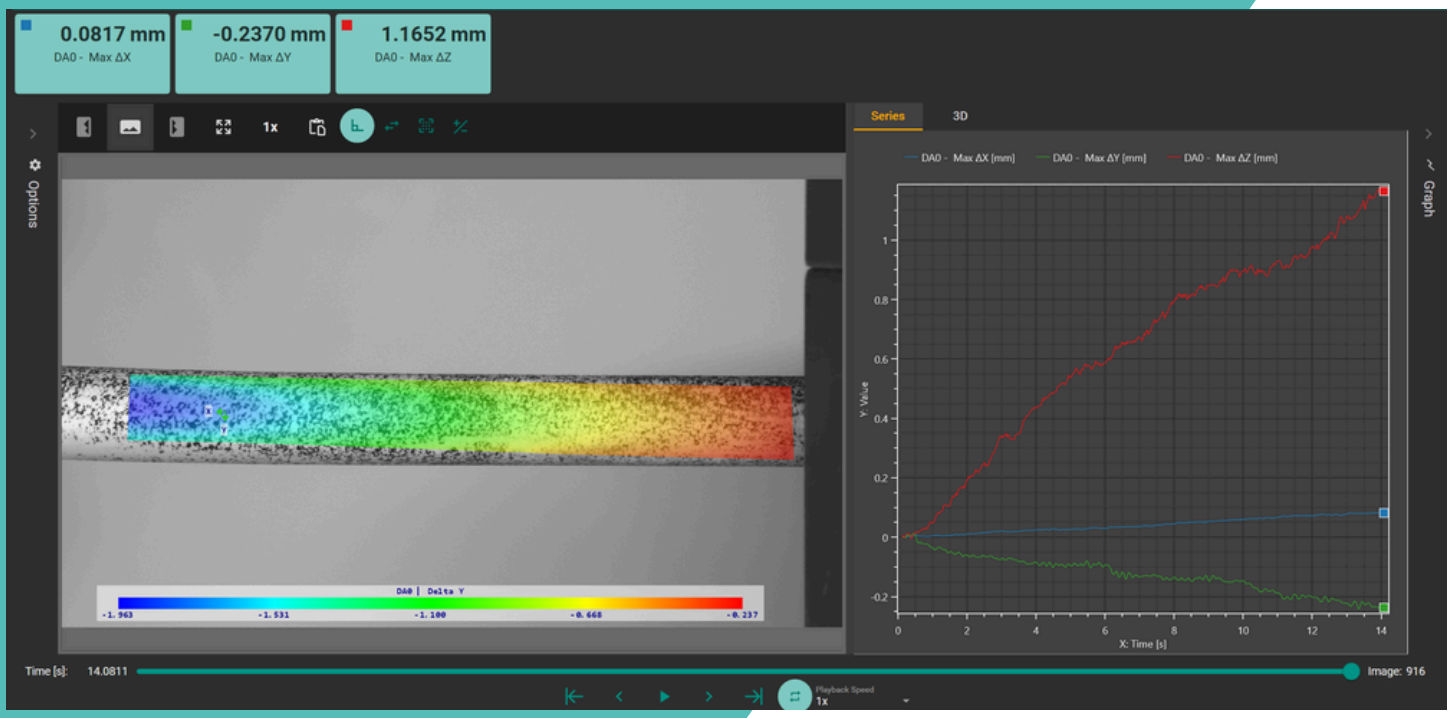
Cartesian coordinates use 3 linear distances (z, y, x) to define a point in 3D space, while cylindrical coordinates use a radial distance (ρ), an angle (φ), and an axial distance (x), which is convenient for objects with cylindrical shapes or rotational symmetry.



