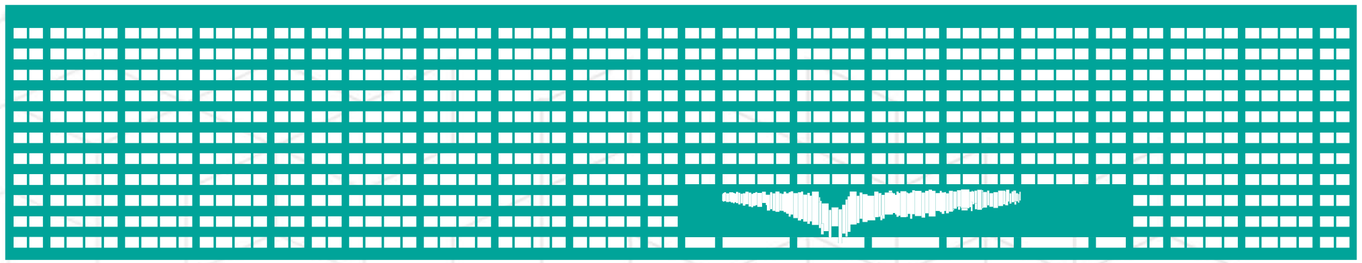
MERCURY RT

AMEE

Flexible Non-Contact Measurement System for Complex Analysis of Deformation and Displacement of Static and Dynamic Events

VŠB TECHNICKÁ UNIVERZITA OSTRAVA

VSB TECHNICAL UNIVERSITY OF OSTRAVA



What is DIC, And What is it suitable for?

Digital Image Correlation (DIC) is an advanced optical method that excels in precision and is used for measuring and visualizing strains, displacements, and deformations in materials under load. It is a non-contact, full-field technique that captures images of an object's surface before and after deformation. By comparing these images, DIC algorithms can determine the surface displacements and strains across the entire field of view.

DIC is particularly useful because it provides a comprehensive view of how materials deform at a single point and over the observed surface. This makes it an invaluable tool in several areas:

DIC is a versatile tool for:

- ❑ Material Testing: Analyzing mechanical properties of various materials under stress.
- ❑ Structural Analysis: Evaluating structural integrity and deformation in engineering.
- ❑ R&D: Validating numerical models against experimental DIC data for accurate predictions.
- ❑ Quality Control: Ensuring products meet deformation and load-bearing standards.
- ❑ Biomechanics: Investigating mechanical behaviour of biological tissues for medical insights.

What?

At MercuryRT, we build a technology with Digital Image Correlation techniques developed, compiled, and supplied as software to the end users with ease of use.

Why?

