



AMITRONICS

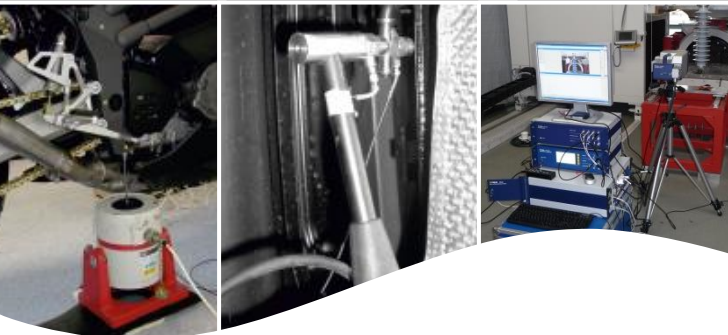
Angewandte
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MEASURE. EVALUATE. OPTIMIZE.



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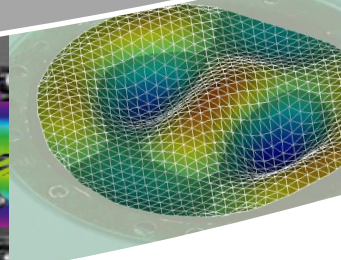
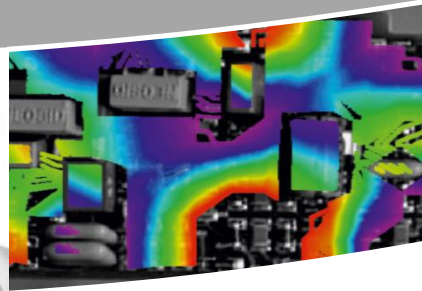
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ENGINEERING SERVICE PROVIDER FOR RESEARCH AND DEVELOPMENT

Since 1999 we have been successfully active in the microelectronics, automotive and mechanical engineering sectors.

Objects of investigation are acoustically and dynamically loaded structures of all sizes: from micromechanical parts, microstructures and microelectronic components to vehicles, machine tools and wind turbines.

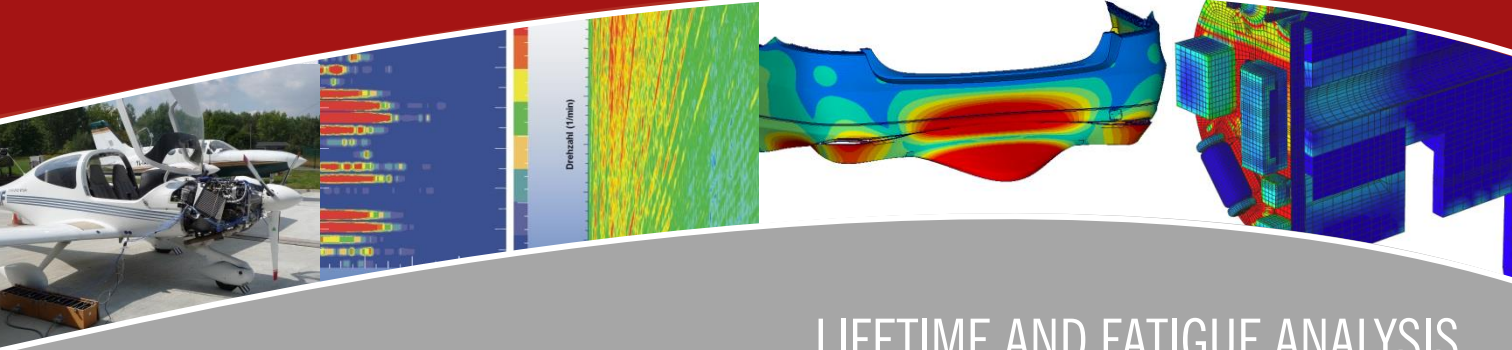
Amitronics GmbH has been officially authorized for employee assignment since 2009, is a member of the German association „Bundesverband für Zeitarbeit“ with an own collective agreement and offers engineering and technical personnel to BMW since 2010.



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- Non-contact vibration measurements by means of 2D laser scanning vibrometry
- 2D vibration analyses (transportable)
 - Measurement of deflection shapes, eigenfrequencies and transfer functions of assemblies optically accessible
 - Stiffness and weak point analysis, visualization of relative movements within the assembly
- 50 μm laser focus size, therefore structures with a minimum size of 70 μm can be measured
- Modal and operational vibration analysis (3D) and subsequent optimization
 - Determination of dynamic properties of parts, assemblies and complete systems with synthetic excitation
 - Eigenfrequencies, mode shapes, mode damping
 - Analysis of operational deflection shapes
 - Derivation and implementation of optimization measures to increase the reliability and/or to reduce vibrations and acoustic emissions
- Simulation and model updating
 - Finite-element based modal analysis, frequency response analysis and acoustic simulation
 - Updating and validation of simulation models using measurement results of experimental modal analysis



