



Ultrasonic Sciences Ltd

## Ultrasonic squirter systems for inspection of aerospace composites



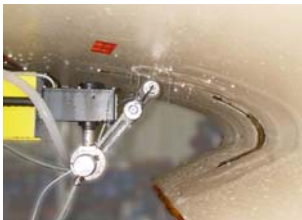
- Systems up to 18 metres long
- Configurations from 2 to 17 axes
- Contour following systems for complex curves with CAD input for scanner control
- Exceptional dynamic range using logarithmic receivers and remote pulser preamplifier
- Multiple gate acquisition and display in real time
- C scan, B scan, thickness mapping and full RF acquisition
- Multi-channel and combined immersion/squirter options

Ultrasonic testing using the through transmission squirter technique remains the predominant method of inspection of composite materials.

Relatively flat panels can be tested using simple 2 axis machines, but the increasingly complexity of components requires more sophisticated scanners.

USL can provide systems for both simple and complex applications. These combine highly rigid and highly accurate mechanical scanners with USL's established PC based instruments, to provide fast and effective testing of composite structures.

A unique range of precision manipulators is available, with the type selected to suit the application.



A range of manipulator designs for multi-axis contour following applications

Systems can operate in pulse-echo mode and in through transmission, either in separate scans or simultaneously. Motorised part manipulators can be included as shown below.



Software features include real time C scan imaging from multiple monitor gates in a single scan, using logarithmic and linear amplifiers simultaneously. Complex contour following programs can be set-up by a teach and learn procedure, or by importing from CAD data, such as CATIA.

## System features

### Mechanical

- Axis configuration from simple X-Z units for flat panels, to 17 axes for complex shapes
- Horizontal and vertical gantry types
- Custom designed, highly rigid structure
- High quality construction throughout
- Scanning speed up to 1m/sec
- Optional turntable and rotate axes
- DC servo or stepper motor drive, with rack and pinion, ballscrew or belt transmission
- High quality linear bearings (NSK type) giving long life under arduous conditions
- Precision optical encoders on all axes
- Exceptional resolution and repeatability.
- Through transmission and pulse echo data in the same scan
- Precision manipulators - gimbal/gimbal, gimbal/rotate and goniometric

### Ultrasonics

- Fully integrated PC-based ultrasonics, data acquisition and motion control
- High power pulser for optimum penetration
- Remote Pulser preamplifiers for exceptional S/N ratio
- Simultaneous log and linear data acquisition
- Logarithmic receiver for wide dynamic range - instantaneous 95dB, total >120dB
- High speed A-D conversion with custom DSP (digital signal processing) board for data acquisition
- Multi-channel units for more than 2 squirters
- Up to 8 independent gates per channel - amplitude and time of flight monitoring
- Single and multi-channel operation
- Frequency from 0.2MHz to 35MHz

### Software

- Windows 2000 / Vista software
- True simultaneous multi axis motion control for complex shapes
- High refresh rate digital RF/A scan
- C scan imaging from multiple gates simultaneously
- Full RF data acquisition and processing, including B scan capability
- On screen measurement and analysis
- 3D image manipulation
- Interfaces to network and offline computers
- CATIA/CAD generated scan profiles

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