

LABCO



**The Independent,
Third Party Test Laboratory
for Materials and Components**



Established in Brake/Germany as a development laboratory for cables and wires.

The laboratory manager bought the laboratory to start his own company with **5 employees**.

A **shaker** for vibration testing was purchased.

Extension. 2700 m² of laboratory and office area.



1978

2000

2003

2006

2009

2014

2018

2019

LEONI AG bought the laboratory from Siemens AG.

Accreditation received.

Establishment of the **RF - section**.

LABCO GmbH moved into their **new building**.

Several new test devices implemented like RFA, Splash water chamber, ...



In July 2000 the laboratory was accredited according to the DIN EN ISO 17025.



The accreditation is accepted by countries around the world which cooperate with the international accreditation organization.

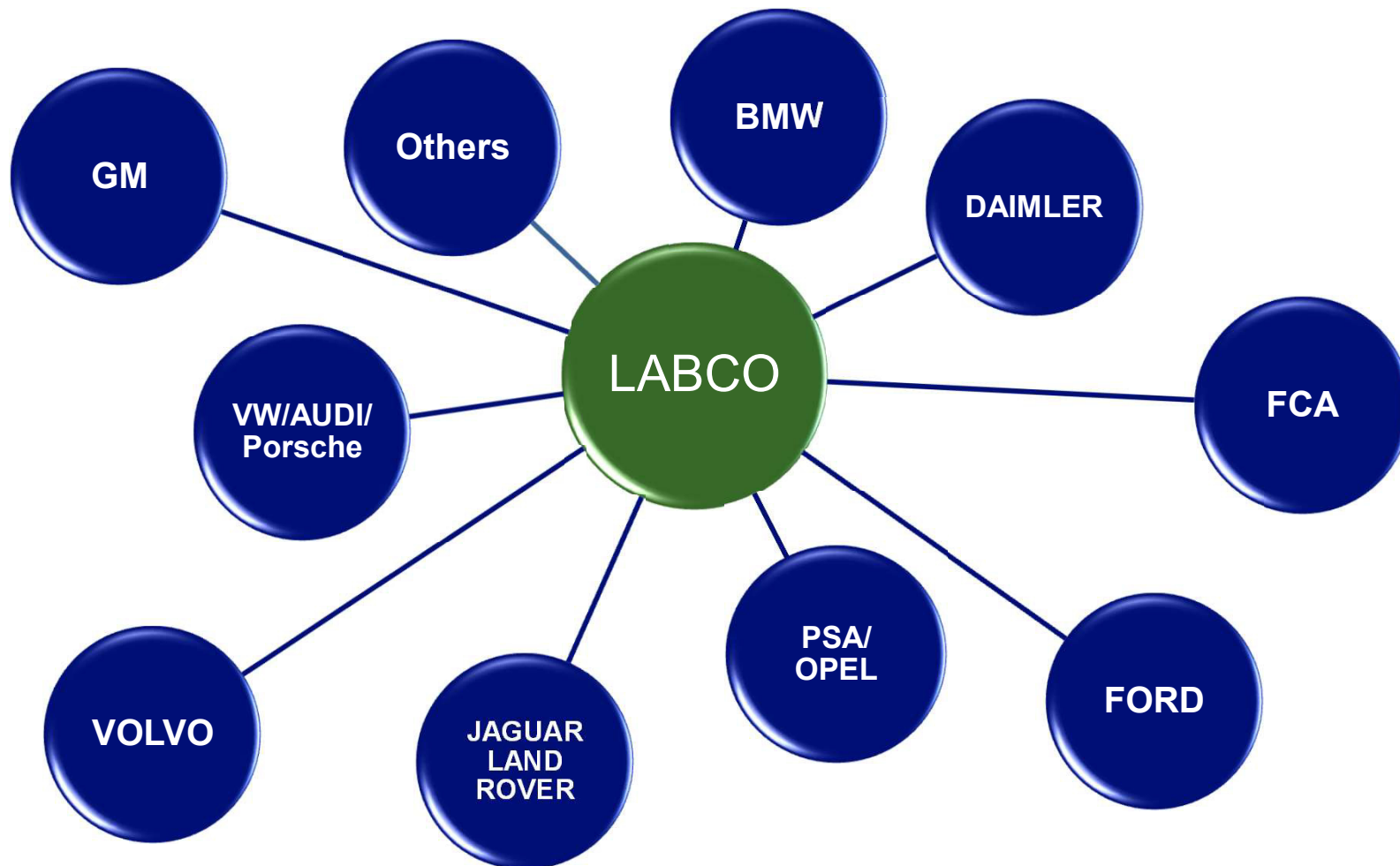
e.g. Brazil, France, Germany, Italy, Japan, Sweden, United Kingdom, USA.



The accreditation includes more than 160 specifications of the following organizations and companies. Also a flexible accreditation is available.

