

Material Testing Fact Sheet

Measuring for a better understanding

Important factors in product development processes are the dimensioning of components, the exact determination of material properties and the validation of FE calculation models. ARAMIS helps to better understand material and component behaviour.

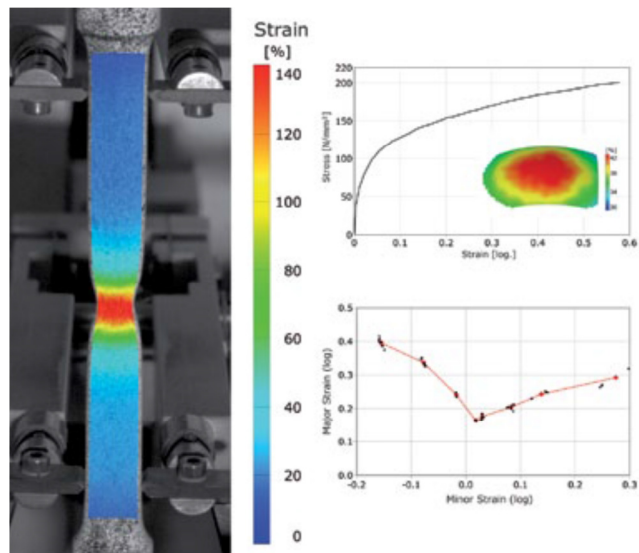
Material testing

The precise full-field ARAMIS results improve the accuracy of material characteristic values. Existing evaluation procedures are enhanced and thus more reliable, like the determination of flow curves and forming limit curves. A lot of material tests can only be evaluated because of the non-contact measurement and the high local resolution ARAMIS results.

- High temperature tests
- High speed tests
- Very small specimen sizes

Today, ARAMIS is an established and proven measuring solution in hundreds of material research facilities around the world for:

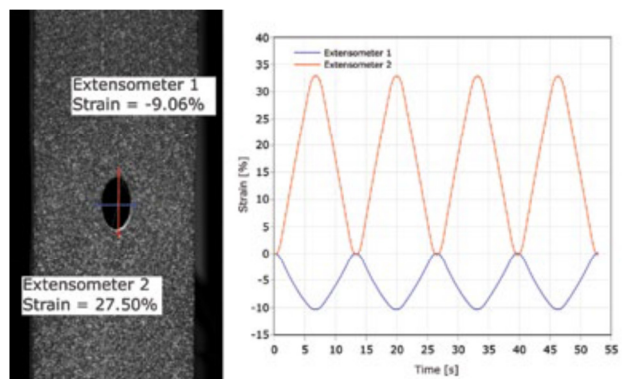
- Strain-Stress evaluation
- R-Values
- Poisson ratio
- Young's modulus
- Forming limit curves
- Residual stress
- Shear modulus



Real-Time 3D measuring

ARAMIS provides real-time results for multiple measurement positions on a specimen's surface. These are directly transferred to testing devices, data acquisition units or processing software (e.g. LabView, DIAdem, MS Excel, etc.) and are used for:

- Controlling of testing devices
- Long-term tests with smallest storage requirements
- Vibration analysis
- 3D Video Extensometer



Component Testing and Analysis

ARAMIS is the right tool for the understanding of the component itself as it is

- independent from material, size and geometry
- and measuring under real-use conditions.

ARAMIS considers the real component geometry which would not be possible with traditional measuring devices like strain gauges, displacement sensors (LVDT), vibrometers, etc. 3D measurement results are always required as a 3D object leads to non-linear deformation behaviour. ARAMIS links to the component's original 3D CAD data for transformations, direct comparisons and visualizations. ARAMIS provides all results for static and dynamic tests even at high speeds for smallest to largest components for

- Strength assessment
- Vibration analysis
- Durability studies
- Crash tests

Finite Element Analysis

New products and production processes are designed and optimized with numerical simulation methods. Material parameters and component deformation behaviour have a significant influence on the accuracy of simulation calculations and their reliability.

ARAMIS is used for the determination of material parameters as FE input values and the validation of numerical simulations by calculating the differences between experimental measurements and FE data.