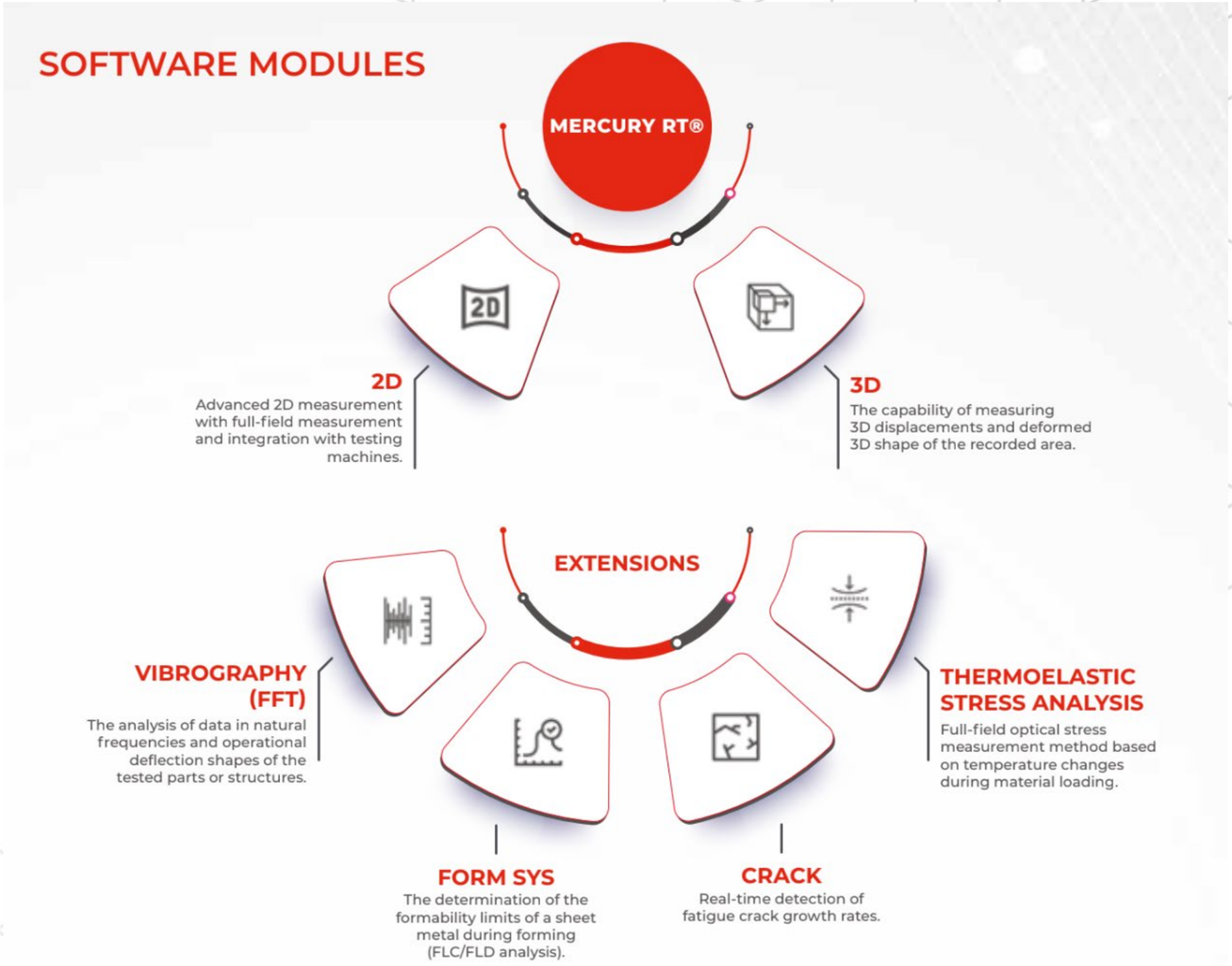
To create the art of experimental mechanics with current market trends we as a team of software engineers and application engineers, merge and brainstorm together.

How?

Measure with non-contact optical systems and by customizable in-built modules (virtual probes) that provide desired Stress and strain results in our software.

"WE SOLVE PROBLEMS AND WITH OUR TECHNOLOGY DEVELOPED BY COLLABORATING WITH INDUSTRY EXPERTS ON LONG-TERM COOPERATION"

Software

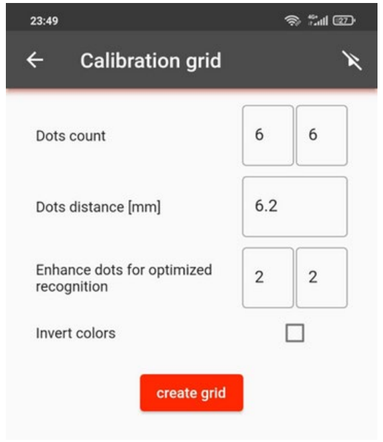

SOFTWARE MODULES
MERCURY RT®
2D
3D
2D
Advanced 2D measurement with full-field measurement and integration with testing machines.
3D
The capability of measuring 3D displacements and deformed 3D shape of the recorded area.
EXTENSIONS
VIBROGRAPHY (FFT)
The analysis of data in natural frequencies and operational deflection shapes of the tested parts or structures.
THERMOELASTIC STRESS ANALYSIS
Full-field optical stress measurement method based on temperature changes during material loading.
FORM SYS
The determination of the formability limits of a sheet metal during forming (FLC/FLD analysis).
CRACK
Real-time detection of fatigue crack growth rates.