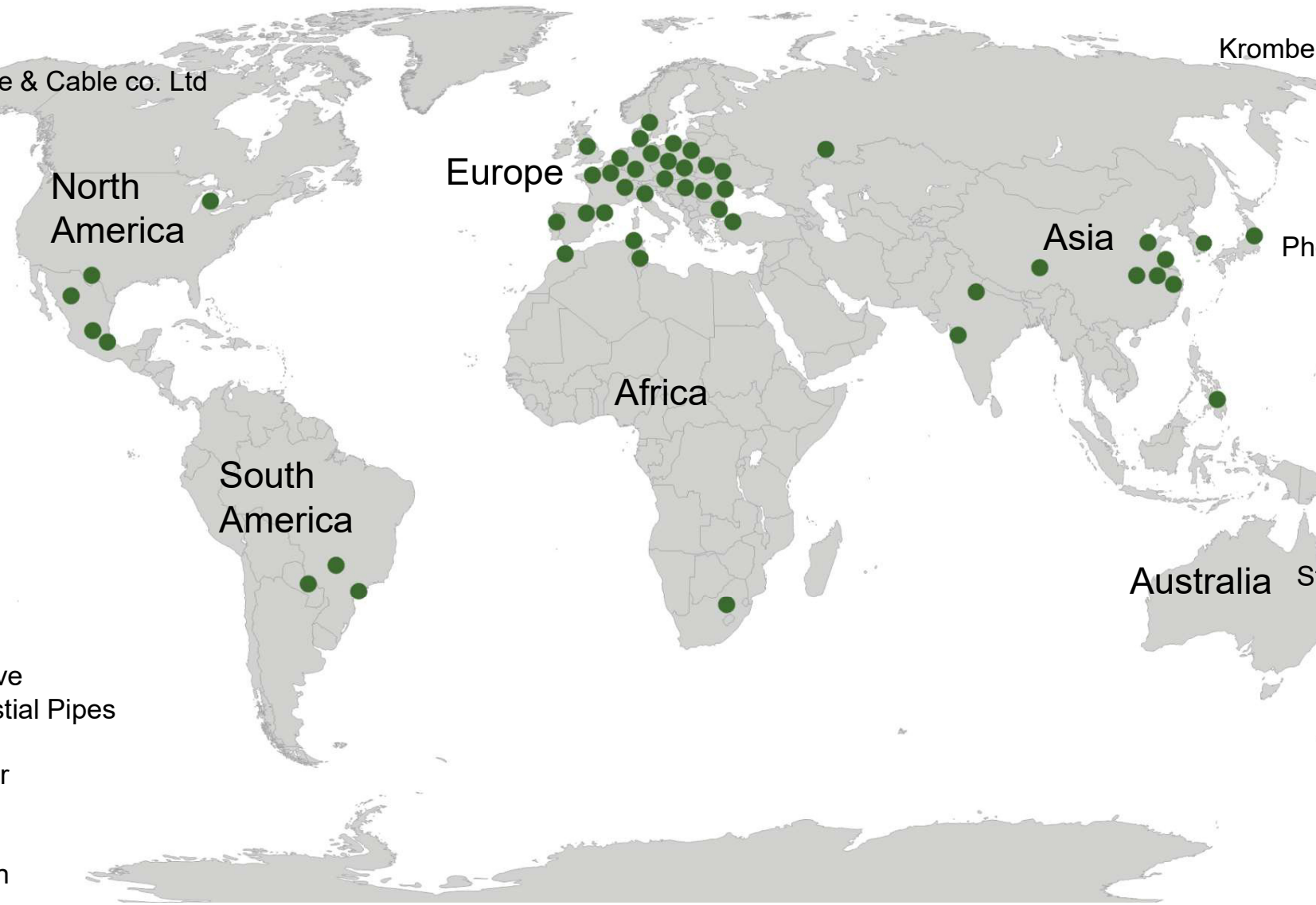
- ASTM
- BMW
- BOSCH
- DAIMLER
- DIN
- EN
- FIAT
- FORD
- GMW
- ISO
- IVECO
- LV
- MAN
- NISSAN
- PSA
- RENAULT
- SAE
- SCANIA
- USCAR
- UTMS
- VOLVO
- VW
- JASO
- SIEMENS

The following car manufacturers accept LABCO GmbH as an independent laboratory. This means that our test results lead to component releases without re-testing in OEM laboratories.



A summary of our main customers

- Audi
- Acome
- ASK
- Autokabel
- Beijing S.P.L Wire & Cable co. Ltd
- BIW Isolierstoffe
- BMW
- Bosch
- Certoplast
- Coficab
- Condumex
- Conti Teves
- Coroplast
- Daimler
- Aptiv
- Draka
- Dräxlmaier
- DSG-Canusa
- Elettrosud
- Erich Jaeger
- FCI
- Federal Mogul
- Fiamm Automotive
- Fränkische Industial Pipes
- Fujikura
- Gebauer & Griller
- Gessmann
- Hella Fahrzeug
- Hellermann Tyton
- Helukabel
- HEW Kabel
- Huber & Suhner



- Intercable
- Iprotex
- Kostal
- Kromberg & Schubert
- Kyungshin
- Lapp Kabel
- Leoni
- LS Cable
- NKT Cables
- Phoenix Contact
- Porsche
- Prysmian
- PSA
- Rehau
- Relats
- Rosenberger
- Scapa
- Schlemmer
- Schulte & Co
- Stocko Contact
- Sumitomo
- TE
- Tesa
- TÜV
- Uniwel
- VDE
- Volkswagen
- Voss
- Walro Flex
- Yazaki
- Yura

Our Team has nearly 40 years of experience in testing wiring harness components.

Our main services are:

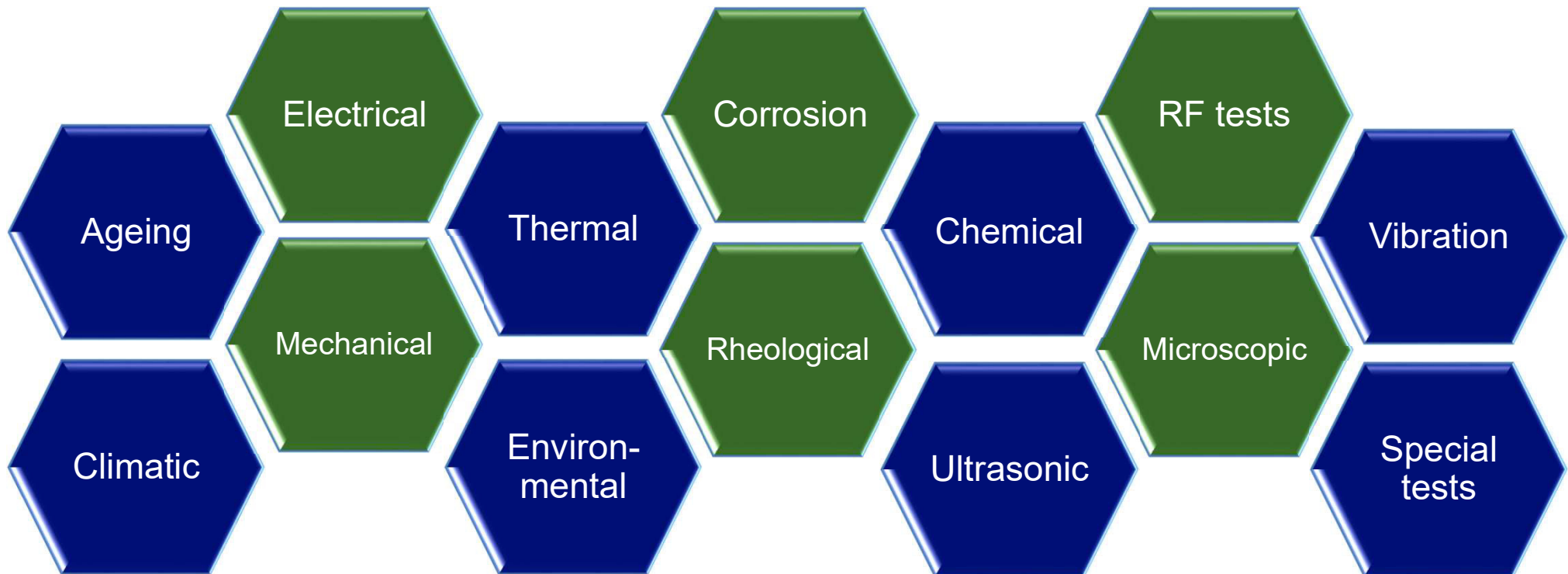
- Tests of wiring harnesses
- Tests of automotive cables
- Tests of wiring components (e.g. moulded connectors, cable protective parts etc.)
- Tests of tapes and tubes
- Tests of fuses, terminals, fuse boxes, etc.
- Radio frequency tests
- Compatibility tests
- Vibration tests
- Ultrasonic welding tests on copper cables
- Examinations of plastics materials
- Analysis of reasons for faulty products
- Special tests in line with customer requirements

