

Wind Blade Inspection Solution

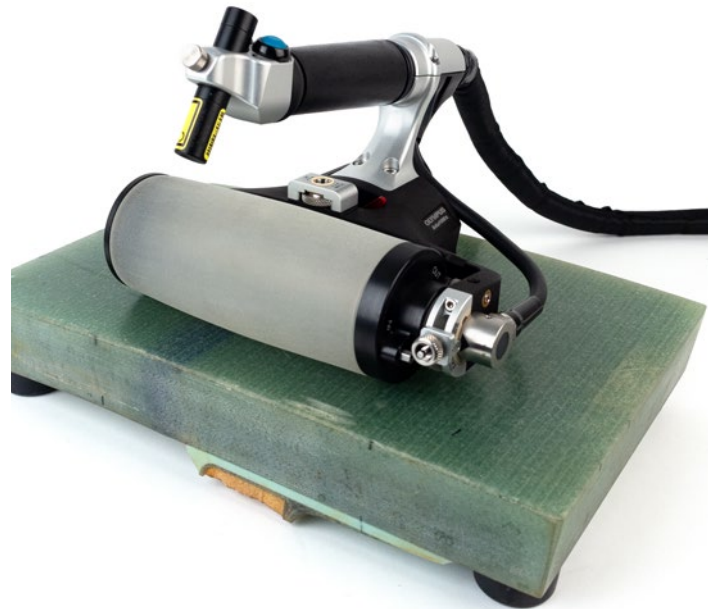
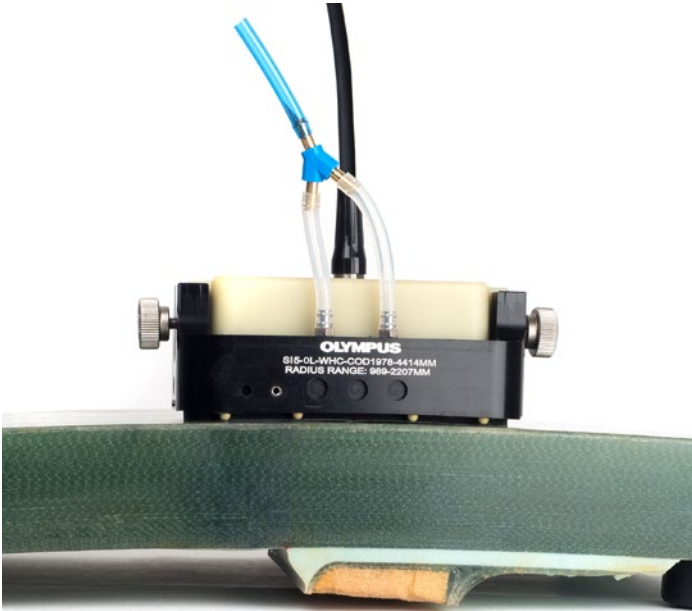
Inspect Spar Caps and Shear Web Bonding with
Phased Array Probes



- › Low-frequency 0.5 MHz and 1 MHz UT and PA probes
- › Different configurations for thick-material inspection or optimized near-surface resolution
- › Perform encoded inspections manually, with a two-axis scanner, or using a RollerFORM™ scanner

Solving the Challenges of Wind Blade Inspection

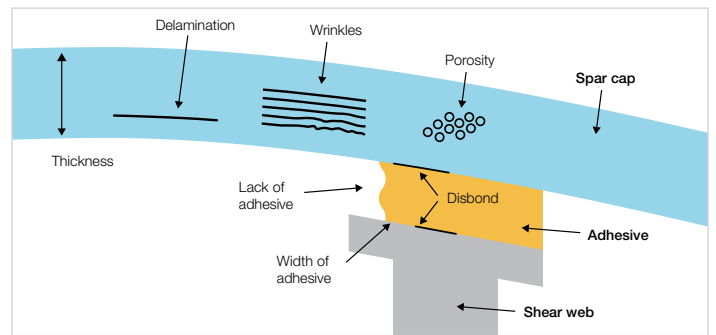
The Olympus wind blade solution enables users to inspect blade spar caps and shear web bonding made with thick, attenuative materials, such as carbon fiber reinforced plastic (CFRP) and glass fiber reinforced plastic (GFRP). With wider coverage than conventional ultrasonic testing (UT), our phased array technology makes these challenging inspections easier with improved scan speed, increased data point density, reliability, and comprehensive imaging.