Probes

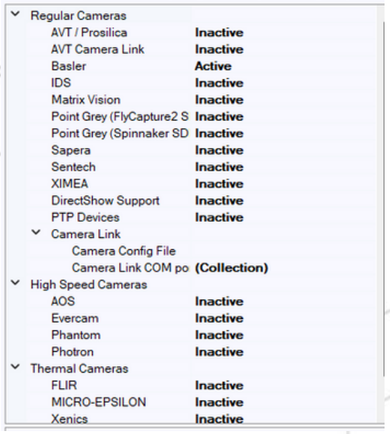
Point Probe	Displacement, Velocity, Acceleration
Rigid Probe	Avoids motion disturbance at specific area
Line Probe	Relative, absolute and Euclidean elongation
Strain Gauge	Strain components and Poisson Ratio
Neck Gauge	Neck detection (longitudinal and transversal)
Chain Gauge	Elongation detection on multiple sections
Polyline Probe	Curved line measurement
Force Gauge	Force deformation
Area Probe	Area deformation on uniform & non-uniform surface
PIV Field	In-plane flow measurement
Crack Probe	Crack propagation
Angle Probe	Refracted shear or longitudinal waves
Thermal Probe	Computation of TSA- strain/stress
Torsion Probe	The angle of Twist and Torsional strength measurement - Torque

