

Ultrasonic Leak Testing

A new dimension in gas bubble detection in water basins

Ultrasonic leak testing enables precise, reliable detection of gas bubbles in a water basin. It minimises human influence and increases efficiency and quality even with low leak rates.

MACEAS ultrasonic leak testing takes your quality assurance to a new level: It detects and locates leaks with an accuracy of $1 \cdot 10^{-4}$ mbar · l/s. In addition, it is universally applicable, whether in the automotive industry or other sectors, and offers a reliable, cost-efficient solution for industrial series production.

How it works

If a bicycle tyre has a puncture, fill it with air and submerge it in water to find the leak by looking for bubbles rising to the surface; then it can be sealed. Based on this principle, components such as tanks, pipes or housings are tested for leaks in series production using ultrasonic leak testing – at a highly developed, industrial level – in a fully automated and precise manner. This makes MACEAS ultrasonic leak testing a decisive step towards quality assurance in operator-independent industrial series production.

Applications

MACEAS ultrasonic leak testing offers a wide range of applications in various industries – from the automotive industry to building engineering to the energy sector.

Your advantages at a glance:

- Objective, transparent leak testing: Thanks to automation, permanent monitoring of all points on the test piece, avoidance of time-consuming manual checks.
- This is your assurance of top quality through permanent testing of every relevant measuring point with guaranteed leak rate for reliable localisation of even the smallest leaks.
- Several parts can be tested in one basin
- Semi-automatic or fully automatic leak testing systems
- No periodic calibration or time-consuming preparation of test parts required
- Low-maintenance ultrasonic system
- No vacuum components necessary
- Low test gas costs thanks to use of air or nitrogen as test gas
- Reduction of testing times and operating costs
- High flexibility: Product holder for other product variants



