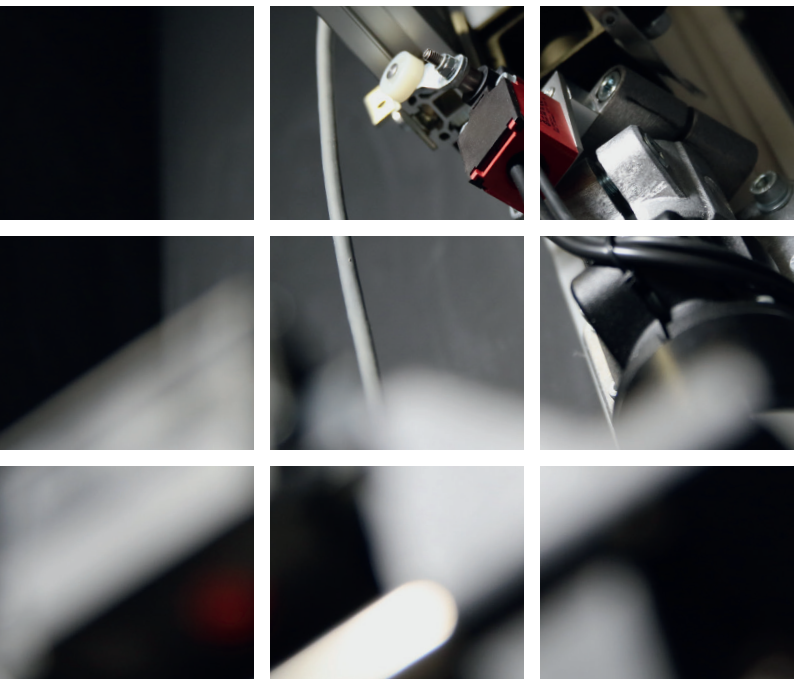


moving forward

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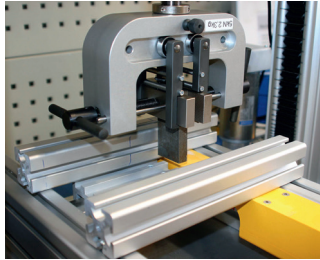
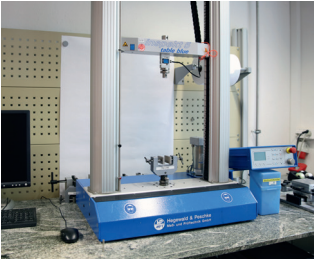


TEST & TECHNOLOGY
LABORATORY



MECHANICAL FORCES

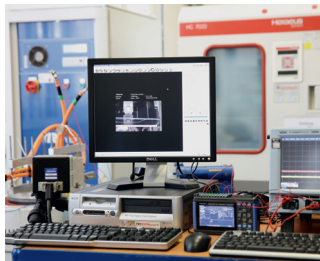
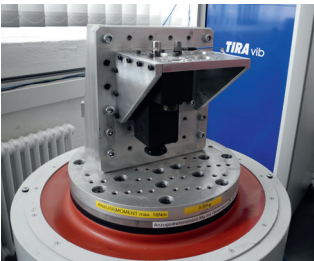
You would like to know your product's deformation when subjected to a controlled force and have all documented in video? We can shed light on these and similar questions with our universal testing machine. It allows precise tensile or compressive loads on the test specimen and their documentation.



- Documentation of load-displacement curves
- Determination of material parameters
- Feel and switching points of operating elements
- Synchronous video recording of destructive tests

VIBRATION

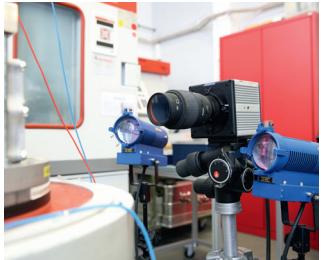
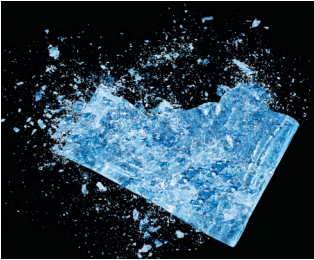
Will my product work reliably under the influences of vibration and shock? On our modern shaker we also simulate typical stresses that can result from operation, transport or misuse. Due to our extensive laboratory infrastructure, we can monitor functional behaviour in detail.



