

CFRP Radii Inspection



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Phased Array Inspection Solution

Aircraft manufacturers, maintenance service providers, and airline operators have recently started using ultrasonic phased array technology to ensure the quality of their composite parts during manufacturing. Parts manufactured of carbon fiber reinforced polymer (CFRP) pose an inspection challenge because of their many shapes and thicknesses. The inspection of these corners is relatively new but is becoming more and more important with the increasing use of CFRP laminates in aircraft structures.

Olympus offers a solution with its phased array instrument such as the OmniScan® PA to meet the most demanding requirements. This solution uses appropriate holders and curved linear arrays composed of 16 to 64

elements that fire in sequence to cover the entire corner in a single pass. The geometry of the probe allows for all of the ultrasonic beams to coincide at 90° with the surface of the part in a manner similar to flat-surface inspections. The main advantage of using the OmniScan PA for this application is the possibility of inspecting the entire corner in one simple scan. With respect to the inspection speed, a typical setup can inspect along a corner up to 200 mm/s.

The Olympus CFRP Radii inspection solution offers important benefits:

- Full coverage in a single scan
- Curved linear arrays
- Greater POD
- High inspection speed
- C-scan imaging



FEATURES

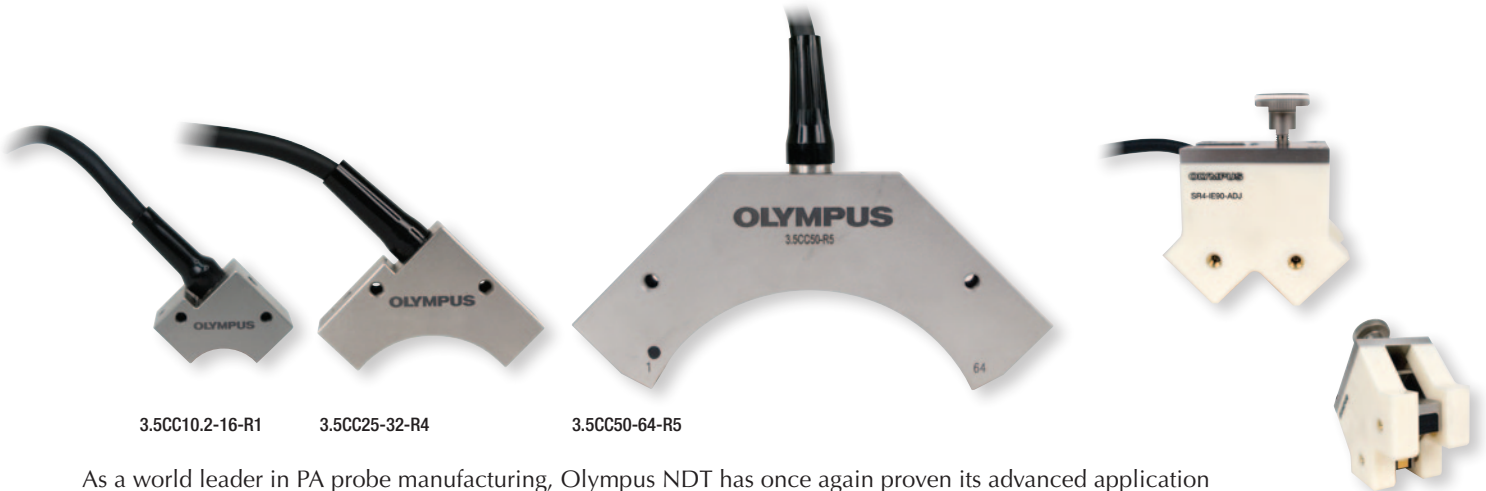
- OmniScan instrumentation
- OmniScan software
 - Familiar menu-driven interface
 - Multiple C-scan option
 - A-Scan and C-scan data storage
 - Time-corrected gain (TCG)
 - Quick swapping between PA and UT for prove-up and defect sizing
 - Customizable color palette for amplitude and thickness C-scans
 - Live A-scans and B-scans
- Curved linear PA probes
 - Acoustic impedance matched with water
 - High circumferential resolution around the radius
 - Corrosion-resistant stainless steel case
 - Waterproof guaranteed to 1 m (.28 ft)
 - Compatible with adjustable immersion wedges
- Immersion corner wedges for curved linear array probes
 - Available in specific radii and angles
 - Adjustable radius to fit on various components to be inspected
 - Perform manual scans with a Mini Wheel™ encoder or a time base

Your Challenge



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Probes and Wedges for CFRP Radii Inspection Solution



As a world leader in PA probe manufacturing, Olympus NDT has once again proven its advanced application knowledge with the introduction of the Curved Array Probe series. All aspects of the probes have been examined and optimized for more inspection possibilities and a more ergonomic design.

PHASED ARRAY PROBES

| Part number | Casing type | Frequency (MHz) | Number of elements | Pitch (mm) | Elevation (mm) | Radius (mm) (R) | Angle (°) (A) | Inspection type | Minimum part opening angle (°) |
|-----------------|-------------|-----------------|--------------------|------------|----------------|-----------------|---------------|-----------------|--------------------------------|
| 3.5CC10.2-16-R1 | R1 | 3.5 | 16 | 1.0 | 5.0 | 10.2 | 90 | ID | 70 |
| 5CC10.2-16-R1 | R1 | 5.0 | 16 | 1.0 | 5.0 | 10.2 | 90 | ID | 70 |
| 3.5CC25-32-R4 | R4 | 3.5 | 32 | 1.32 | 6.0 | 25.0 | 90 | ID, OD | 70 |
| 5CC25-32-R4 | R4 | 5.0 | 32 | 1.32 | 6.0 | 25.0 | 90 | ID, OD | 70 |
| 3.5CC50-64-R5 | R5 | 3.5 | 64 | 1.65 | 6.0 | 50.0 | 121 | OD | 50 |
| 5CC50-64-R5 | R5 | 5.0 | 64 | 1.65 | 6.0 | 50.0 | 121 | OD | 50 |

These probes come standard with an OmniScan® connector and a 2.5 m (8.2 ft) cable, or can be specially fitted with other connectors and cable lengths.

PHASED ARRAY WEDGES

| Part number | Probe type | Angle of the inspected part (°) | Radius range in mm (in.) | Inspection type |
|--------------|------------|---------------------------------|--------------------------|-----------------|
| SR1-I81-ADJ | R1 | 81 | 4 to 14 (0.157 to 0.551) | ID |
| SR1-I90-ADJ | R1 | 90 | 3 to 14 (0.118 to 0.551) | ID |
| SR1-I98-ADJ | R1 | 98 | 3 to 13 (0.118 to 0.512) | ID |
| SR4-IE90-ADJ | R4 | 90 | 3 to 20 (0.118 to 0.787) | ID, OD |

ACCESSORIES

| Part number | Description |
|-------------|---|
| ENC1-2.5-DE | Mini Wheel™ waterproof encoder (2.5 m cable with DE-15 connector) |



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