Features

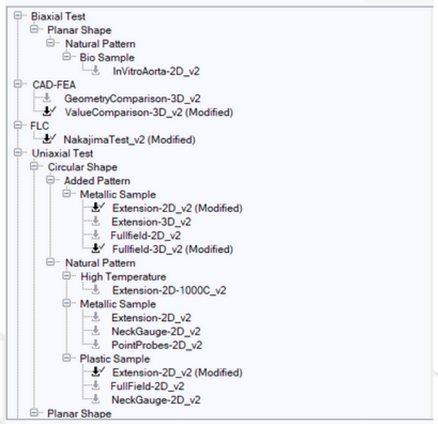
MercuryRT Mobile App



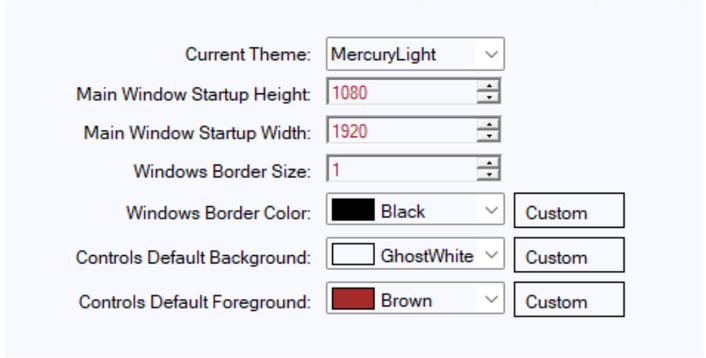
Active Cameras



Measurement Library

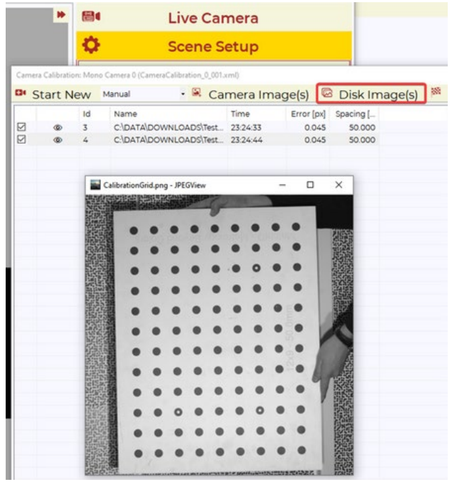


Color Setup

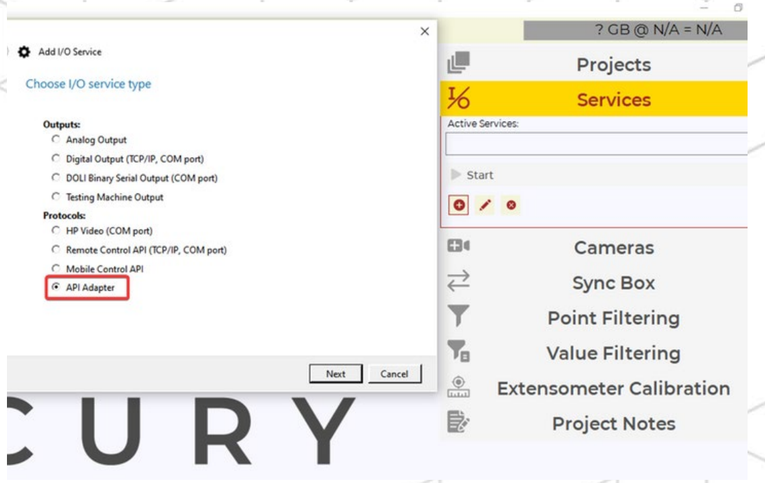


Features

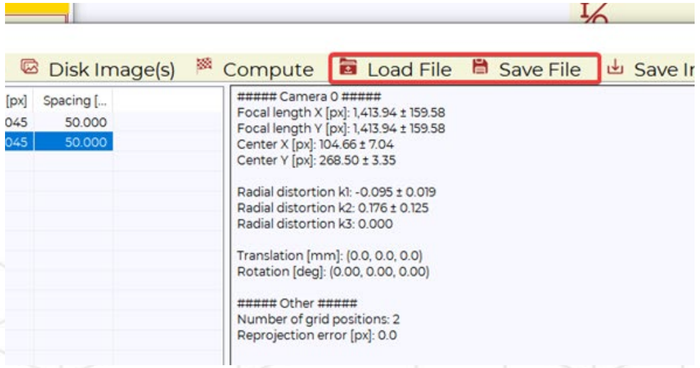