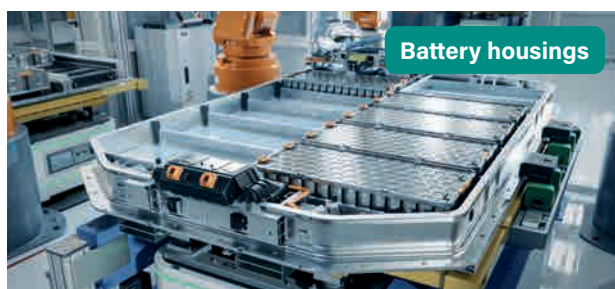
Hot water tanks



Compressors



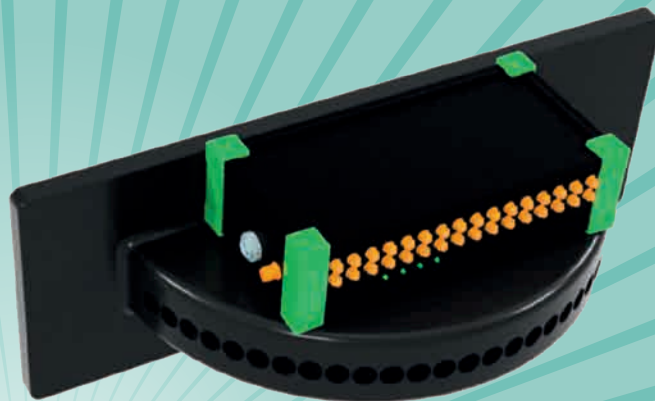
Fuel tanks



Battery housings



MACEAS USBD4000 Sensor Unit

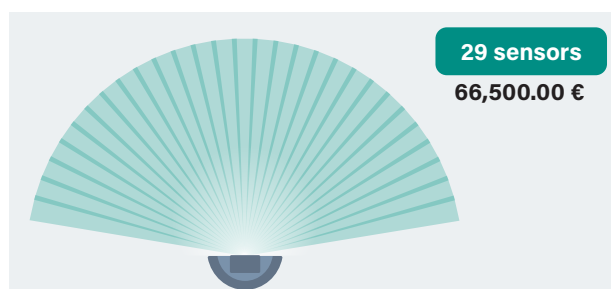
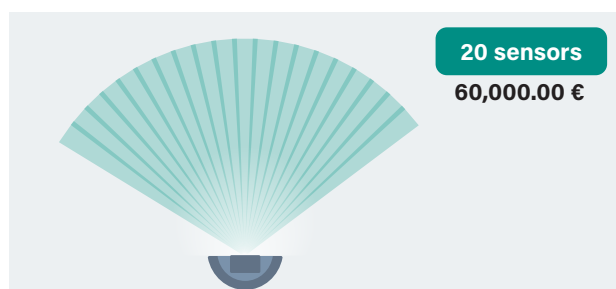
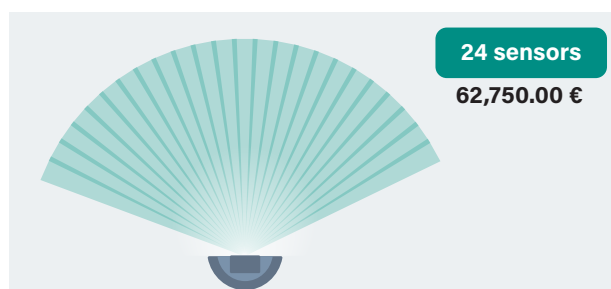
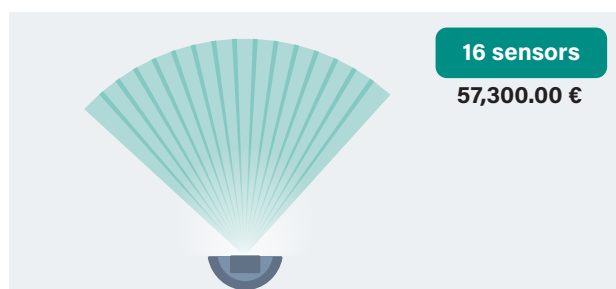


Latest ultrasonic testing technology with 3D leak detection and related software

A flexible system for precise results

The USBD4000 offers a reliable solution for a broad range of requirements. The basic structure and scope of delivery remain the same, but the number of ultrasonic sensors varies. This determines the size of the sound and test field

and consequently the maximum size and the number of test pieces to be tested. This enables us to tailor the inspection perfectly to your individual needs – for maximum precision and efficiency.



The result of over 25 years of experience in ultrasonic leak testing:

- Compact, next-generation hardware and software
- Easy to install and compatible with all MACEAS systems
- Preventive maintenance with real-time, long-term data
- Optimised signal processing and interference suppression
- Precise leak detection and real-time measurement results
- Efficient error handling and user management

Active sensor unit – components:

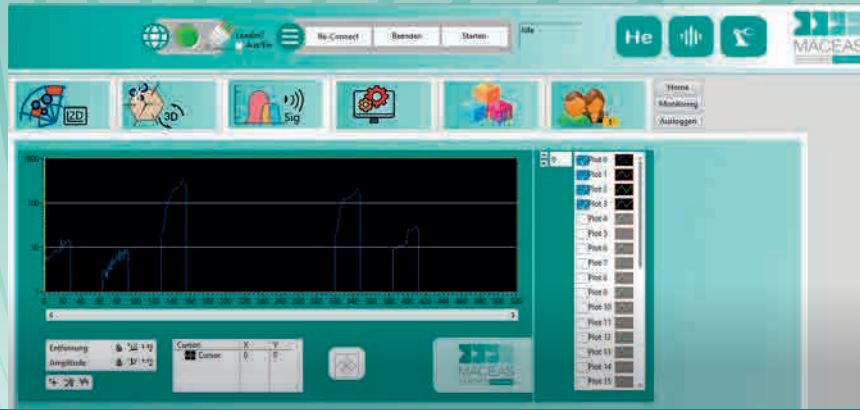
- Sensor holder with up to 29 ultrasonic sensors
- Screened-off sensor cables
- Active sensor electronics including measuring electronics
- Protective hood

Active sensor electronics – Technical data:

- Power supply: 24 VDC
- Power consumption: 10 W
- Interface: 100 Mbit/s Ethernet
- Sensor connections: 32 SMA sockets
- Signalling: 3 status LEDs



MACEAS USBD4000 Sensor Unit



User-Friendly, Flexible Integration

Control PC:

- With Windows 10 or Windows 11 IOT
- Higher-level measurement sequence control
- Self-explanatory operation
- Complete parameterisation via MACEAS, also remotely

User-friendly display:

- For monitoring the test process
- Efficient, precise control through adjustment of important parameters and insight into real-time data for leak detection and localisation



Integration in a production line for quality control

The sensor unit for ultrasonic leak testing can be easily integrated into existing production lines and enables automated inline quality assurance. The precise detection and localisation of leaks during the production process ensures seamless control without interrupting the workflow.

We look forward to hearing from you:

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LEAK TESTING BY **EXCELLENCE**