

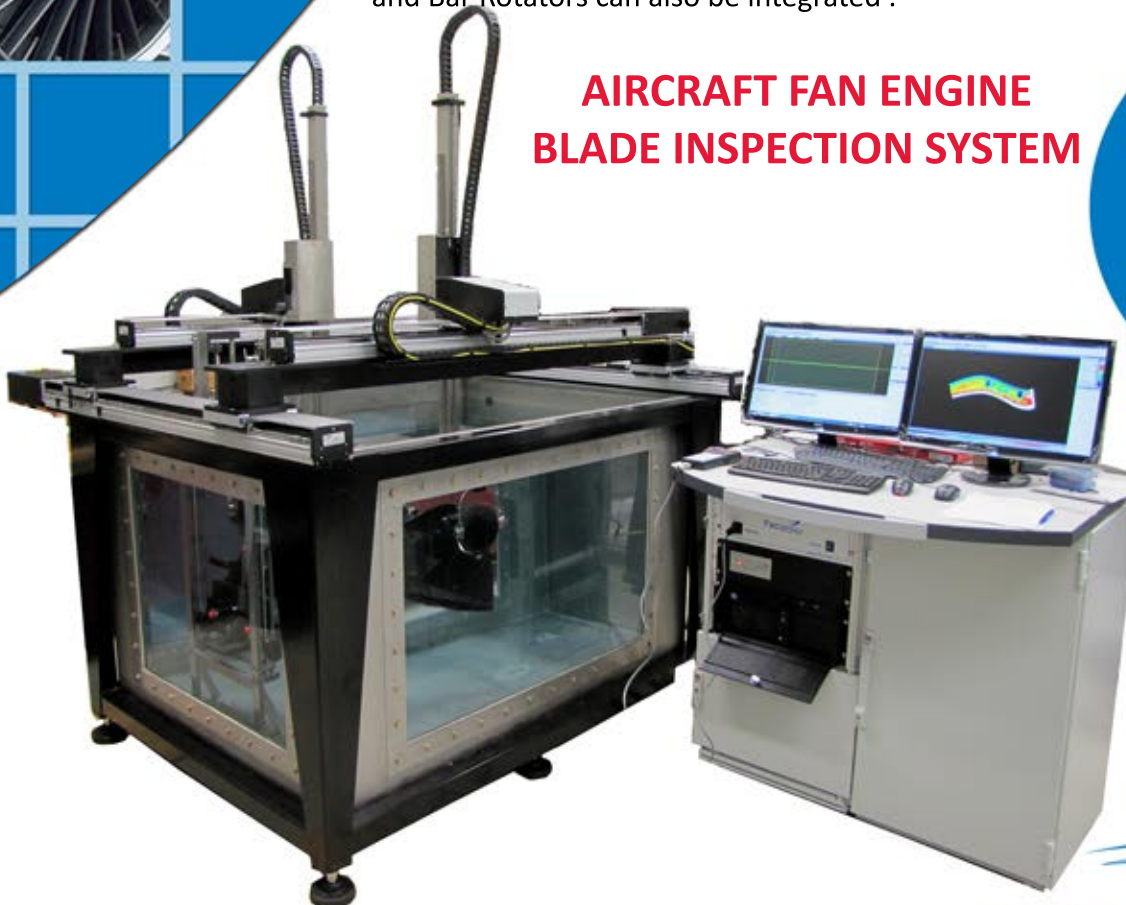
SCAN3D™

IMMERSION SCANNER

Scan3D™ is a turn-key Immersion Scanner designed for Ultrasonic Inspection of complex 3D parts such as **Composite Fan and Turbine Blades**. Combined with TecView™ 3D and our Gimbal/Gimbal manipulator, Scan3D™ revolutionizes the ultrasonic scanning process. With Scan3D™, the scan-plans of the parts are directly imported from CAD files and C-Scans are performed simultaneously in Through-Transmission and Pulse-Echo. Results are then displayed on the imported 3D model for analysis. Scan3D™ allows you to perform advanced contour following inspection with arbitrary motion and following the shape of any curved part. The capabilities of this Immersion Scanner are numerous; users can combine the automated teach and learn with the imported 3D CAD of the part to generate scan-plans and perform complex 3D contour following. A typical configuration consists of 10-axis immersion tank with two independently controlled X&Y carriages, two Z-axes, two fully automated and submersible Gimbal/Gimbal manipulators. Turn Tables and Bar Rotators can also be integrated .

www.tecscan.ca

AIRCRAFT FAN ENGINE BLADE INSPECTION SYSTEM



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TECSCAN

TECVIEW™ 3D

TecView™ 3D features **Basic** and **Advanced Contour Following** capabilities. Advanced contour following allows almost arbitrary motion on any curves following the shape of the inspected test specimen. The capabilities of this feature are among the most complex and demanding in terms of mechanics, electronics, and software development efforts. This advanced contour following capability lets TecView™ inspect various shapes, such as turbine blades, fuselages and other complex aerospace structures.