- Detection of functional weak points
- Behaviour at critical resonant frequencies
- Verification of product quality
- Compliance with the relevant standards

HIGH-SPEED RECORDINGS

Amazing insights can often be gained from the examination of processes that occur much too fast for the human eye to follow. Our high-speed camera even enables the analysis of one-off events. A dedicated evaluation of the video provides valuable information about the kinematic behaviour.



- Documentation of fast movement events, incl. nonrecurring events
- Meaningful, impressive videos
- 2D movement analysis with results in the form of diagrams
- Synergies through combination with other tests

ENVIRONMENTAL SIMULATION

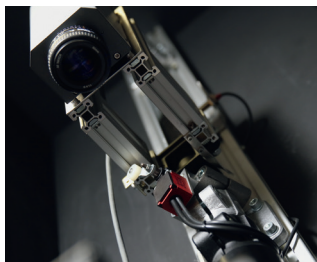
Depending on the field of use, products must be able to work just as well in the hot and humid climate of the tropics as in the bitter cold of the far north or during a rainy April day in our part of the world. Our testing facilities simulate such influences in the laboratory.



- Temperature and climate tests
- Accelerated aging
- Submersion | Strong water jets
- High pressure steam jet

LUMINANCE MEASUREMENTS

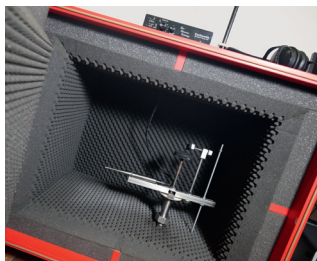
Luminance describes what is commonly referred to as brightness. As a photometric variable, it takes into account the sensitivity curve of the human eye. The measurement of luminance is the method of choice to optimize the visual appearance of display elements.



- Luminance measurements on plane light sources
- Lightproof measuring chamber
- Large dynamic measuring range
- Numerous evaluation and visualisation options

ANALYSIS OF ACOUSTICS & FREQUENCIES

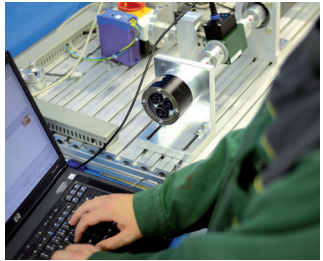
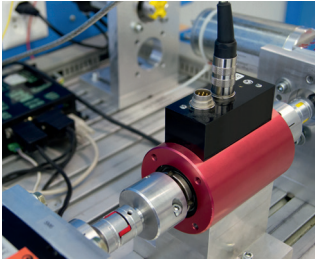
Thanks to the high-quality measuring chain and powerful analysis software, the subjective interpretation of noises and tones can be supplemented by quantitative evaluations and illustrated by means of catchy visualisations. Additionally, we offer calibrated sound level measurements.



- Recording of sounds
- Creation of acoustic signatures
- Frequency analysis
- Standard measurements of sound levels

DRIVE TECHNOLOGY LABORATORY

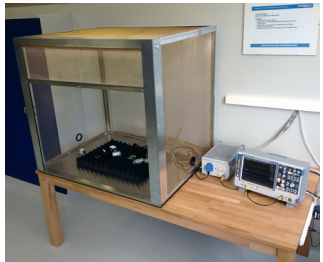
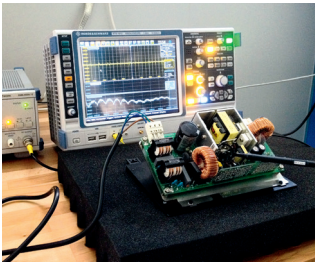
Modern and well-equipped drive technology laboratory with the latest motor test benches as well as various equipment for conducting tests and analyses of all kinds in the field of mechatronics. We can use this laboratory to support you in the development phase and to optimise the system solution.