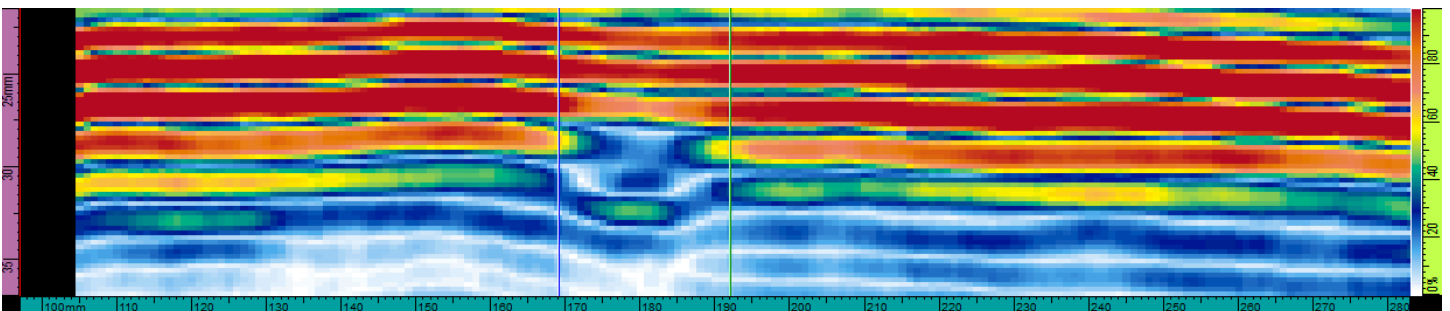
The I5 probe with SI5 holder (left) and the 1 MHz RollerFORM XL scanner (right) on a sample featuring a spar cap bonded to a shear web.

Spar Cap Inspection

Monitoring the integrity of spar cap material is important for manufacturers. As soon as a flaw is detected, they need to quickly adjust production parameters to help ensure the quality of the glass or carbon fiber materials. Delamination, wrinkles, porosity, and disbonds generate indications that can easily be detected, sized, and displayed using intuitive imaging views on an Olympus phased array flaw detector.



