

INSPECTION SYSTEM

SONOAIR

NON-DESTRUCTIVE MATERIAL TESTING WITH AIR-COUPLED ULTRASOUND

MADE IN GERMANY

SONOTEC 

AIR-COUPLED ULTRASONIC INSPECTIONS

Modern **composite materials such as glass or carbon fiber reinforced plastics (GFRP, CFRP) and ceramics** are successfully being used in multiple industries such as aerospace and automotive or for the production of sports and leisure goods.

Already during the material development it is necessary to detect internal structures and discontinuities fast and reliably. Research institutes, industrial development laboratories, and quality assurance departments of production facilities

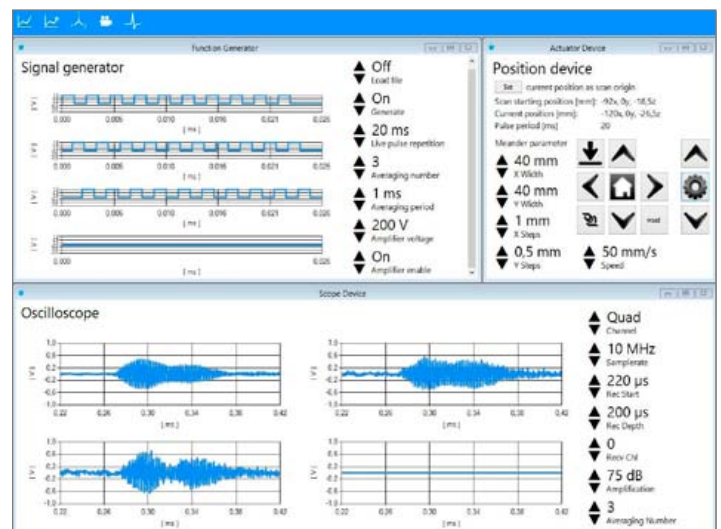
highly appreciate a **contactless, high resolution inspection**. The high performance of our transmitter-receiver system is crucial to test highly attenuating materials through air. The ultrasonic transducers, the scanning area and the software can be adapted to the specific geometry and material composition of the test object.

These high requirements can be fulfilled with the new and modular SONOAIR inspection system **for laboratory and quality assurance applications**.

ADVANTAGES AT A GLANCE

- Air-coupled testing method, contactless, couplant free
- Up to 4 transmitter and receiver channels with freely configurable square wave burst transmitters and low noise receiving amplifiers
- Inspection of highly attenuating materials
- High resolution due to the use of focusing transducers
- Upgradeable and adaptable system due to the modular concept
- On site system setup and detailed product training by our experts
- High-performing probes „Made in Germany“

SOFTWARE SONOSTUDIO



- Display of measurement results as A-, B-, C- or D-Scan
- Repositioning of measurement gates after the inspection
- Storage of the complete A-scans for every measurement point during the testing process (optional)
- Individual signal processing algorithms e.g. for filters (optional)

APPLICATIONS

- Interface detection
- Homogeneity analysis
- Bond inspection and delamination testing
- Detection of internal cracks and inclusions

MATERIALS, COMPOUNDS & STRUCTURES

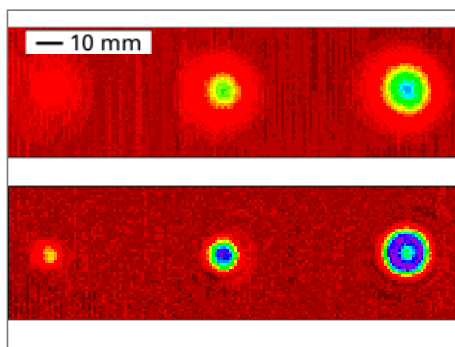
- Carbon fiber reinforced plastics (CFRP)
- Glass fiber reinforced plastics (GFRP)
- Wood, cellulose and natural fibers
- Plastics
- Thin metals sheets
- Adhesive bonds
- Honeycomb structures
- Foams and foam compounds
- Structural composites of lumber and adhesives as well as chipboard sheets

PROBES FROM THE ULTRASOUND SPECIALIST

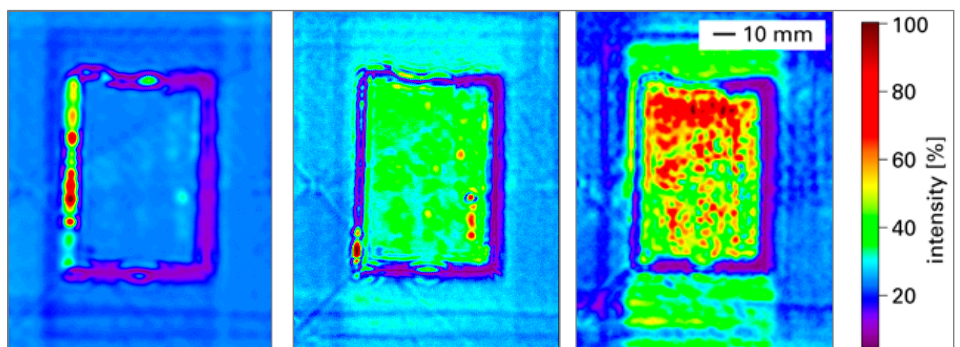
- ✓ In-house piezo composite manufacturing
- ✓ Probes in the frequency range from 50 to 400 kHz, focusing and non-focusing, multi-element probes
- ✓ Design of customer specific probes
- ✓ More than 25 years of experience in R&D and production of ultrasonic probes