In addition:

- Development of specifications



We offer the following services and tests:



To perform ageing tests we have

- more than 160 ovens in the temperature range up to 350 °C
- Vacuum ovens up to 300 °C
- Ovens up to 1200 °C
- Convection ovens with up to 250 air changes per hour

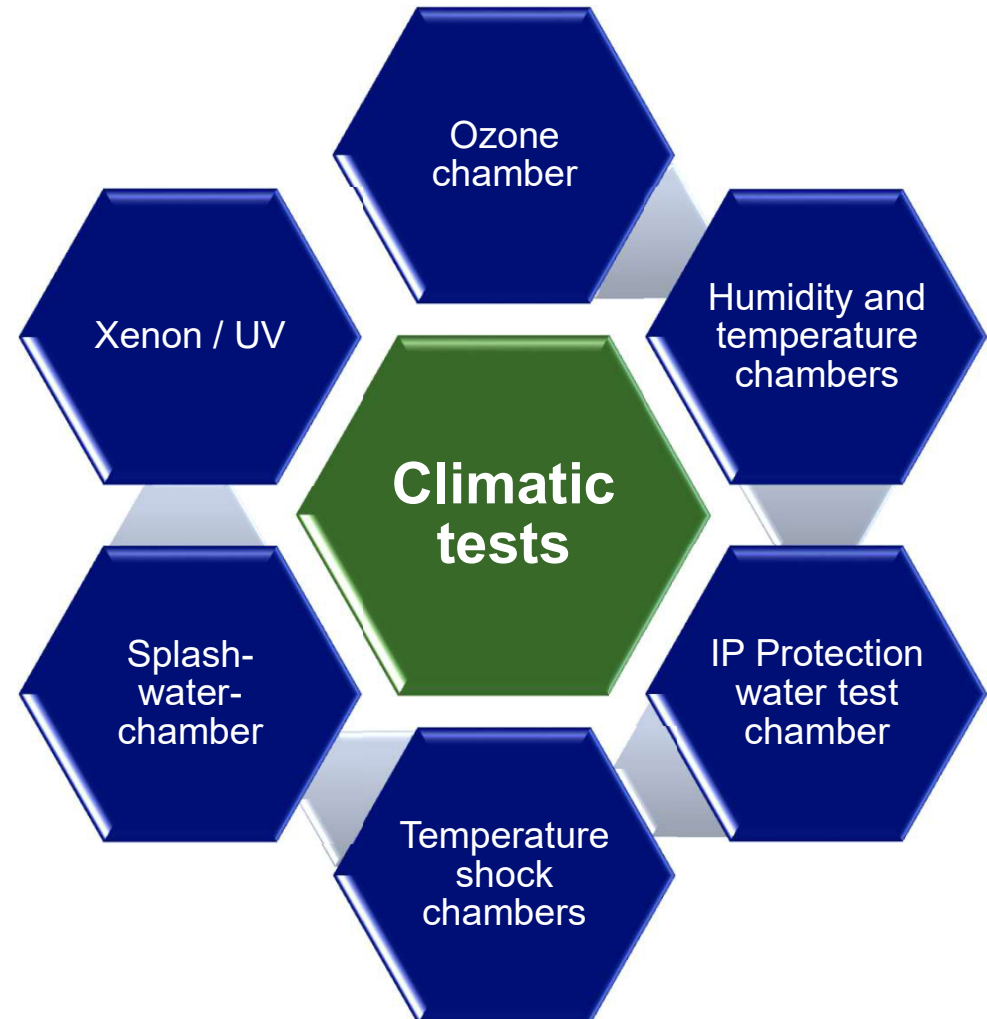


Temperature monitoring



Samples before an ageing test

We have more than 27 climatic chambers. With these we are able to perform climatic tests between -80 °C and +200 °C with a relative humidity of 5 % up to 98 %.

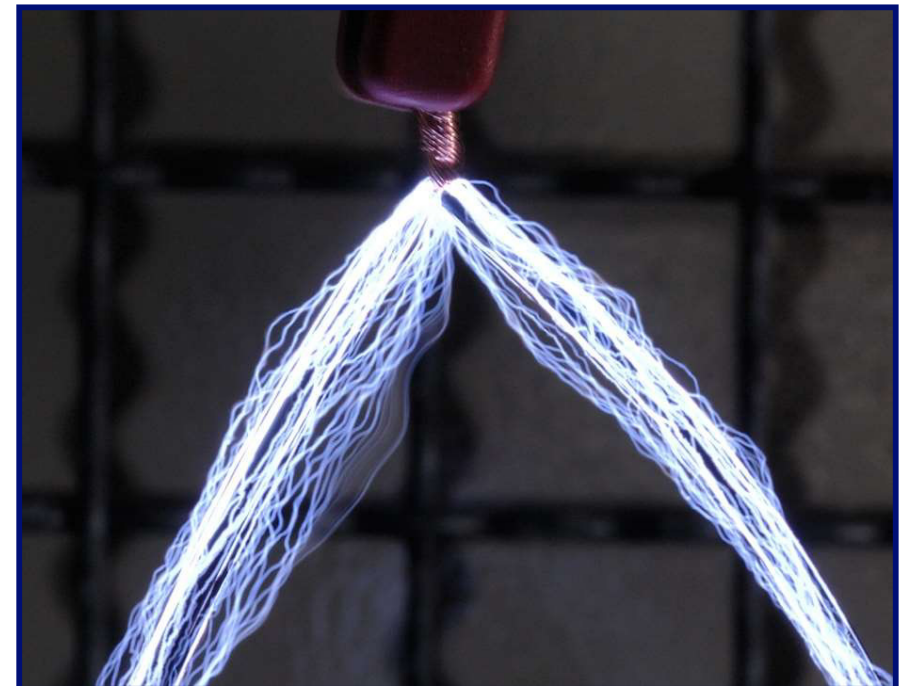


- More than 300 power supplies up to 3000 A
- Oscilloscopes
- High voltage up to 50 kV (AC/DC)

- Dielectric strength
- Electrical properties during storage in hot or cold water