Typical defect types detected by phased array ultrasound

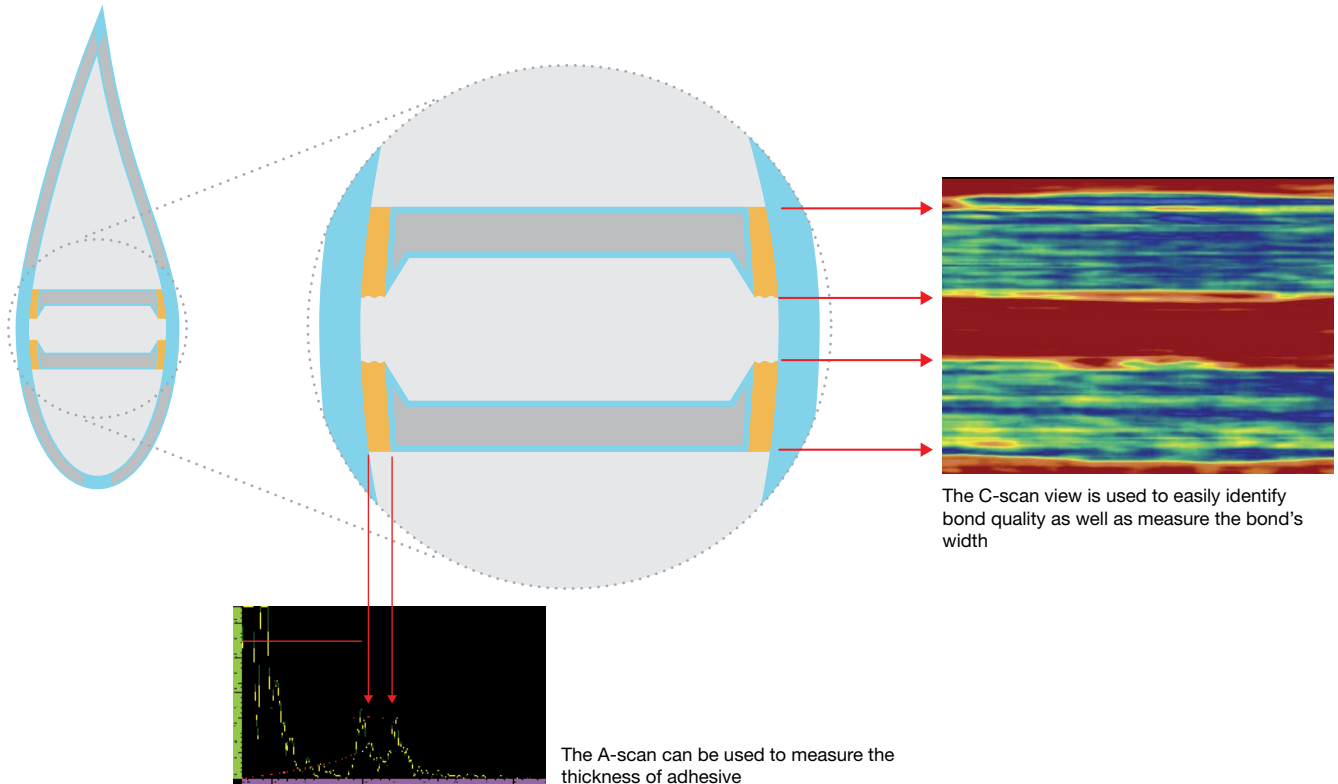


An S-scan showing the presence of wrinkles in a GFRP spar cap

Fast and Reliable

Shear Web Bond Inspection

Inspection of shear web bonding is critical for the long-term reliability of the blade. This phased array probe solution can travel along or across the blade using the Mini-Wheel™ encoder or RollerFORM™ scanner for manual one-line encoded scans or the GLIDER™ scanner for two-axis, semiautomated encoded scans. The resulting C-scan images show the inspected area mapped with color-coded signal amplitude. At bonded zones, if the bond is good, the ultrasound travels through the adhesive and disperses into the shear web, resulting in no or a weak echo at the bonded interface (represented in blue or yellow on the C-scan). This intuitive imaging is used to easily identify the bond's quality and measure its width. In some applications, the corresponding A-scan can be used to measure the thickness of the adhesive.



Acquisition Performance

While an OmniScan™ flaw detector is the instrument of choice for manual or semiautomated inspection during manufacturing and in-service inspection, the FOCUS PX™ acquisition unit can be used as part of a custom automated inspection system in manufacturing.



Semiautomated inspection using the 72-inch (1.8 m) long GLIDER scanner and OmniScan flaw detector

Ordering Information

Item number	Part number	Description	Application recommendation
Probes			
Q3300971	0.5L64-96X22-I5-P-5-OM	0.5 MHz I5 type linear phased array probe, 64 elements, 96 × 22 mm total active aperture, 1.50 mm pitch, 22 mm elevation, 5 m long cable.	Greater penetration in very attenuative and/or thick materials.
Q3300970	1L64-96X22-I5-P-5-OM	1 MHz I5 type linear phased array probe, 64 elements, 96 × 22 mm total active aperture, 1.50 mm pitch, 22 mm elevation, 5 m long cable.	General purpose, better resolution.
U8415001	M2008	Conventional ultrasonic probe. 0.5 MHz, 1 in. diameter element, BNC.	Fast screening inspection.
Probe holders			
Q7201106	SI5-0L-WHC	Flat semicontact probe holder for I5 PA probe.	To scan across the length of the blade. General purpose; required on parts thicker than 40 mm.
Q7201114	SI5-0L-WHC-COD1978-4414MM	Curved semicontact probe holder for I5 PA probe.	To scan along the length of the blade. Required on parts thicker than 40 mm.
Q7201108	SI5-0L-AQ25	Flat Aqualene delay line probe holder for I5 PA probe.	To scan across the length of the blade. For increased near-surface resolution on parts up to 40 mm thick.
Q7201107	SI5-0L-AQ25-COD1978-4414MM	Curved Aqualene delay line probe holder for I5 PA probe.	To scan along the length of the blade. For increased near-surface resolution on parts up to 40 mm thick.
Q7201944	SM2008-0L-SC	Semiconduct holder for the M2008 ultrasonic probe.	Fast screening of parts thicker than 40 mm.
Q7201945	SM2008-0L-AQ25	Holder with an Aqualene delay line for the M2008 ultrasonic probe.	Fast screening of parts up to 40 mm thick.
Wheel probe			
Q7500135	RollerFORMxl-1L128-5m	RollerFORM XL scanner with a 1 MHz, 128-element, 1 mm pitch, and 13 mm elevation phased array probe and 5 m long cable.	Easy to implement for phased array inspection of parts with thicknesses of up to 50 mm.
Encoding systems			
U8775296	ENC1-5-LM	Mini-Wheel encoder, 5 m long cable with LEMO® connector.	Manual encoded inspection.
Q7750157	Y-PA-65x64-5Deg	Yoke to mount an SI5 probe holder to a GLIDER scanner.	Semiautomated encoded inspection with the GLIDER scanner.
Q7500034	Glider-72x24	Two-axis encoded scanner with manually activated vacuum cups. 72-in. stroke on the fixed axis (X) and 24-in. stroke on the mobile axis (Y).	Semiautomated encoded inspection with the GLIDER scanner.
Q7500041	Glider-A-Venturi	A pair of optional venturi-activated suction cups for the GLIDER scanner.	Enables the GLIDER scanner to be used on rough surfaces, upside down position, or other demanding applications.
Couplant feeding units			
U8775001	WTR-Sprayer-8L	Manual water pump; 8 L.	Manual inspection (no electricity needed).
U8780008	CFU03	Electric water pump.	Semiautomated inspection (electricity needed).

Phased Array Probe and Holders



SI5-0L-AQ25-COD1978-4414MM holder model



SI5-0L-WHC-COD1978-4414MM holder model



I5 phased array probe



RollerFORMxl-1L128

UT Probe and Holders



SM2008-0L-AQ25



M2008 0.5 MHz probe



SM2008-0L-SC

For conventional ultrasonic testing (UT) applications, holders are available that enable the M2008 probe to be used with the GLIDER™ scanner or the Mini-Wheel™ encoder.

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