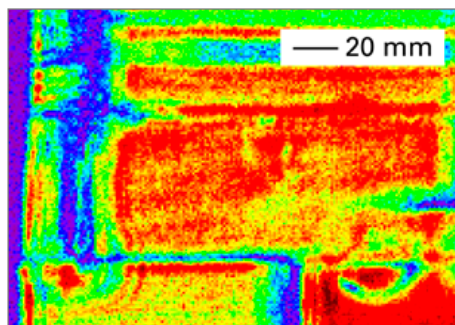
APPLICATION EXAMPLES



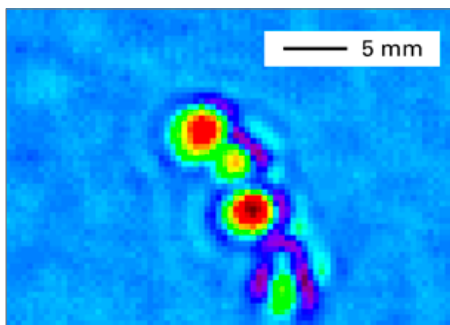
Comparison of a drilled hole: non-focusing (top) and focusing probe (bottom)



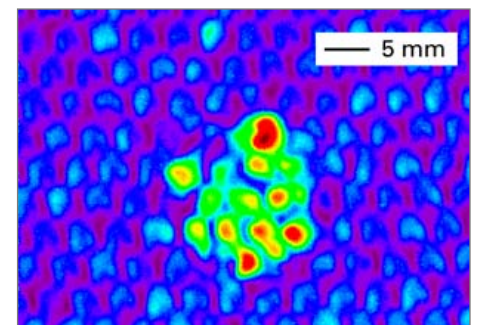
CFRP plate with kissing bond and frequency dependent contrast mechanisms at 200, 300 and 400 kHz (left to right)



Laminated wood with different discontinuities



Proof of impact damage at CFRP plate



Detection of a defect in a honeycomb structure

ACQUIRING EXPERT KNOWLEDGE



Forschungszentrum
Ultraschall

In cooperation with the Forschungszentrum Ultraschall FZ-U (research center for ultrasonics) we offer trainings for air-coupled material testing in Halle (Saale), Germany. The FZ-U has a high expertise in air-coupled testing of several materials and structures. With theoretical lectures and practical demonstrations the training sessions provide a profound introduction into the subject. In addition to the special features of this testing method, its potential and limitations are explained. In the practical part image formation, the possibilities of signal processing and the resolution capabilities are presented. Participants also have the opportunity to bring along their own material samples in order to inspect them with experts. Contact: www.fz-u.de

GENERAL DATA

| | |
|-------------------------------|--|
| 19" unit consisting of | PC with Windows 8.1 and system software SONOSTUDIO; Digitizer 16 Bit, 100 MS/s; Transmitter unit; Receiver unit |
| Operating temperature | 5 to 40 °C |
| Network interface | 1 GBit/s LAN |
| Protection class | IP20 |
| Standards | IEC 61010, IEC 60204 |

TRANSMITTER

| | |
|---|--|
| Number of channels | Up to 4 |
| Pulse height of the output signals | Up to 400 V (optional up to 800 V) |
| Frequency range | 35 to 750 kHz |
| Maximum power | 2 kW (400 V), 4 kW (800 V) |
| CW operation | Possible |
| Square wave burst transmitter | Freely configurable (the pulse width can be selected individually for every square wave pulse of the burst) |

RECEIVER

| | |
|---------------------------|--------------------------------------|
| Number of channels | Up to 4 |
| Frequency range | 25 to 650 kHz (optional up to 3 MHz) |
| Gain | 0 to 120 dB, 0.5 dB increment |
| Noise | 1 nV/√Hz |

SCANNER

| | |
|----------------------------------|--------------------|
| Scanning area (X x Y x Z) | 500 x 500 x 160 mm |
| Positioning accuracy | 20 µm |
| Scanning increment | Minimum 50 µm |

PROBES

| | |
|--|---|
| SONOSCAN CF series with robust stainless steel housing | |
| Frequency range | 50 kHz to 400 kHz |
| Relative sensitivity | Up to -30 dB |
| Resolution | Up to 2 mm |
| Focusing | Permanent focus with shaped lens or electronically adaptable focus with multi channel Fresnel zone design |

SOFTWARE

| |
|---|
| Easy to operate and intuitive graphic user interface |
| Separate windows for parametrization of the system components (transmitter, receiver, scanner) |
| Individual screen layout |
| Storing of complete A-scans for every measurement point during the testing process |
| Repositioning of the gates after the measurement |
| Individual signal processing algorithms e.g. for filters |
| Display of the test results as A-, B-, C- or D-Scan |
| Storing and documentation of complete data sets |

ULTRASONIC TESTING TECHNOLOGY "MADE IN GERMANY"



SONOTEC was founded in 1991 by the two physicists Dr. Santer zur Horst-Meyer and Hans-Joachim Münch and is still owner operated. With currently more than 140 employees SONOTEC is a growing technology company highly renowned as solution provider for ultrasonic measurement technologies especially in the field of non-destructive testing (NDT). The integration of a strong R&D department and flexible manufacturing makes SONOTEC the ideal partner for multiple customers from different industries.

SONOTEC preserves the right to change technical specifications without further notice. (Rev. 4 / 2016-06-01)

SALES & SUPPORT

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