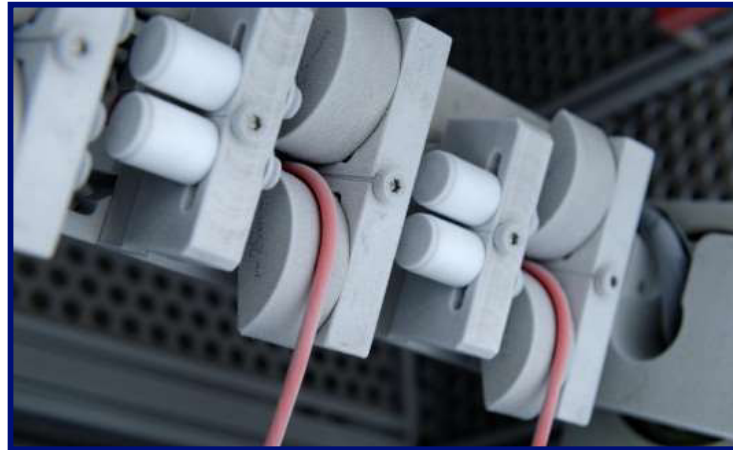


Short - circuit test

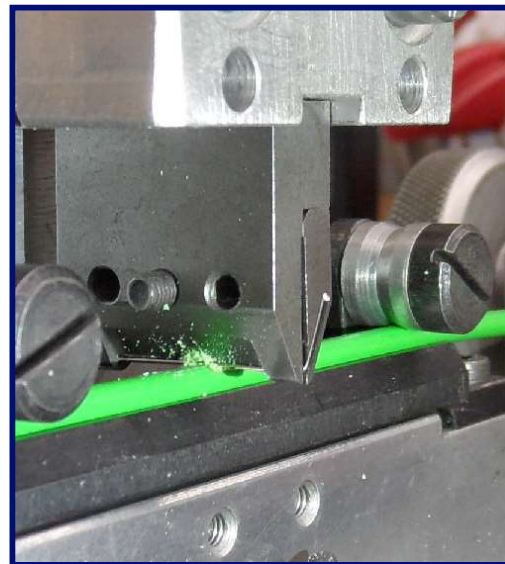


High voltage test equipment

- Elongation at break
- Shore hardness A and D
- Micro hardness
- Cycling bending test
- Winding at RT/-70 °C
- Bending force
- Tensile strength
- Insulation notching resistance
- Abrasion (5 different testing devices)
- Flexibility tests (several testing)



Cycling bending test



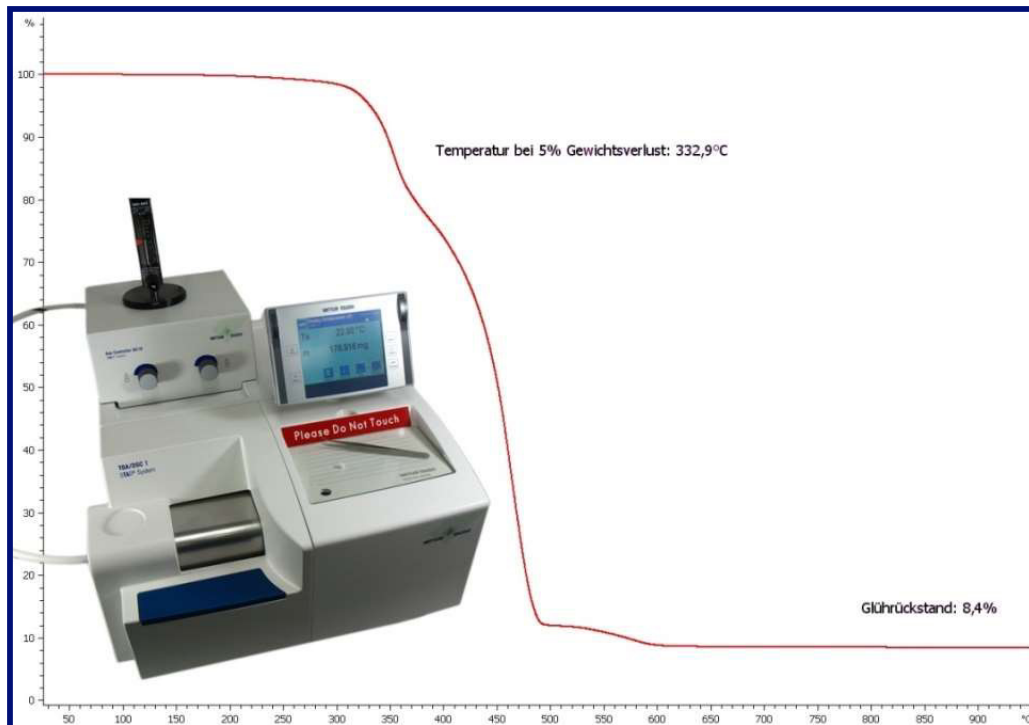
Abrasion test



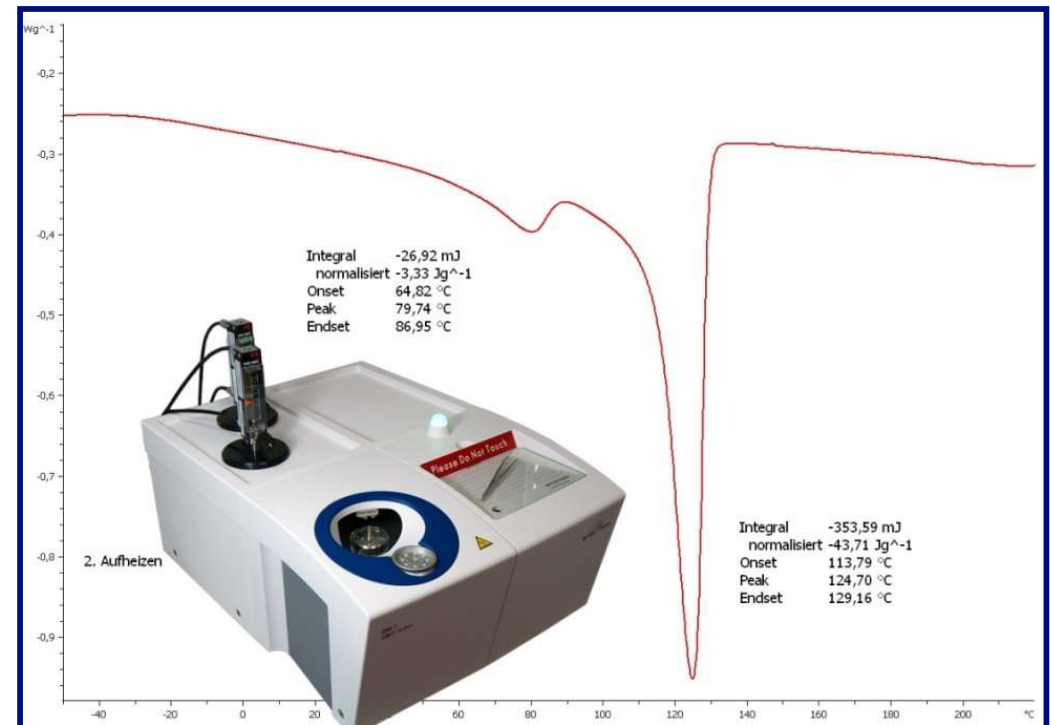
Tensile testing machine

Thermal tests

- TG (Thermo-Gravimetry) up to 1000 °C
- DSC (Differential scanning calorimetric) from -170 °C up to +550 °C
- Melting behaviour, glass transition temperature
- Specific heat capacity