- Application-specific life cycle measurements and tests
- Speed and torque measurements
- Detailed analyses for application-specific problems
- Accompanying tests for compliance testing (UL, CE)

ELECTROMAGNETIC COMPATIBILITY (EMC)

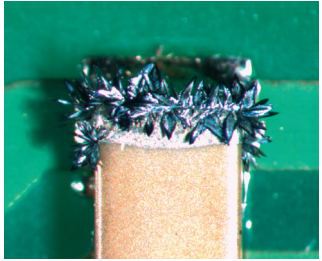
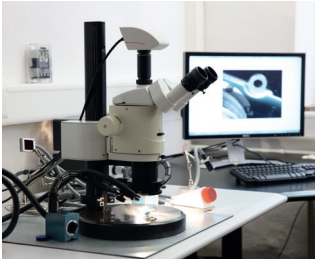
Absolute safety is required long before the product launch to ensure that all EMC requirements are fulfilled. It is worthwhile taking these requirements into consideration right from the very beginning, i.e. to check them in time during development in order to remedy any potential EMC problems at an early stage.



- Pre-compliance measurements
- Field-bound and line-bound measurements of devices and motors
- Optimisation of the EMC behaviour (online debugging)
- Facilitation of the certification of finished products

OPTICAL INVESTIGATIONS

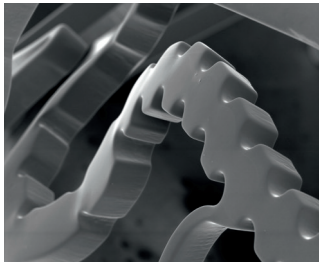
Optical measurement of components using a stereo microscope complements purely mechanical measurements. One of its advantages is the documentation of the measuring results in the form of images and overlaid measuring lines. Structures that are difficult to access can be examined by means of endoscopy.



- Zoom magnification
- Measurement of distances, angles and radii
- Image post-processing
- Increased depth of focus by means of image synthesis

SCANNING ELECTRON MICROSCOPY (SEM)

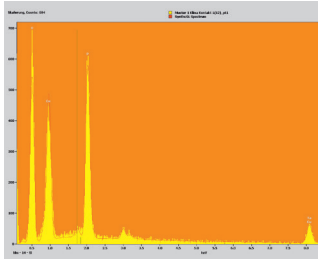
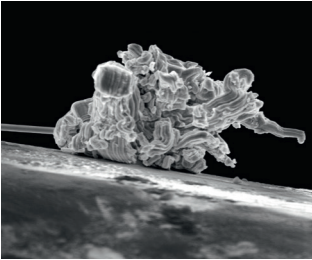
When a conventional light microscope runs up against its resolution limits, it is time to deploy the scanning electron microscope (SEM). Visible in its images are sample structures that can no longer be resolved with light, vividly depicted in the finest detail.



- Detailed pictures with a vivid look
- Display of surfaces on the smallest scale
- Evaluation of morphological properties
- Examination of contamination, e.g. particles

ENERGY-DISPERSIVE X-RAY SPECTROSCOPY

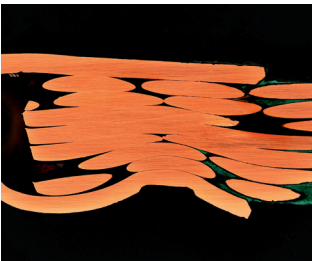
The quantitative determination of the element composition of even the tiniest structures is the domain of X-ray spectroscopy. Scanning electron microscope images can be combined with overlaid «element maps» to form a meaningful whole. All elements heavier than carbon can be detected.



- Quantitative element analysis (points, lines)
- Qualitative element distributions
- Element detection from carbon upwards
- Visualised and numerical results

CROSS SECTION IMAGING PROCEDURE

By first embedding products, assemblies or components in bubble-free synthetic resin, followed by cutting and polishing in any desired plane, it is possible to visualise hidden geometrical interactions (under arbitrary loading conditions) and the structure of the material.



- Documentation of the geometric state
- Tolerance and damage analyses
- Function checking
- Product presentations for marketing purposes



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**Gotthard 3 –
Competence in
Mechatronics
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