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PHAsisBLU

Ultrasonic inspection device for the fast and precise inspection of welded joints with robots in production, especially spot welds and short weld seams (e.g. Arplas®)



For fast, simple use in production
– especially optimized for the automated,
robot supported inspection



Imaging inspection
Phased array technology
for simple and reliable
inspection and evaluation



Precise inspection
729 virtual probes and a
physical resolution more
accurate than 0.35 mm



Over 25 years of experience
in spot weld inspection
combined in our innovative
PHAsis inspection systems

System highlights

- Precise testing of resistance welded spots of steel or aluminum sheets
- 2- and 3-sheet joints with single sheet thickness from 0.6 mm to 5 mm
- Extremely high image sequence and inspection speed due to 20,000 ultrasonic measurements per second for high-resolution spot weld inspection
- More than 700 measuring points (A-scans) recorded in the inspection area per spot weld
- Storage of all A-scans for possible re-evaluation and correlation to destructive testing
- Imaging display of the spot weld as live scan (C-scan) and as result (D-scan, depth accurate)
- Minimal training time of approx. 4 hrs.
- A universal standard probe; special solutions available (e.g. for coarse grain structure / aluminum / hard-to-reach areas)
- Innovative probe technology: Fixed rexolite delay or flexible water delay paths with membrane for best results – even on rough or uneven surfaces
- All in one device: management of inspection plans, monitoring of inspection equipment, secured inspection according to inspection plan or flexible with one-click presets or individual parameters in „free inspection“ mode
- Support of high probe frequencies up to 25 MHz for reliable spot weld inspection



121 elements, 11 x 11 matrix for a high resolution of the lens diameter more accurate than 0.35 mm



Minimum coupling agent requirement when using water. Surface dries by itself within a few minutes



Ideal for fastest and safest ultrasonic testing with robot



Testing of a 3-sheet connection from one side only



Here you find the family of **PHAsis** inspection systems



Optional: Mobile PHAsis inspection trolley

Complete workstation, incl. long-term operation without mains with exchangeable high-performance battery units



Single user and robotic solution

Single user:



Stationary workplace or optionally with test trolley

- **PHAsisBLU** ultrasonic inspection device
- PC or notebook with **PHAsisMANAGER** administration software, **PHAsisDEVICE** inspection and evaluation software and MS SQL Express data base
- Optional mobile test trolley with battery operation

Automated inspection with robot:

Workplace



PHAsisMANAGER administration software: Central organization of test plans, equipment and results, imports, exports etc.

19" PC Racks or Mini PC



PHAsisDEVICE inspection and evaluation software

Industrial tablet



for initial setup and maintenance

Test station / Test stations



Variant 1:

Robot manipulates the probe; **PHAsisBLU** is mounted on the robot

Variant 2:

Robot manipulates the component in front of the fixed probe

When using multiple **PHAsisBLU** test stations or workplaces, the **PHAsisMANAGER** administration software is installed on an independent PC as to organize and synchronize all information with the **PHAsisBLU** ultrasonic devices:

- Single user or central management of test equipment, plans and results
- Management of access rights
- Monitoring of inspection equipment
- Data import of test plans (CSV files)
- Data export of test results (modern REST interface)
- Secured test sequence up to 100% fulfillment through preset test plans
- If required **PHAsisBLU** can communicate with the customer's existing database system via standardized interface

Quickly and reliably inspected in seconds

PHAsis with robot technology

Advantages of the PHAsisBLU Technology

- Fast processing and evaluation of test data by use of multicore technology
- Fast test cycles through a fast LAN or WLAN connection and high pulse rate frequency of 20 KHz
- Ultrasonic inspection time less than 1 second
- Rugged, milled, solid housing
- Simple mounting of the inspection device
- Service-friendly component exchange
- Fast and economical repairs due to good accessibility of the components
- Windows operating system 64 bit
- Customer's own computer systems can be used, resulting in high serviceability
- Remote access via WLAN for setting and service actions