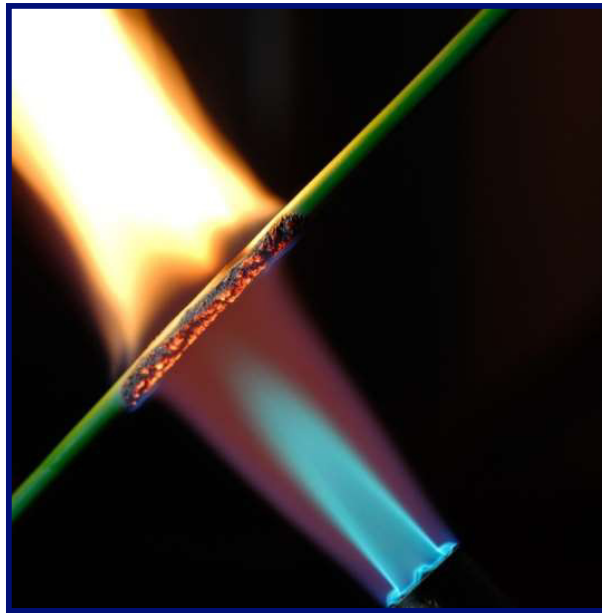


Thermo-Gravimetry



Dynamical Scanning calorimetry

- Fogging test
- Humidity
- Hydrolysis
- Combustibility
- Waterproof test
- Homogeneity
- Fluid temperature shock chamber (-40 °C / +170 °C)
- Air temperature shock chamber (-80 °C / +200 °C)
- Ultraviolet chamber



Combustibility



Ultraviolet chamber

- SWK 1000
- Chamber size: 100 cm x 100 cm x 80 cm
- Tank volume: 61 liter
- Numbers of cycles: 100
- Splash volume: 3-4 liter
- Splash life: 3 s
- Amount of Arizona dust: 3 %
- Water temperature: 0-4 °C

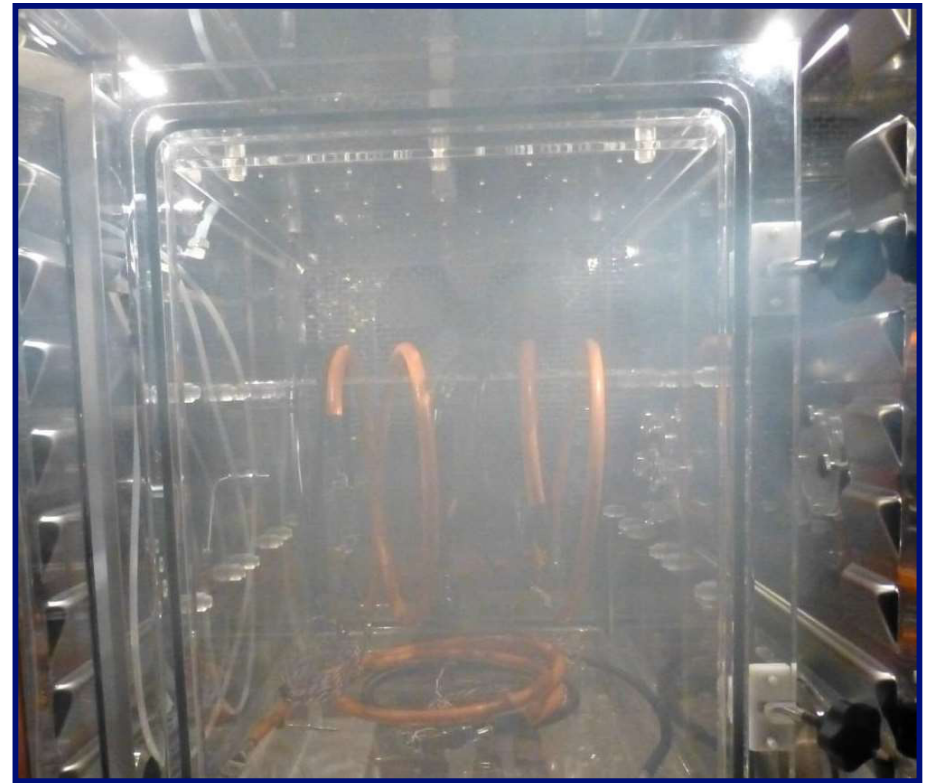


Splash water chamber

- Salt spray chamber with up to 70 °C, humidity up to 95 % and a 30 % salt concentration
- Industrial climate (multi-component climate)