Virtual Calibration



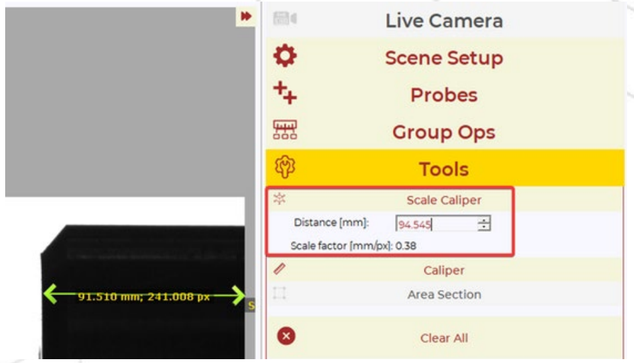
Remote Commands



Offline Calibration

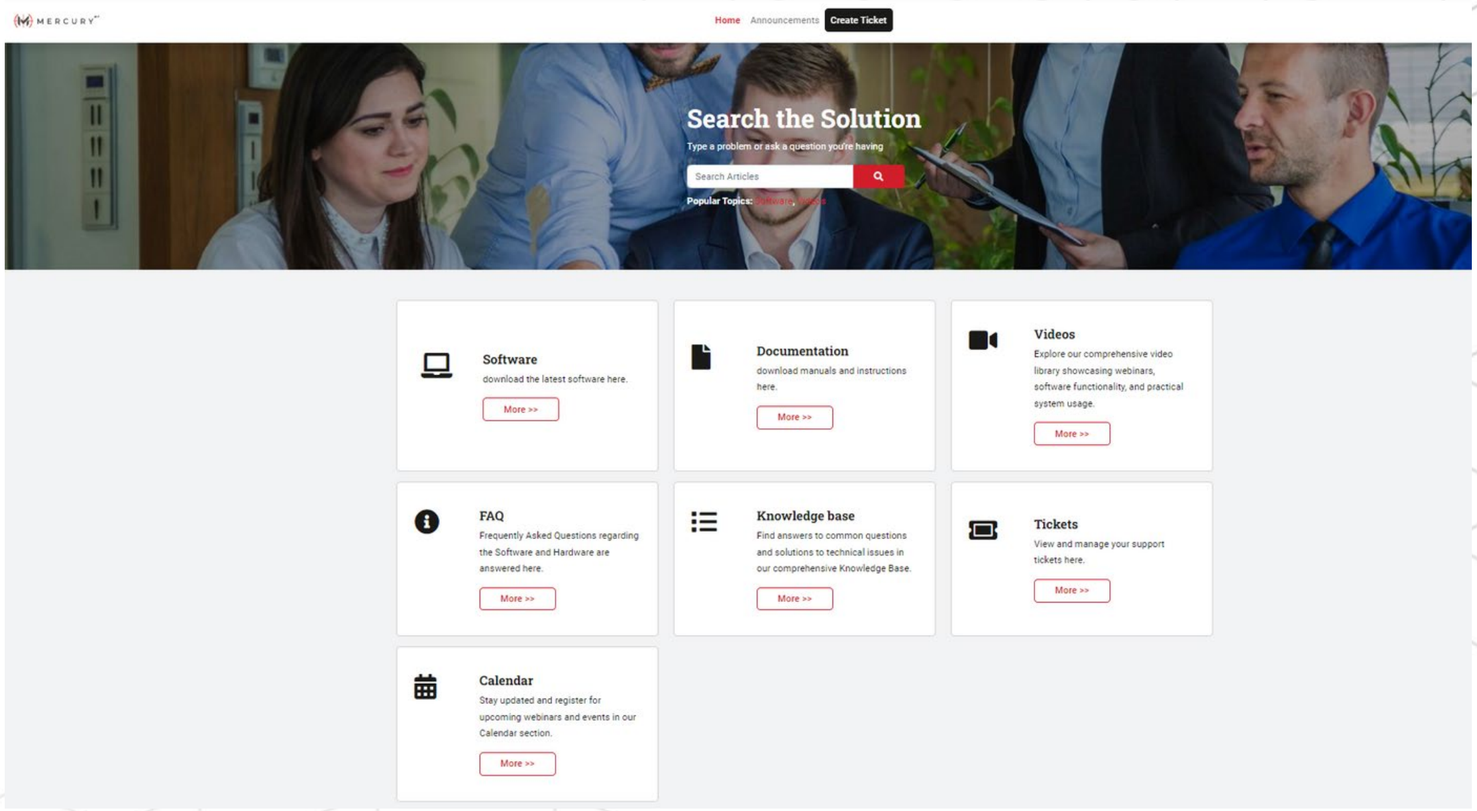


Scale Caliper Tool

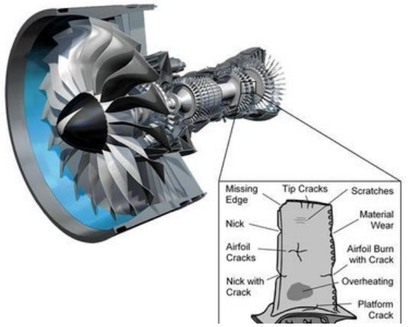


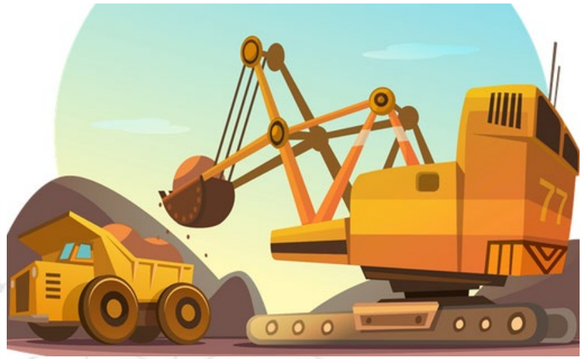
Support

TESS (Technical Support & Service)