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AIRBORNE SOUND

- Mobile and stationary sound measurements/noise reduction of sound sources
 - Acquisition and evaluation of noise emissions
 - Primary noise reduction measures at the sound source
 - Optimization of sound transmission and reduction of sound radiation

- TPA – Transfer Path Analysis
Analysis of the primary transmission paths of a structure
 - Synthetic excitation or operational excitation at important force transmission points
 - Measurement of structural and acoustic responses (acceleration and sound pressure) at points of interest
 - Analysis and evaluation of the primary structural/acoustic transmission paths

- Sound absorption measurements with plane waves (impedance tube) and diffuse sound fields (alpha cabin)

- Sound power measurements in standardized rooms (according to EN ISO 3740, 3741, 3744 and 3745)

LIFETIME AND FATIGUE ANALYSIS

- Vibration and shock tests, also in combination with temperature and humidity loads
 - Test spectrum according to corresponding standard
 - Generation of test spectra based on mission profiles
 - Standard-compliant testing in accordance with defined parameters
 - Visual evaluation of simple pass/fail criteria
 - Online monitoring of electrical parameters during the test

- Fatigue analyses by combining experimental and simulative techniques
 - Analysis of component loads, strains and stresses using finite element simulation
 - Investigation of failure mechanisms by applying of fracture mechanic concepts
 - Evaluation of reliability and lifetime of components
 - Derivation of design optimizations and guidelines

- Experimental characterization of materials and components
 - Static and dynamic material testing of specified mechanical properties (tensile, shear, compression tests, dynamic mechanical analysis DMA, dynamic fatigue tests)
 - Determination of thermal (heat conduction and transfer) and thermomechanical parameters (thermal expansion)
 - Deformation analysis before, during and after loading by optical methods

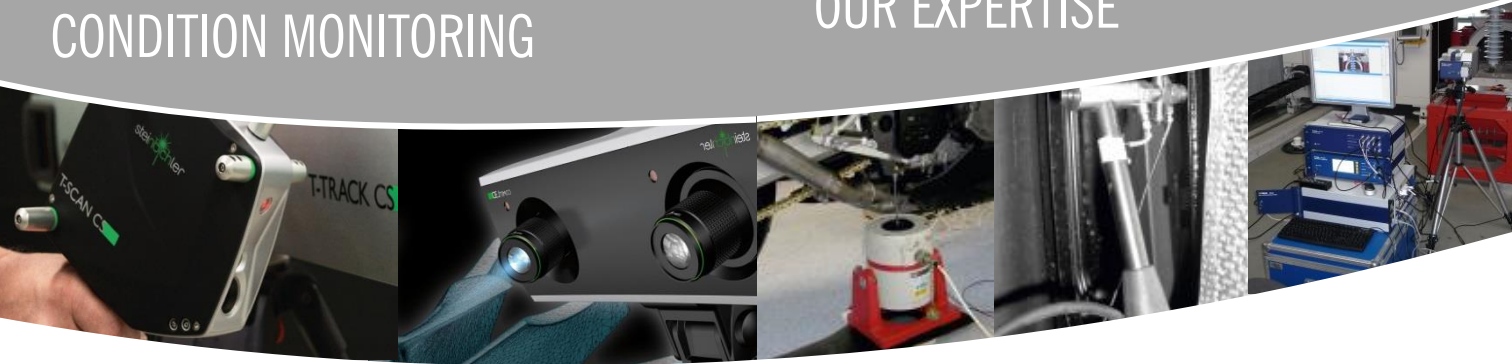
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3D SURFACE DIGITIZING CONDITION MONITORING

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OUR EXPERTISE



■ 3D Surface Digitizing - non-contact and imaging methods

Optical 3D digitizing of surfaces with the hand-held 3D laser scanner T-SCAN CS* and the 3D digitizing high-end sensor Comet L D 5M* for the following applications:

- Quality assurance/inspection
 - Tool and mold making
 - Design
 - Reverse Engineering
 - Deformation analysis
 - Medical applications, scans of art-historical objects etc.
- ## ■ Condition Monitoring
- Process monitoring - machine efficiency/process quality
 - Analysis of process changes
 - Detection of process disturbances in real time
 - Quality monitoring of components
 - Machine monitoring - safety/function of the machine
 - Trend analysis
 - Detecting wear and damage
 - Prevention of failures through early diagnosis – predictive maintenance
 - Structural monitoring
 - Detection, localization and classification of damages
 - End-of-line testing

We offer our clients state-of-the-art measurement and analysis methods to solve various acoustic and structural dynamic tasks:

- 2D vibration analysis
- Modal analysis
- Transfer path analysis
- Vibration and shock tests
- Airborne and structure-borne sound measurements
- Determination of the sound power
- Sound absorption coefficient measurement
- 2D deformation measurement
- High-speed recording
- Optical 3D surface digitizing
- Lifetime and reliability analyses
- Condition Monitoring

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