EXAMPLE 1: TORSION TESTING OF A CABLE



▲ Measurement in Cylindrical coordinates (tangential displacements (φ))

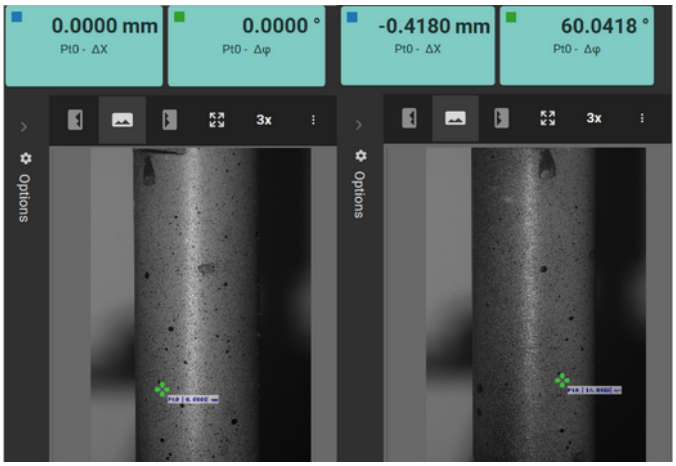


▲ Measurement in Cartesian coordinates

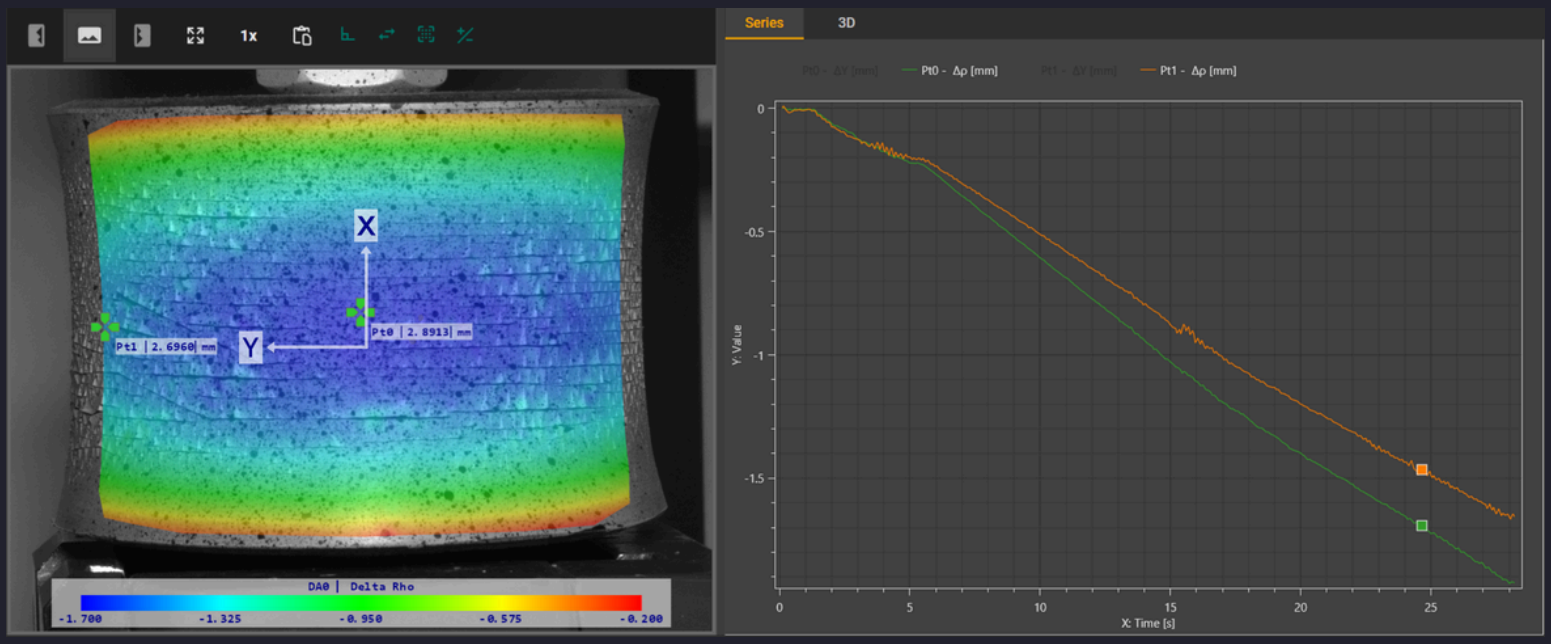
EXAMPLE 2: THREAD PITCH CALCULATION

Thread type: **M20x2.5**
Calculation: (360° / Δφ) × ΔX =
= (360° / 60.0418°) × 0.418 = **2.506 mm**