Industry & Applicaiton



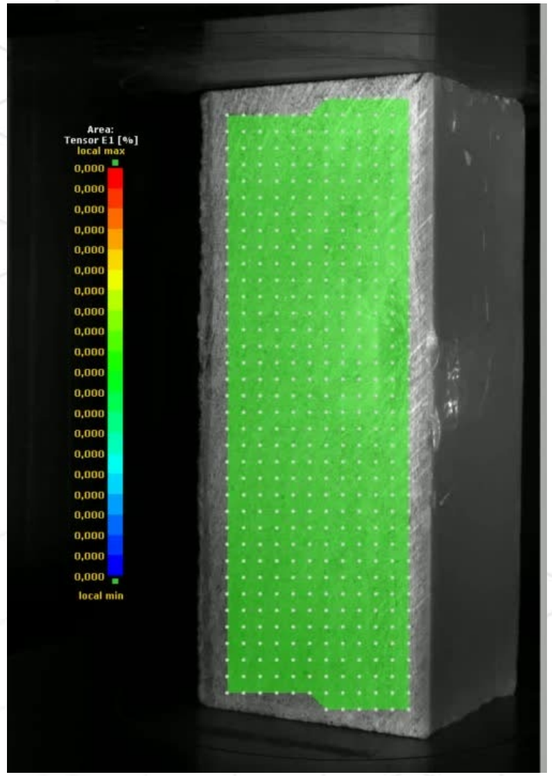


MERCURY RT

AMEE

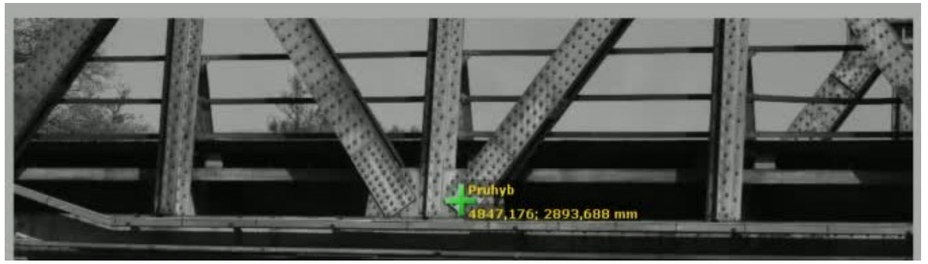
Civil & Construction

Roof beams, cranes, bridge constructions, riveted joints, timber, concrete structures, and building statics:



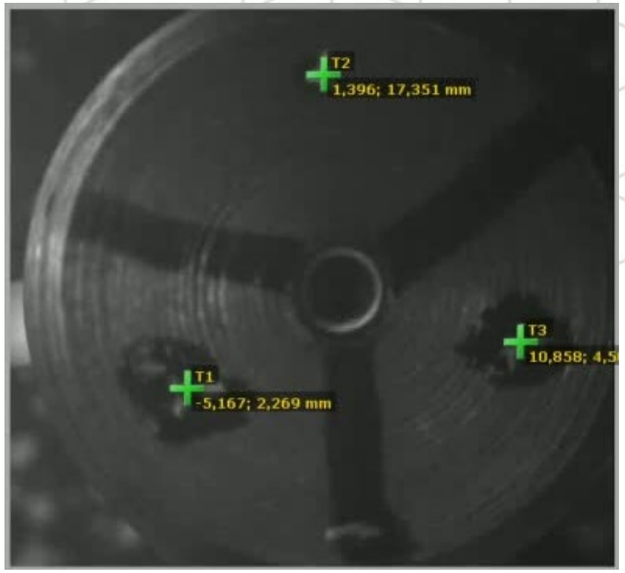
Railways

Rails, welded joints, suspension brakes endurance, transmissions; engines, power line poles track deformation monitoring, wheel-rail contact analysis.



Shipyards & Mining

Welded joints, gearing, propellers, anchor chains, loading systems & cranes, rivets shearing, rope flexibility, Drilling rigs, transporters, jackhammers, and sharpening tools:



