BondaScope 350

NDT Systems
Worldwide Excellence in Ultrasonics

Dual-Mode Composite Bond Tester

Made in USA

Applications

- Integrity of composites and adhesively bonded structures
- Multi-layered laminates, glass fiber/ carbon fiber composites, honeycomb and foam cores, metal to metal bonding, adhe sively bonded fittings
- Delaminations, disbonds, crushed core, skin to core flaws, far-side defects, impact damage, liquid ingress

Features

- Resonance and Pitch-Catch modes
- Compact and Lightweight- only 1.8lbs (0.82kg) with batteries
- Display modes: RF, Impedance plane, Flying dot, Sweep, time-encoded profile
- Automatic Probe recognition and probe library
- Tone burst, high energy pulsed mode

BondaScope 350- Dual-mode bond tester for checking the integrity of bondlines

Introduction

As the use of adhesively bonded joints and fittings has increased across many industries, the need for testing bond integrity has grown. Metal to metal bonded joints, sandwich constructions with various skin and core materials, bonded carbon fiber composite structures have all become important in manufacturing as well as in-service repair patches and adhesively bonded re-enforcements. The integrity of these bonds is critical to the quality of the final product.

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.

Portable Bond Testing

The BondaScope 350 is a super compact and lightweight handheld, battery operated ultrasonic bond tester that uses 2 different testing modes to cover a range of applications. Operating typically between 20kHz-400kHz, the lower frequency, compared to conventional ultrasonic testing, enables deeper penetration through attenuating materials, across multiple glue lines and even sandwich cores to detect far-side defects. The different display modes are optimized for different applications with a variety of gates and alarms to easily identify a flaw.

Dual-Mode Operation

The instrument uses the most common Pitch-catch (P/C) and Resonance modes that are suited to laminates, bonded and sandwich structures. Pitch-catch is dry coupled, easy to use and works well on larger defects, >0.5". Resonance mode requires couplant, but can identify smaller defects and even determine which layer the defect occurred in with multi-layered bonded structures.

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4 Inspection Methods

When a probe is connected to the Bondascope 350, the automatic recognition optimizes the settings for the probe type. There are 4 inspection methods available:

Pitch-Catch RF:

Transmits a short burst of acoustic energy to the part and measures the amplitude and phase change of the received signal directly. A disbond reduces sound attenuation into the part leading to a higher amplitude at the receiver.

Pitch-Catch Pulsed:

Transmits a spike pulse of broadband acoustic energy into the part and measures the amplitude of the received signal.

Pitch-Catch Swept:

Transmits a short burst of acoustic energy to the part across a pre-defined swept frequency range. The system measures the amplitude and phase change of the received signal

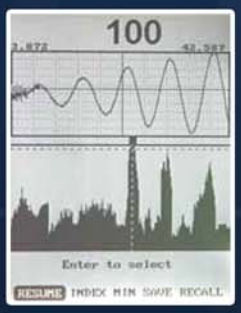
Resonance:

Probe driven at the resonance frequency and the damping caused by contact with the part is analysed. Defects are identified by a change in the phase and amplitude of the probe resonance caused by a change in acoustic impedance of the part.

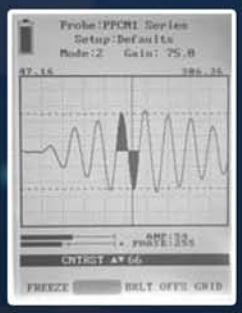
Results can be displayed in different modes including live RF envelope or impedance plane display. The Impedance-plane display (flying dot or swept) is a polar coordinate system showing the phase shift and amplitude of the test area compared to a nulled out good bond. A time-encoded profile of phase and amplitude can also be used for rapid scanning.

There is a range of probes available for each inspection method and the system is also compatible with probes from other manufacturers for added functionality.

Resonance



Profile Display



Pitch-Catch RF

Balancing

TECHNICAL SPECIFICATIONS		
Package Includes	Standard package includes BondaScope 350 instrument, Pelican style shipping case, manual, batteries, AC charger (110-240V) and Calibration Certificate	
Physical Dimensions	3.25"W x 7.0"H x 1.4"D (83x178x36mm)	
Physical Weight	1.8lb (0.82kg) including batteries	
Cable Length	6ft (1.83m) standard	
Operating Modes	Pitch-Catch: tone burst, pulsed & swept frequency Resonance	
Display Modes	RF, Impedance plane (flying dot, swept mode), Profile mode	
Display Type	240 x 320 pixels, QVGA sun readable LCD display with LED backlight, 3.9"(99mm) diagonal	
Probe Connector	8-pin Lemo (compatible with probes from other manufacturers)	
Frequency Range	250Hz-1.5MHz probe and setup specific- adjustable frequency, cycles	
Alarms/ Gates	Box, polar and up to 8 individual and individually sizeable "ring gates" centered at stored reference dot locations in impedance plane operation. Positive or negative operation	
Storage	100 setups and 250 screens with real-time date and time stamp	
Power Source	3 or 6 NiMH Rechargeable AA batteries (8hrs) or AC mains	
Operating Temperature	15 °F to 105 °F (-10 °C to 40 °C)	
Probe Types	Pitch-Catch: Spring loaded or fixed tips Tone burst or Pulsed Low, medium or high frequency High voltage option	Resonance: Standard- 110kHz, 165kHz, 200kHz, 250kHz, 280kHz, 330 kHz, 370 kHz. Honeycomb- 18kHz, 26kHz, 53kHz
OPTIONS	Pitch-catch and Resonance probes, USB data transfer kit	

The specifications in this document are subject to change without notice.

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