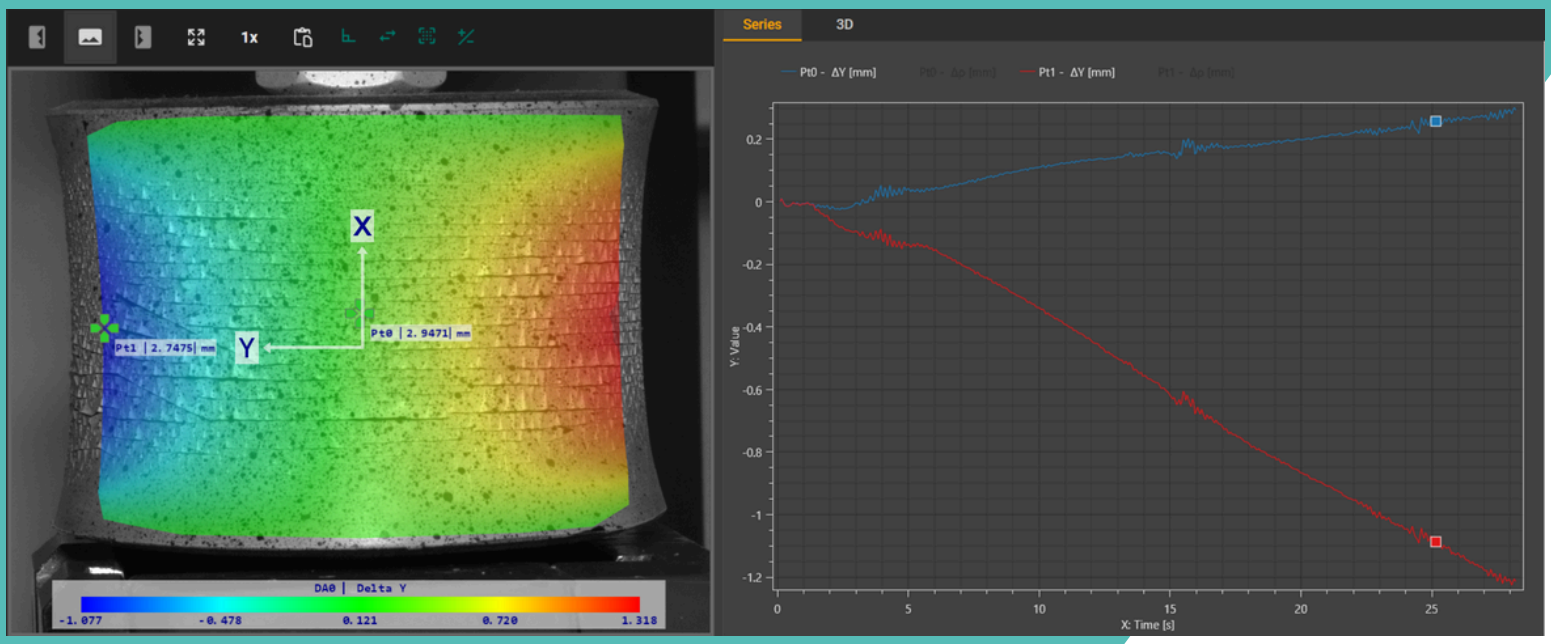
Computed result corresponds to the nominal thread pitch value.