Tools

- Communication interface: Automation interface, PHReAP (REST-interface), interface licence / interface licence for remote control for each **PHAsis** ultrasonic inspection device, incl. detailed description
- Probe holder incl. water coupling nozzle for **PHAsis** probe diameter 24 mm for mounting on a robot
- 4 pieces of distance information for vertical alignment on the spot weld surface via automation interface
- Reference plate with reflectors for system monitoring and calibration
- Export interface for test results, import interface for test plans



Fig. Example of an integration: ABB robot with **PHAsisBLU** ultrasonic device and probe, incl. coupling agent spray unit and surface milling cutter

Option: Cobot

On request, we can provide you with a cobot, which can be used with the **PHAsisBLU** ultrasonic inspection device and an industrial tablet or laptop as a single unit for testing joint connections.

The robot can be easily taught by an experienced inspector or an inspection supervisor and be used as a mobile unit.

Such robots can make spot weld inspection and longitudinal weld seam inspection less expensive. Instead of manually testing with one device, the testing technician can test several components simultaneously with 2-3 cobots.

Inspection software

The inspection and evaluation software for the **PHAsisBLU** is identical to the one for **PHAsisNEO**. Both inspection devices work in the same system, so manual ultrasonic inspections can be combined with those of robots and merged in the **PHAsisMANAGER** administration software.

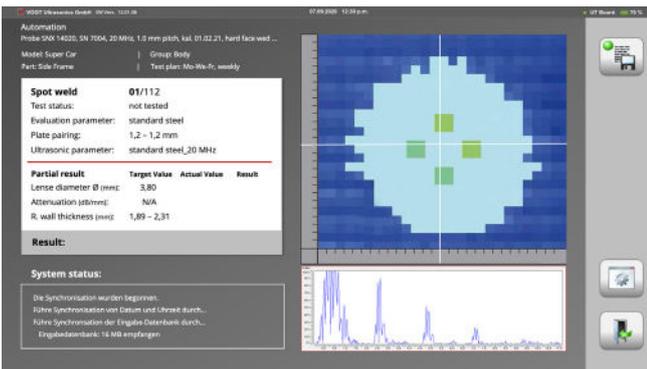
In just a few seconds per weld spot, the testing and evaluation software provides data on the diameter of the welded spot, the remaining wall thickness of the welded area as well as the sound attenuation caused by structural transformation as possible evaluation criteria for zinc adhesion bonding.

Mode „Inspection according to test plan“

In this mode, the inspection plans are created by an experienced ultrasonic inspector and made available to the users or robots by means of synchronization with the individual inspection devices.

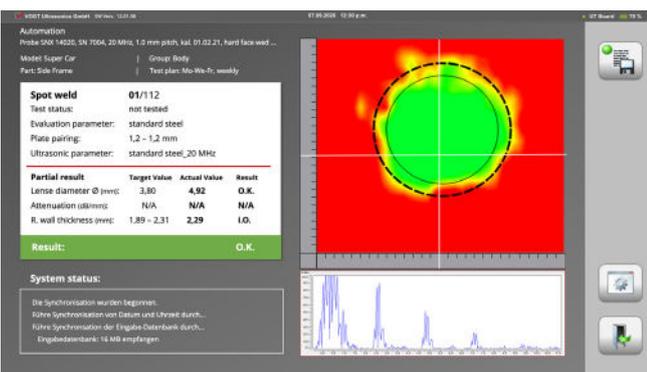
Operation with a robot

The **PHAsis** inspection and evaluation software communicates the inspection plan with the robot controller via a standardized REST interface. Spot welds defined in the inspection plan are individually approached and inspected with the parameter sets defined for the spot.