Salt spray test



Industrial climate test

- Mass flow index (MFI)
- Mass volume index (MVI)
- Fluid tests
- Viscosity

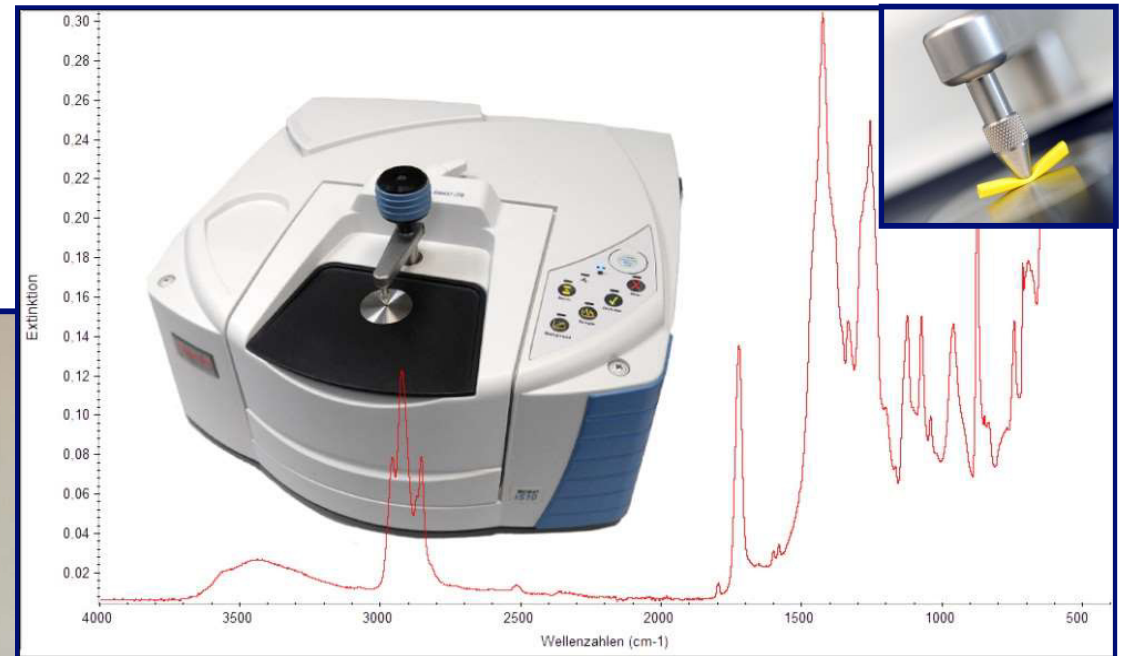


MFI / MVI test equipment

- Extraction
- Infrared spectrometry (IR)



Extraction test equipment



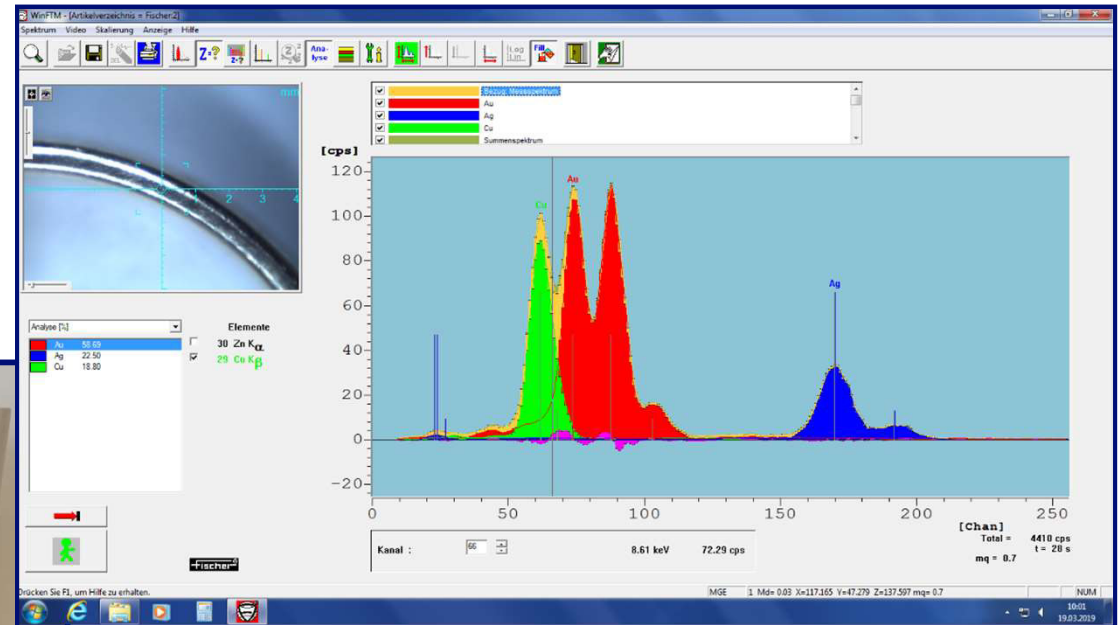
Infrared spectrometry

X-RAY fluorescence tests

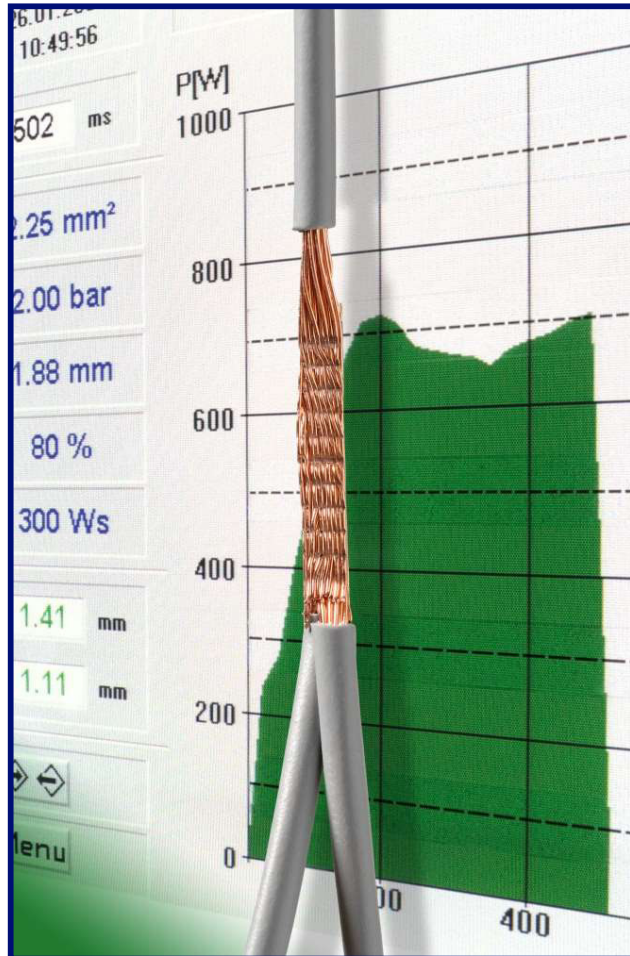
- Elemental analysis in seconds
- Elemental analysis of solid, powdery or paste materials and liquids
- Measurement of multilayer systems