EXAMPLE 3: SILENTBLOCK UNDER TENSION



▲ Measurement in Cylindrical coordinates (radial displacements)



▲ Measurement in Cartesian coordinates (Y axis displacements)

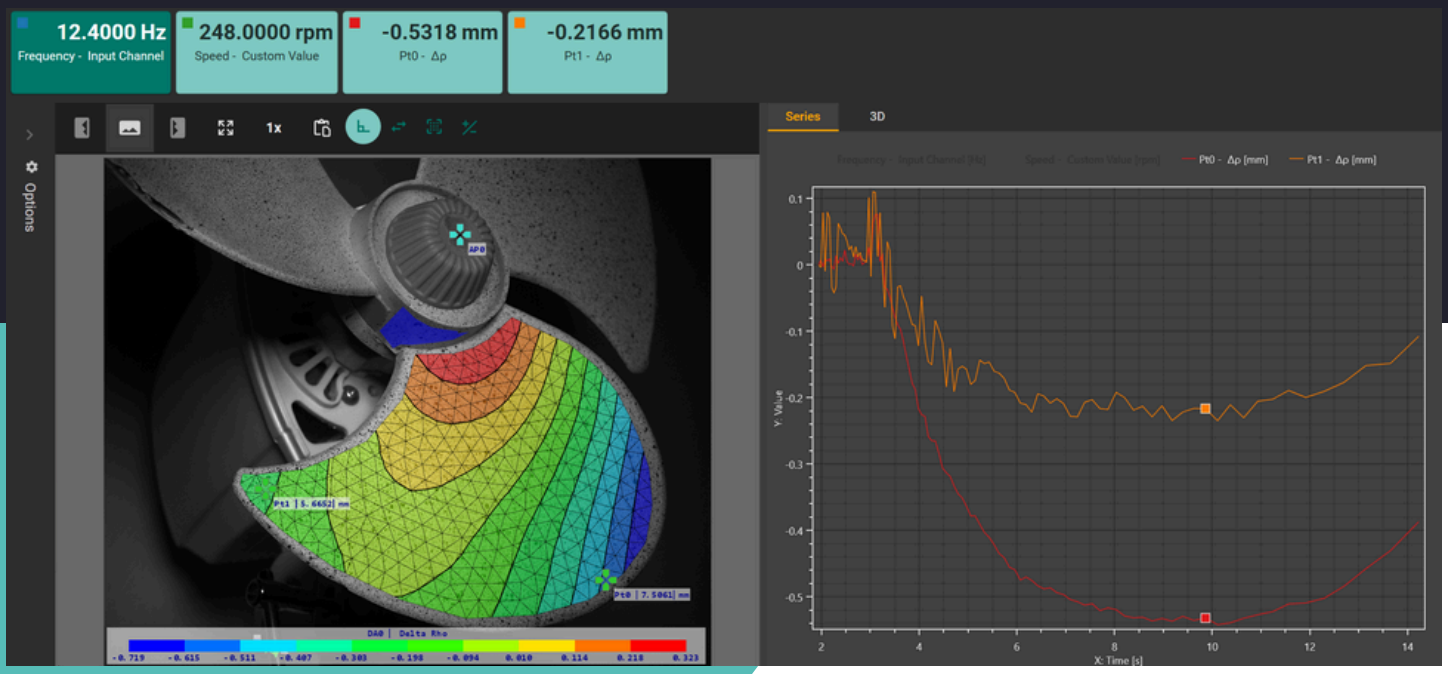
This example uses a silent block (bushing), which is a vibration-damping component, and demonstrates its lateral contraction due to the Poisson effect under tensile loading. The DIC results in both images clearly illustrate differences between the Cartesian and cylindrical coordinate systems.

The Cartesian coordinate system does not describe the behavior of the studied body adequately, as evidenced by the gradient in ΔY.
By contrast, in the cylindrical coordinate system, the radial displacement at a given height along the object is approximately constant, as dictated by solid mechanics.