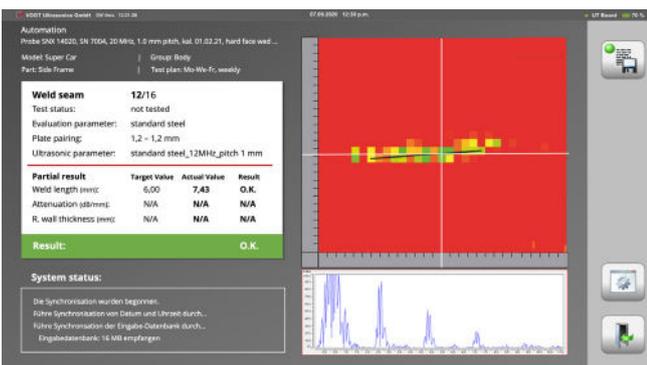
Live C-Scan for positioning

- Runtime-based orientation points for vertical positioning of the probe to the surface of the spot weld
- Automatic adjustment of the display depending on the probe position (right- and left-handed)



D-Scan as an evaluation proposal

- Status information of the automated process
- Live imaging display of results during operation
- Online A-scan of a selected grid point



Option: Weld seam testing module

- Testing of short seams, e.g. Arplas®, with a length of approx. 3 - 12 mm without changing the probe
- Intelligent evaluation, even of interrupted weld seams

Technical data

Here you will find an overview of the most important technical data.
Further questions? Send us an e-mail to info@vogt-ultrasonics.de

Hardware

| | |
|----------------------------------|--|
| Dimensions | 200 x 200 x 82 mm |
| Weight | 2.5 kg |
| Housing | CNC made aluminum housing |
| Mounting | Threaded mounting holes on the back side for easy mounting |
| Protection class | IP 64 |
| Phased array inspection channels | 128, 16 thereof parallel |
| Digitization rate | 100 MHz |
| Communication | 1 x LAN 1GBit/s |
| Max. IFF | 20 KHz |
| Max. pulse amplitude | +/- 100 V (neg. square pulse) |
| Band width (-3dB) | 0.5 - 25 MHz |
| Pulse width | ≥ 5 ns |
| Focal Laws | Up to 4096 (virtual probes) |
| Power supply | 12 V DC, external power supply 100-240 VAC, 50-60 Hz |
| Operation temperature | 0°C - 40°C |
| On board sensors | 4 x temperature |
| Cooling | Passive (no fan) |

Ultrasound data management PC min. requirements

| | |
|---------------|---|
| PC Board | Intel Pentium QuadCore @ 2.0 GHz, 8 GB RAM, 512 GB SSD |
| Communication | 1 x HMDI, 2 x LAN 1GBit/s |

Standard Probe

| | | |
|--|--|-----------------------------|
| Type | Phased Array 2D Matrix | |
| Number of elements | 11 x 11 arranged in square | |
| Cable | Long-Life 2.5 m; 5 m for robot applications | |
| Nominal frequency | 12 MHz | 20 MHz |
| Inspection area | 9 x 9 mm ² | 11.7 x 11.7 mm ² |
| Physical resolution more precise than | 0.35 mm | 0.45 mm |

Software

Administration and communication:

- Access rights and user management
- Test equipment monitoring and management of inspection devices
- Management of plate pairing and materials
- Various interfaces such as test plan import, result export or communication interface for automated testing

Inspection:

- "Inspection according to test plan" mode: secures testing with 100% fulfillment and enables safe testing with minimal training
- Improved setup of inspection plans and inspection according to proven standards of conventional ultrasonic inspection
- "Free testing" mode: fast testing without a test plan with instantly selectable standard or individual parameter sets
- Inspection mode for highly sound-attenuating materials or very rough surfaces
- Multiple modes for detection of cladding
- Access to all setting parameters at any time for the implementation of individual evaluations

Data management:

- Creation and administration of test plans and free testing
- Transfer of the results of the free testing into new test plans
- Management of plate pairings, evaluation and ultrasonic parameters
- Inspection plans available on all devices by means of synchronization
- Individual color display of spot welds (D-Scan)
- Test reports can be exported as Word, Excel or PDF documents. Two different types of reports available – detailed or compressed
- Predefined, universal ready to go setups as well as the possibility for creation of individually advanced setups



Arrange an appointment now for a live/online presentation with us!



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Proven quality
Accredited as independent testing laboratory according to DIN EN ISO / IEC 17025; Certified according to DIN EN ISO 9001 und DIN EN 9100