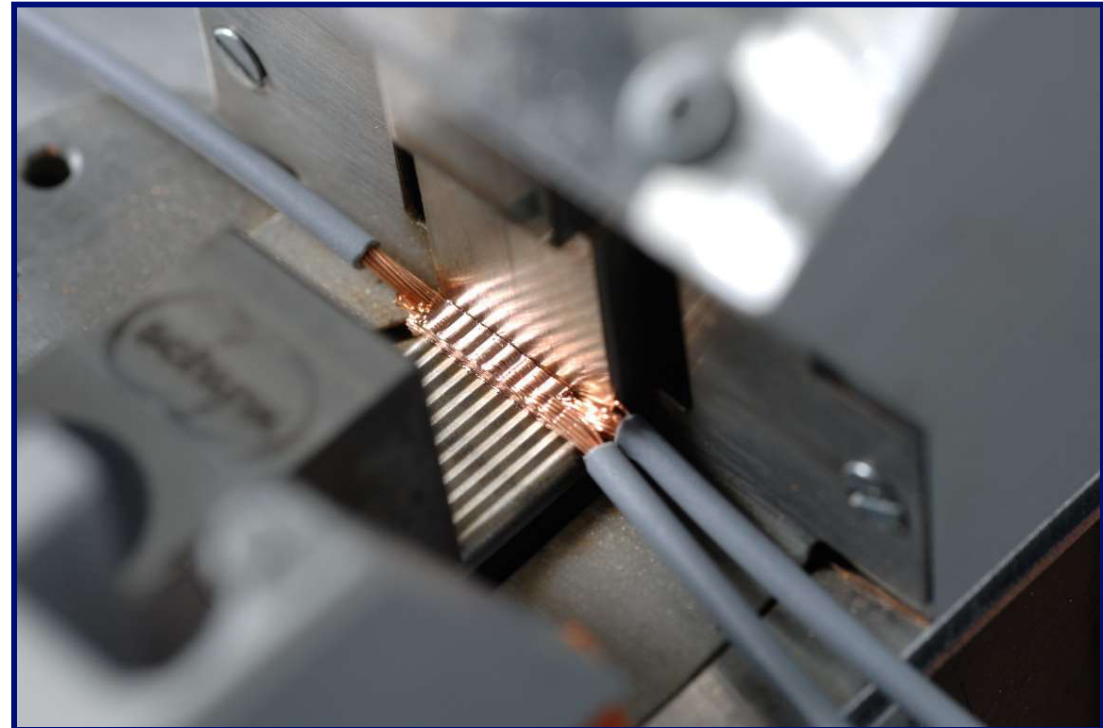
X-RAY fluorescence analyser



Fluorescence spectrometry



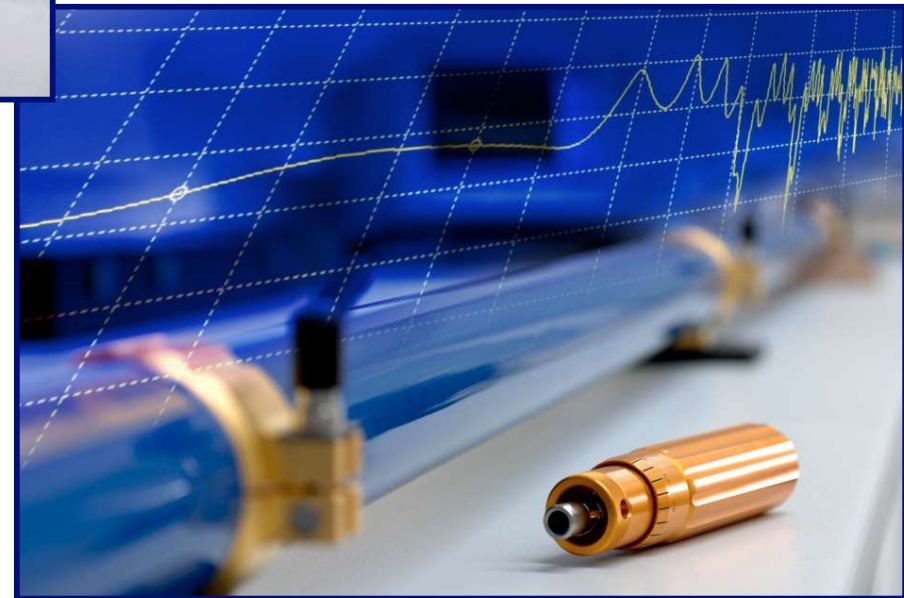
Ultrasonic welding apparatus
(Schunk Minic Automatic)





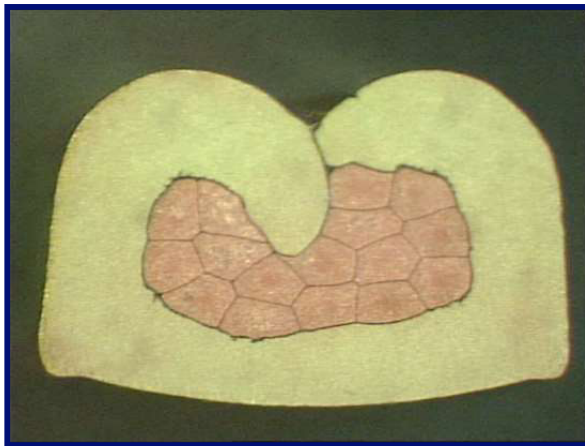
- RF test devices
- Vector network analyser (VNA)
- Oscilloscopes
- Function generator
- Line injection method
- Triaxial test method

- Screening attenuation
- Capacity
- Skew
- Coupling resistance
- Insertion loss
- Return loss
- Mean characteristic impedance