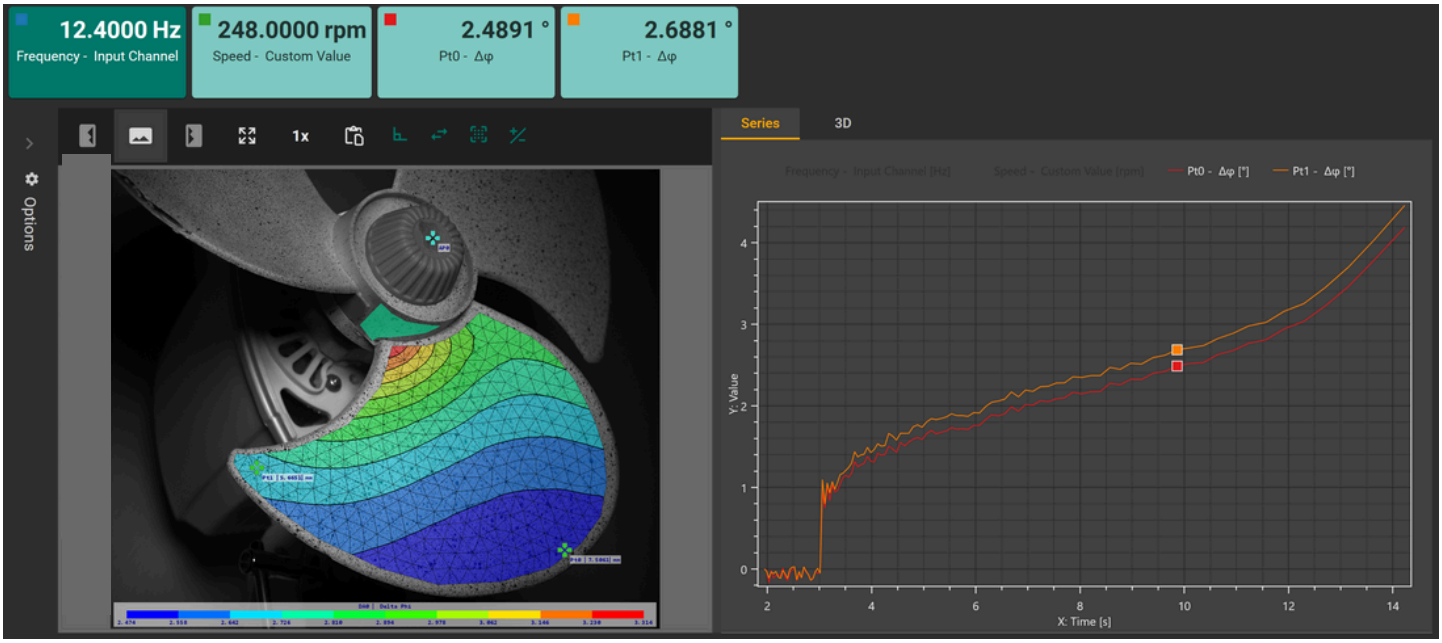
EXAMPLE 4: FAN ROTATION RUNDOWN

In this example, the deformation of a fan blade is measured using a cylindrical coordinate system aligned with the fan's axis of rotation, with an Anchor Point placed at the origin. A rundown sequence was recorded, with the camera's hardware synchronized with the X-Sight Synchron device.

Pictures below demonstrate the result in the cylindrical coordinate system in the radial direction (ρ) and in the tangential direction (φ).



