www.limess.com

Q400 | DIC Digital Image Correlation

non-contact 3D deformation sensor

Based on a digital image correlation technique and the stereoscopic principle of the setup with two cameras objects contour, displacement and strain is measured, contactless and full field.

Material and stability tests, determination of material parameters, component tests, usage in tension test machines, validation of FEM calculations, exploration of cracks, measurements at airplane components (A380, static and dynamic), dynamic tests like crash tests, pedestrian safety tests and airbag cover optimization.

- Measurement fields from 1x1mm² to 10x10m²
- Systems with high resolution and high speed cameras.
- Multi camera systems for for thickness measurements of anisotropic materials during tensile tests, for component tests of complex shaped objects and for 360° measurements
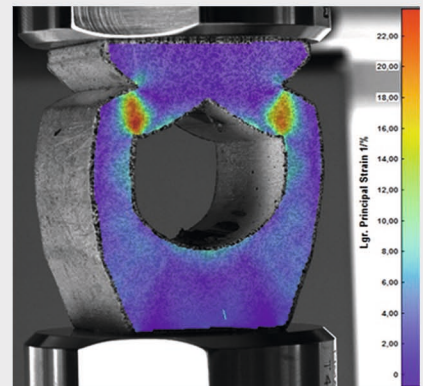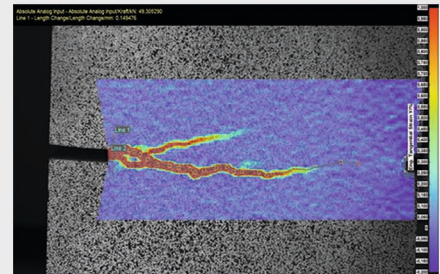

Clear and comprehensive
The measurement results give meaningful informations at a glance. The color coded strain distributions show areas with inhomogenous strain. Local extreme values can be recognized instantly.One measurement corresponds to many thousand "virtual strain gauges". The visualization are similar to results of a finite element analysis (FEA).

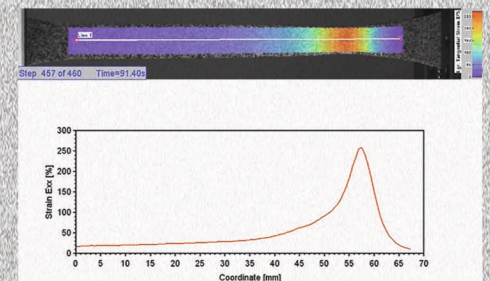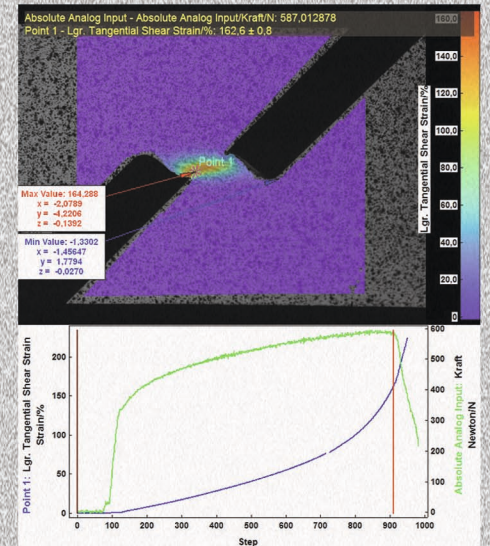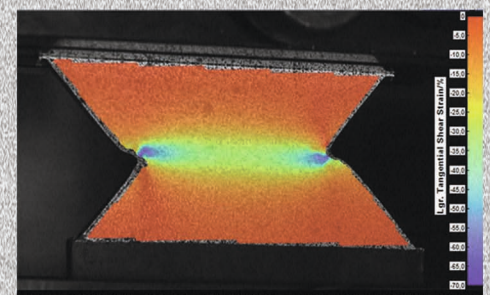### More than colorful - You can rely on it !
For every measurement point and and for every measured variable (coordinate, displacement, strain) the measurement accuracy (standard deviation) is given. The reliability of the measurement are guaranteed as measurements with poor accuracy can be excluded
from the results and from the interpretation.

Easy to use and flexible
The automatic system calibration is guaranteed finished within max. 20 seconds! One button launches the integrated analysis modules that can determine a many material parameters (Young's modulus, Poisson's number, etc.). The analysis modules can be customized from the user or from LIMESS to achieve individual calculations and visualizations.

LIMESS

Point 1 - Lgr. Principal Strain 1/µstrain: 855 ± 6

Lgr. Tangential Strain X/µstrain

Analog Input - Absolute Analog Input/Force/N: 1096,228027

Lgr. Tangential Strain X/%

Istra4D E-Modul Berechnung

Istra4D E-Modul Berechnung

Probenabmessungen:

Breite in mm   10.00
Dicke in mm   2.00
Querschnitt: 20.00 mm²

Bildindex von 1 bis 471

Fit von 10 bis 13

4 Punkte von 0.10% bis 0.29% Dehnung

Diagramm Wahre Spannung vs. Dehnung

Datei Zusatzprogramme Editieren ?

Diagramm Wahre Spannung vs. Dehnung

Spannung in N/mm²

E= 3703.152MPa
A0=10.0x 2.0mm²

E-Modul Berechnung nach ISO 527

Lgr. Tangential Shear Strain/%

Absolute Analog Input - Absolute Analog Input/Kraft/N: 587,012878
Point 1 - Lgr. Tangential Shear Strain/%: 162,6 ± 0,8

Max Value: 164,288
x = -2,0789
y = -4,2206
z = -0,1392

Min Value: -1,3302
x = -1,45647
y = 1,7794
z = -0,0270

Lgr. Tangential Shear Strain/%

Point 1: Lgr. Tangential Shear Strain/%   Absolute Analog Input: Kraft/N

Step

Step 457 of 460   Time=91.40s

Strain Exx [%]

Coordinate [mm]

Application example from industry and research

Material tests for the determination of material parameters like Young's modulus, poisson's ratio, etc.

Component tests: strength test, Tests in load frames, test stands, temperature chamber, tensile test machine

Validation of FEA simulations, crack propagation, crack growth, delamination tests, fracture analysis

Dynamics tests: crashtests, pedestrian safety tests, airbag tests, dynamic tensile tests, vibration analysis, fatigue tests, stress rupture test
Measurement of CTE (thermal expansion coefficient, etc.)
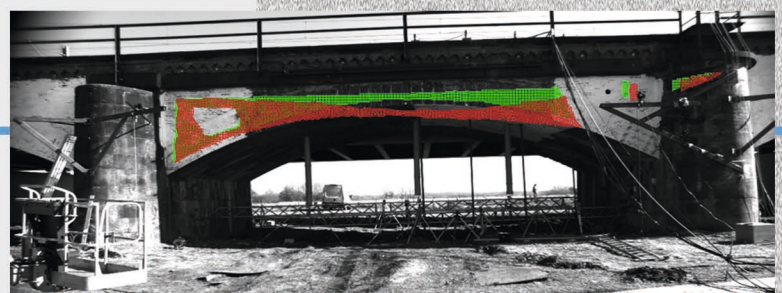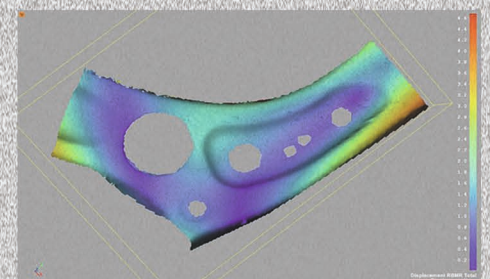
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