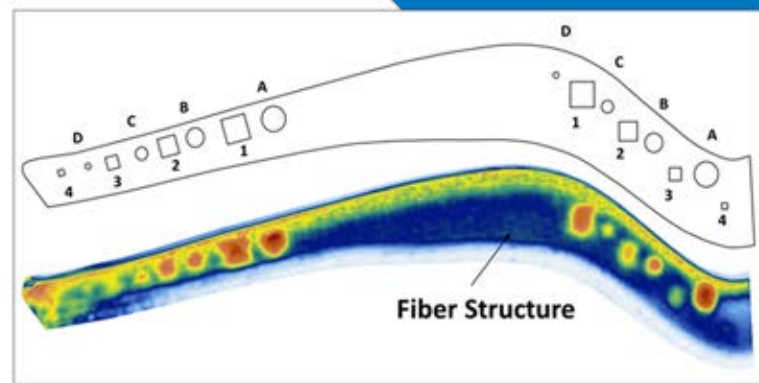
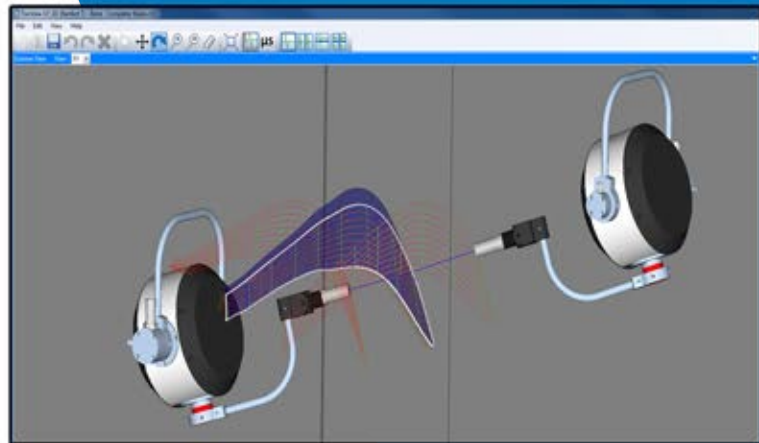
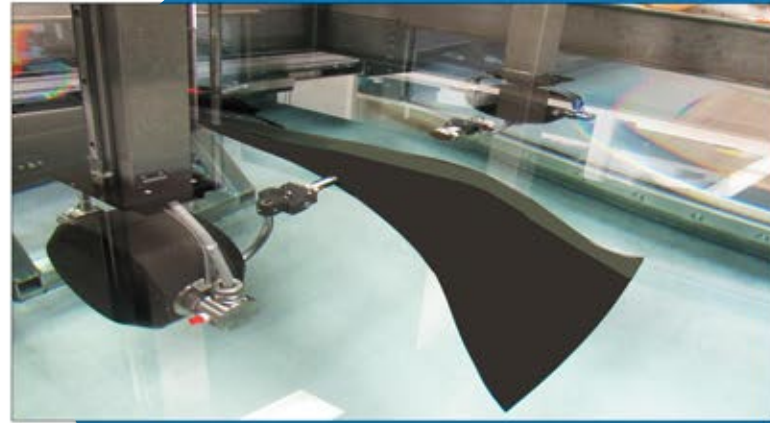
TecView™ 3D generates a scan plan using a 3D drawing of the part enabling complex 3D contour following to be performed. TecView™ 3D requires a step file in order to import the part geometry which is a common file type of all major CAD software packages..

AEROSPACE APPLICATION: Turbine Blade Inspection

Composite fan blades are becoming increasingly popular in aerospace application especially in modern aircraft design. Turbofans currently designed for the next-generation of medium-haul airliners are constructed from composite material with titanium shaped leading-edge. Due to requirements of safety and reliability, these composites blades must be inspected.

Once the blade installed, the CAD module is loaded and the system is auto-calibrated to confirm the blade position. Using the interactive tools for part entry, the user defines the scan surfaces and performs a complete 3D scan. During the scan, the 3D trajectories are displayed on the screen with the animated Gimbal manipulators and the blade. Through-Transmission and Pulse-Echo C-Scan results are displayed in real-time during data acquisition.

Results are illustrated on a sample composite fan blade containing simulated disbands between the titanium leading-edge and the composite blade. The C-Scan was obtained in through transmission mode. All defects are detected at different SNR due to the large variations in thickness of the composite core; the thickest section of the blade is on the left-hand side of the image.



SYSTEM FEATURES

- Easy manual Teach & Learn with remote control pendant and remote monitor
- Part geometry extraction from CAD drawings
- Probe movement animation along part and interference check
- Automatic generation of the motor path at a given distance and angle from part

- Advanced and automated calculations for smooth multi-axis motion
- Sound path calculations for through transmission inspections
- Automatic positioning of imported scan plans
- Interactive tools for part entry
- 3D display of results