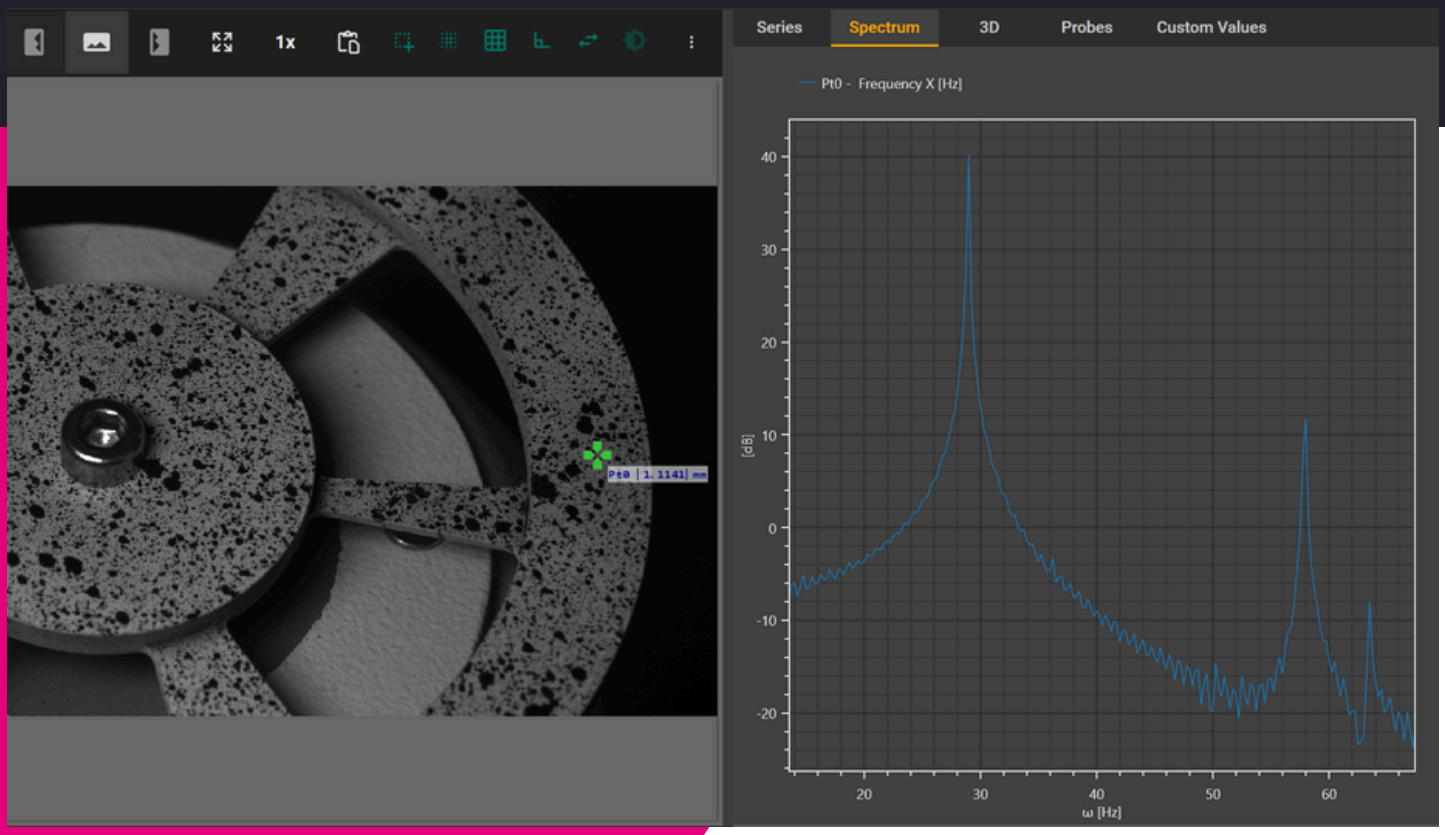
▲ Map and plot of changes in radial direction



▲ Map and plot of changes in tangential direction

REAL-TIME SPECTRUM CHART

Alpha DIC allows to plot directional dominant frequencies by using FFT (Fast Fourier Transform) to Point Probe time history. This may come in handy to analyse behavior of components exposed to vibrational load.

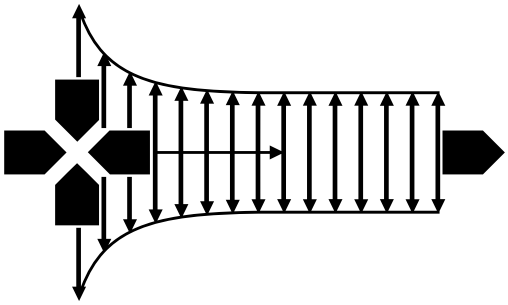


EXPANDED CAMERA SUPPORT

Alpha DIC now supports the following industrial camera platforms: **FLIR**, **AVT** (including **Bonito CameraLink**), **Basler**, **Optris (IR Camera)**, **Ximea**, **Daheng**, **IDS**, **DynaColor**, and **IX i-SPEED7.** This expanded compatibility provides users with greater flexibility in selecting the optimal imaging solution for their measurement and analysis needs.