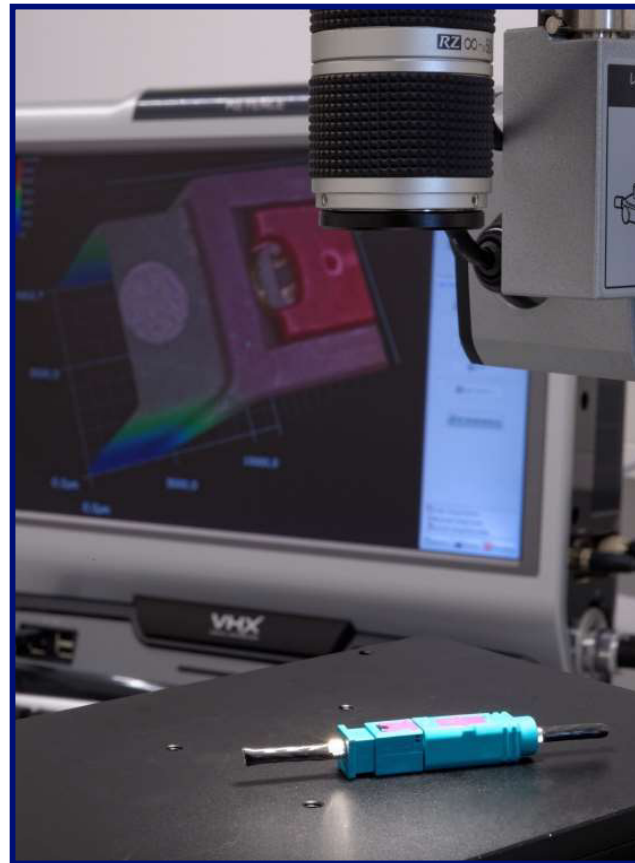


Microscopical tests

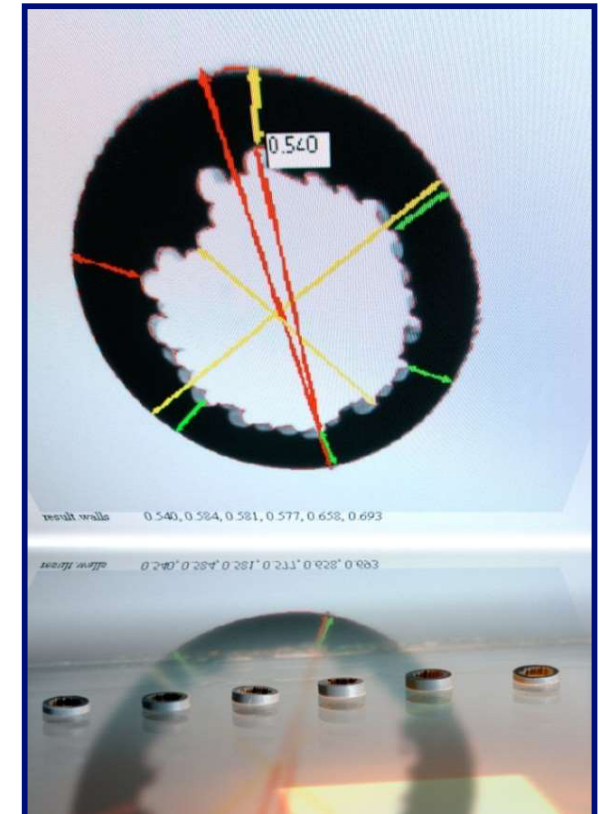
- Digital microscope with a magnification of 0 - 200 and a depth of focus of 4 cm.
- Stereo microscope
- Video microscope
- Overhead light
- Fully automatic microscope equipment for cables and wires
- Micro sections
- RFA



A micro section



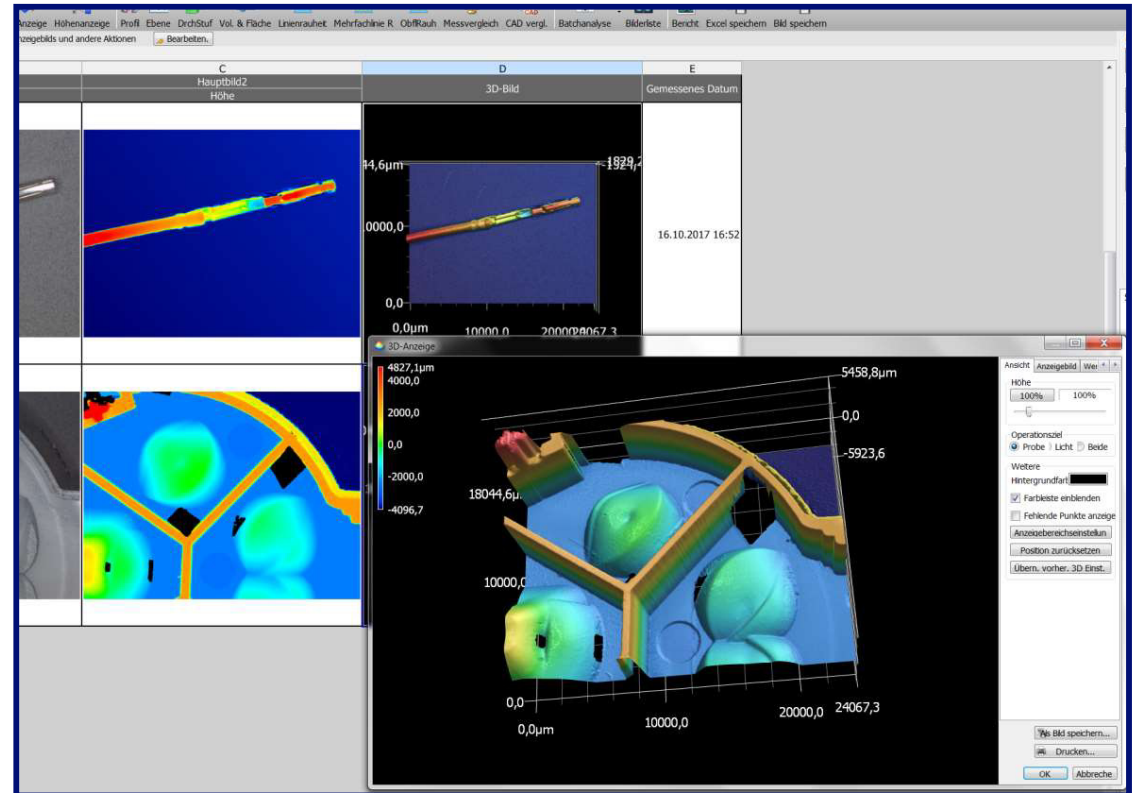
Digital microscope



An automatic measurement of a cable

Wide-area 3D Microscopy

- Scans the entire topography of a surface
- Measurement within seconds and user-independent
- High repeatability
- Large-scale views (200 mm x 100 mm)
- Profile measurement
- Measure average height difference
- Measure volume and surface area
- Line and surface roughness
- Fast comparative analysis



Wide-area 3D-Measurement

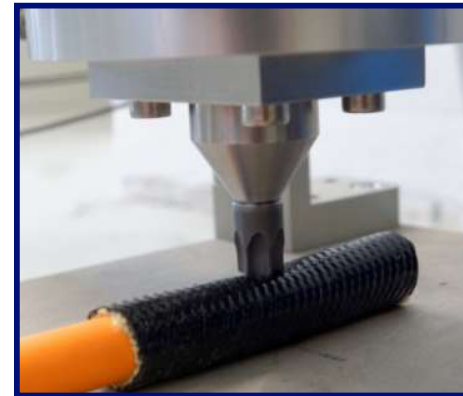
2 vibration devices with controlled environmental conditions

- Sine/random force: max. 80 kN
- Shock vector force: 160 kN
- Frequency: 5 Hz to 2700 Hz
- Amplitude: max. $\pm 38,1$ mm
- T: -70 °C to $+180$ °C
- ΔT : 15 K/min
- Humidity: 5 % to 95 %
- Volume: 1 m³
- Resistance monitoring
- Contact interruptions (μ s)
- Individual assembling
- Sequential electrical load



Special tests

- ABS-simulation tests
- Slow motion test up to 260 °C
- Flexural strength -40 °C / +180 °C
- Door slam test (-40 °C to + 80 °C)
- LV 312-3 Impact tester
- Endurance test for trailer couplings
- Arbitrary 4-Quadrant amplifier for electrical tests according to LV 124



Endurance test device



ABS simulation device



LV 312-3 Impact tester



Your Partner for Testing Materials, Components, Automotive Parts, Various Special Tests or Specific Projects