BondHub

NDT Systems
Worldwide Excellence In Ultrasonics

COMPOSITE INSPECTION IMAGING BONDHUB PACKAGE

Key features

- C-Scan (XY-encoded) imaging capability of all 3 available bond testing modes: Resonance, Pitch-Catch, Mechanical Impedance
- No couplant required for Pitch-Catch and MIA modes
- Full-field inspection coverage and data reproducibility
- Time and thus cost savings by conducting full data review after scan is completed versus during inspection
- Data recording, post-processing, analysis, reporting, archiving
- Increased probability of detection
- Easy interpretation
- Faster and more reliable inspection
- Reduced human error influence
- Quantitative defect sizing
- Portable system including large sun readable display
- Fully battery operated
- Manual and automatic scanners available
- CompVu reader software available for remote data processing

Applications

- Integrity of composites and adhesively bonded structures
- Integrity of honeycomb or foam cored sandwich structures
- Adhesively bonded metal-to-metal structures and fittings
- Multi-layered laminates, glass or carbon fiber composites
- Delaminations, disbonds, crushed core, liquid ingress, skin to core flaws, far-side defects, impact damage and more

Introduction to Bond Testing

As the use of composites and adhesively bonded joints has increased across many industries, the need for testing bond integrity has grown to assure the quality of the material. Conventional ultrasonic methods can be limited for these applications and so a variety of alternative methods have been developed to handle this range of material combinations.

Bond testing was once limited to manual point measurements, which offer no archiving, were open to user error, and often defects could be missed because of the small variation in signal that the defect represents.

The BondHub represents an industry-first technique developed with the goal to make composite inspections more simple and reliable. It utilizes the full capability of the well-established Bondascope 3100 and acts as a motion controller for any of NDT Systems' manual or automatic scanners. Its powerful imaging software, called CompVu, generates high-resolution C-Scan images in Pitch-Catch, MIA and Resonance modes and allows for analysis and archiving of inspection results.

Inspection of composites and adhesively bonded materials has not seen such an advancement for many years. The power of full-field inspection images using bond testing elevates non-destructive testing to a new level.

BondHub Operation

The BondHub displays the live image from the Bondascope 3100 in the traditional phase and amplitude impedance plane. Once a scan is defined, the system automatically generates the C-Scan image in real-time. Various gates can be used, including new color gating for depth analysis in resonance mode. Phase, amplitude, X and Y components of the impedance plane can be displayed as variables. A host of analysis tools including defect sizing, jog to position, post-processing of gates, base material filtering, and reporting can be used before export via available USB connections.

Bond Testing Technologies

Compared to conventional UT, the lower frequencies of 20 kHz - 400 kHz enable deeper penetration through attenuative materials, across multiple glue lines or even sandwich cores to detect far-side defects.

The Pitch-catch and Resonance modes are suited to laminates, bonded and sandwich structures. Pitch-Catch is dry coupled, easy to use and works well on larger defects. Resonance mode requires couplant and can identify smaller defects and even determine which layer the defect occurred in with multi-layered bonded structures. The MIA mode is dry-coupled and most suited to stiffer skin to core constructions.

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Bondascope 3100

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BondHub
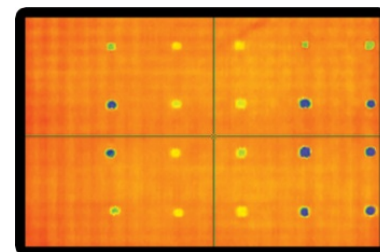
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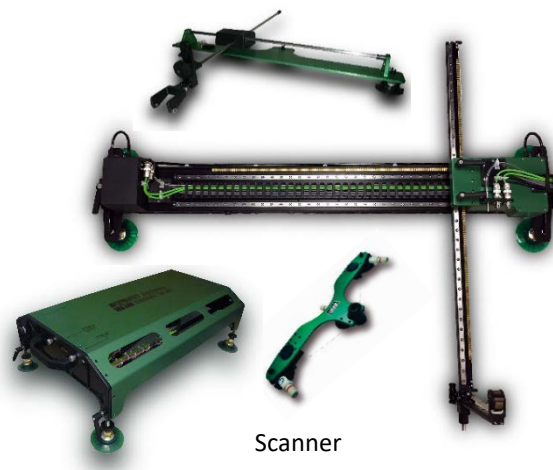
Scanner

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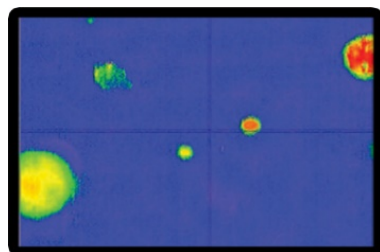
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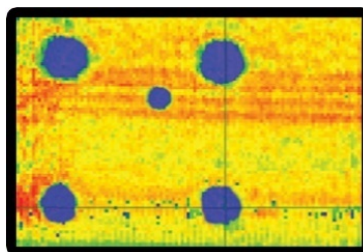
Pitch-Catch

Resonance

Technical Specifications

General	Package	BondHub integrated in Pelican Carrying Case, keyboard, mouse, factory-installed Windows 7 license, factory installed internal Li-Ion battery packs, AC charger, Bondascope 3100-BondHub connection cable, operator manual, custom-made packaging box (Bondascope 3100 not included)
	Unit	Windows 7, 1GHz processor, 128GB solid state HDD, 12" anti-glare TFT LCD display, CompVu software
	Dimensions	21in x 16in x 7.5in, 25lbs | 533mm x 406mm x 191mm, 11kg
	Power source	Two Li-ion batteries (autonomy of 4 hours) or AC power
	Operating temp	32 F - 105 F (0 °C to 40 °C)
	Storage temp	-4 F - 140 F (-20 °C to 60 °C)
Performance	Gates	Rectangular, Elliptical, Wedge, Individually sizable gates. Visual and auditable alarms
	Display modes	C-Scan: Phase, Magnitude, X and Y components from impedance plane
		Impedance plane scatter plot of every data point
		Strip chart: rectangular real-time streaming of outputs
		Retrace position of all dots acquired
	Display Analysis	Flaw-sizing: dimensions, position
		Changeable gates in post-processing, base material filter
		Auto and user defined scaling, metric and imperial units, move scanner to position
	Image output	BMP, JPG, PNG, Report Generator
	Software	ComVu Reader software available for installation on remote PC – allows remote data post-processing
Scanners		Manual Scanners (StringScan, SlideScan) and automated scanners (CrosScan, TunnelScan)
Probe types		Pitch-Catch: Spring loaded or fixed tips Tone burst, pulsed or high voltage option Low, medium or high frequency	Mechanical Impedance: 1/4", 3/8", 1/2" tip dia	Resonance: 18kHz, 26kHz, 53kHz, 110kHz, 165kHz, 200kHz, 250kHz, 280kHz, 330 kHz, 370 kHz