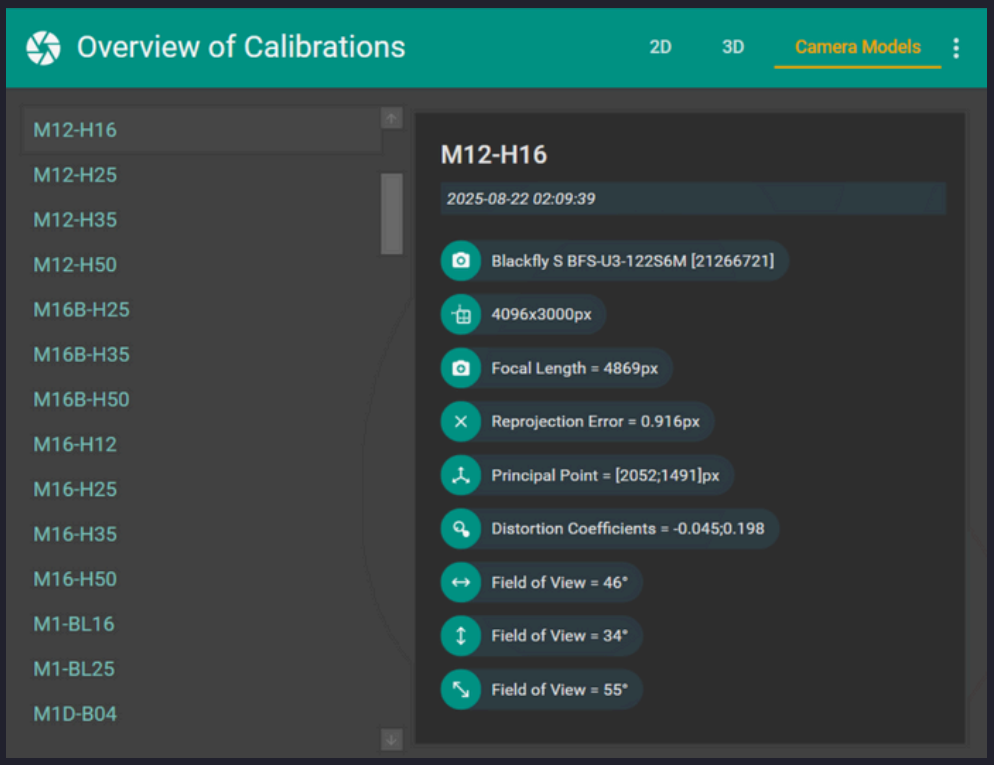
CRACK PROBE LINEAR STRAIN THRESHOLD

Crack Probe now enables setting a variable threshold for crack tip detection. Instead of using a single constant limit, user can define a start and end point, with the threshold interpolated linearly in between. This provides greater flexibility and more accurate evaluation in cases where strain progression is not uniform.



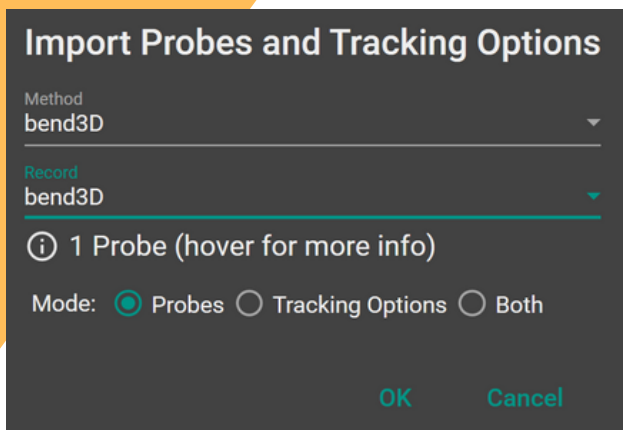
CAMERA MODEL MANAGEMENT

The camera models are unified under the Overview of Calibrations window for quick management. User can quickly create an accurate camera model by detection of a grid, using previously captured grid images or entering the lens focal length manually. Camera models can also be easily exported and imported.



PROBE LAYOUT IMPORT

Probe layout can now be imported from one record to another. Additionally, every offline 3D Record has a feature to modify its coordinate system to a desired position, which is particularly useful when aligning imported probe layouts.