Automotive

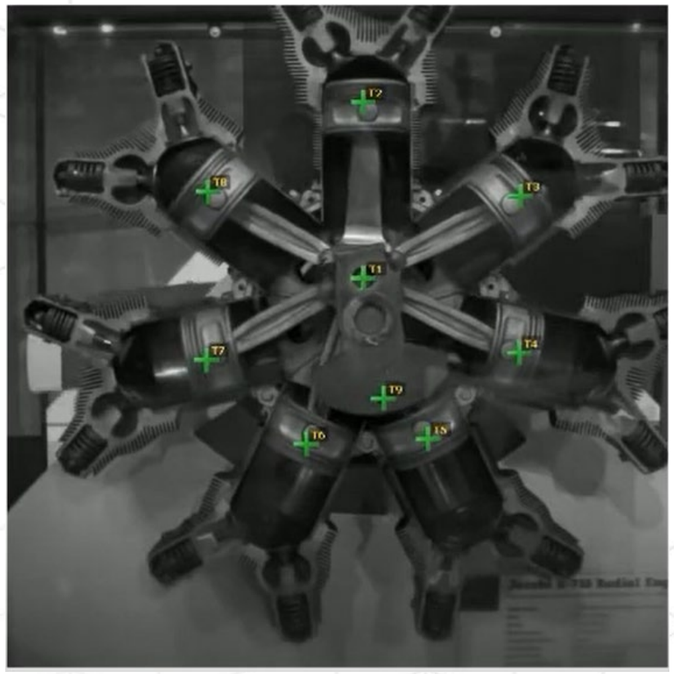
Vibration transfer, welding quality, body twisting, various tests of engine, clutch, brakes, Steering transmissions, thermal influence.

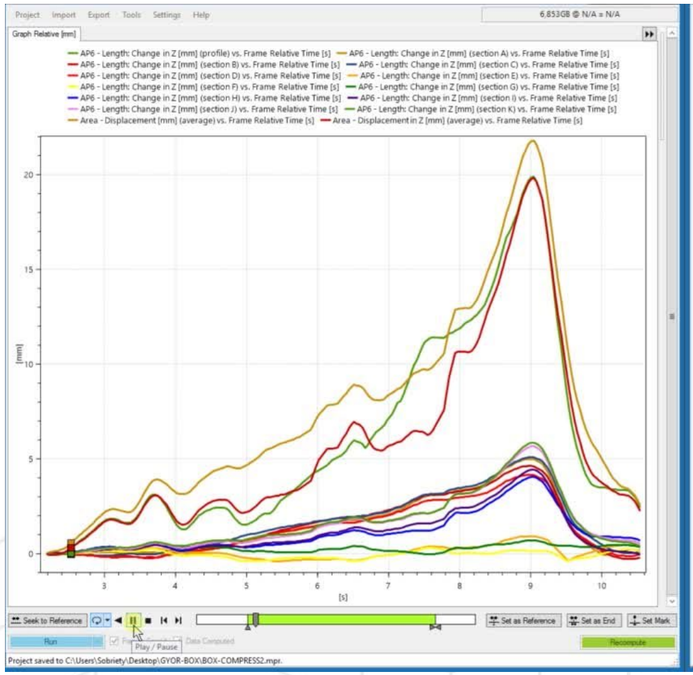
Aerospace

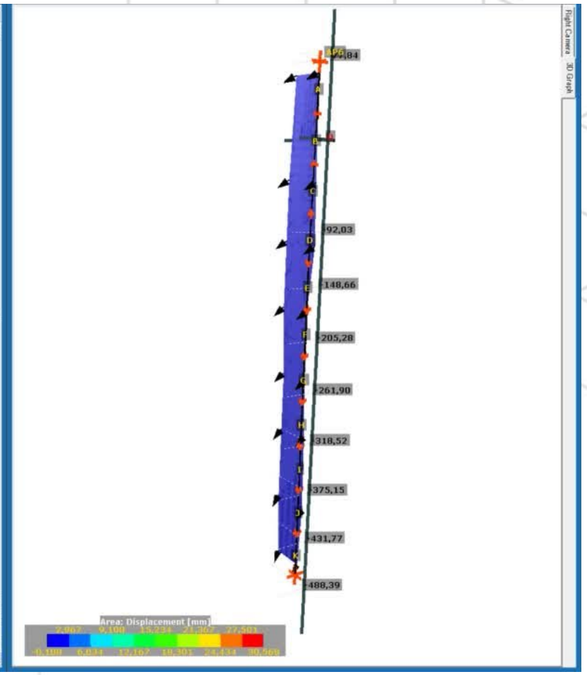
Wings deflection, joints, body structure pressure resistance, hydraulic systems leakage, jet-engine components, various struts; rods, rivets shearing:

Army & Defense

Impact tests on helmets & body armour, firearms, Ballistic impact on transparent armour, Blast loading on structures and vehicles, Military vehicle suspension and drivetrain.







Thank You

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