X-Sight ALPHA DIC 2025 release includes the following 27 new features:

- Record-specific offline methods, each with their own calibration
- Major overhaul of offline method overview
- Migration of legacy offline methods to a new format
- Results (previously named datasets) are now available for viewing
- Prediction of lost points for Trans-Lines
- Probe layout import
- Major overhaul of calibrations
- Addition of Camera Model management as a separate section
- Option to create Camera Model from a single image using focal length
- Added support of complex lens distortions to camera model calibration
- Calibration 2D/3D are both now a single wizard each
- Calibration and model names are input when entering the wizard as a dialog, then shown in header
- “Adjust Rod Calibration” option becomes “Calibration Bar Check”
- Added more informational parameters about computed calibrations
- Overhaul of Vibrography Parameters (Point Probe frequency)
- Added Spectrum chart to RT methods
- Added support of AVTCameraLink Bonito
- Added IX i-SPEED7 high-speed camera support (for calibration or slow measurements only)
- Added working distance and specimen thickness to script data
- Added cylindrical coordinate system detection to calibrations
- Added cylindrical computed values to Point Probes and DIC areas
- Added absolute positions to Point Probes
- Changed Bend Line full export, included individual segment strains
- Added Crack Probe linear strain threshold
- Anchor Point moved from Research license module to Axial module
- Detect DIC Area feature moved from Research license module to DIC Area module
- New License Bundles – Alpha DIC 2D / Alpha DIC 3D

Minor Tweaks:

- Fixed clipping of PP button badge in RT measurement
- Add XIMEA max. FPS restriction to calibrations and RT measurement screens too
- Removed unwanted LOADED and STOPPED notifications in MRT output
- Fixed crash in Anchor Point 2.5D functions
- Fixed saving HS records to an empty offline method
- Added digital certificate to installation file
- Fixed missing camera models from installer on vanilla systems
- Digital Image Correlation keeps the last template aspect ratio upon incremental reset
- Record info file removed, now a part of offline method file
- Improved visualization of underflow and overflow values in LVD
- Removed unused localization strings
- Fixed issue where tensors could be computed as NaN values
- Optimized triangulation performance
- Minor changes of used icons
- Camera panels with buttons are now horizontal instead of vertical (to better fit on the screen)
- Tensor computer now also uses thread count from settings
- Changed default recording mode of high-speed cameras to pre-trigger
- Removed support of x86 32-bit
- Modified 2D/3D offline method creation wizards to be compatible with the new changes in calibrations
- Modified calibration merging options to function with new calibrations
- Tweak probe repositioning logic when modifying calibrations
- Added more splitter controls to calibration wizards
- Reduced the amount of synchronization warnings in 3D calibration wizard
- Tweaked Application Data Folder changing logic to support new file structures
- Canvas rotation is properly propagated between steps of 3D calibration wizard
- Fixed issues with Grid Unit Distance = 0
- Improved performance of point cloud display to better support more points at once
- Added warning to calibrations about having to modify scale and origin offset from their default values
- More tweaks related to calibration wizards
- Fixed license issues with controlling Alpha via Remote Desktop
- Calibration creation time in overviews replaced by the last write time
- Point Probe frequencies without Vibro module are hidden
- Removed MultiCamera module
- Tweak accessibility of save/open results externally
- Restrict maximum FPS of known XIMEA models in HS recorder
- Fixed crashing when running out of space during recording
- Fixed UI issues with cameras that take a long time to start
- Allowed Grid Thickness = 0
- Changed behavior of point data history to wait for full window length in real-time
- Hidden Point Probe frequency types when Vibrography module is not available
- Fixed possible crashes when running out of space during a measurement
- Fixed possible crashes when using cameras that take a long time to open
- Allowed Grid Thickness = 0 during calibration
- Point Probe frequencies are not computed when there are not enough samples yet
- Fixed some issues with Planar 3D mapping, including modifications of 3D coordinate system
- Removed nearest neighbor interpolation from Crack Probes
- Fix issue when exporting records to a lower size than their reference and end index
- Locked probe manipulation on deformed images
- Fix UI issue, where embedded thermal window “leaks” outside of bounds
- Fixed showing non-localized error message in calibration wizards when no camera is available

Contact

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Technical support

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