OLYMPUS®

Your Vision, Our Future

FOCUS PX

Automated Composite Part Inspection

Manufacturer-approved

- **Boeing**
- **Bombardier**
- **Alenia**

Composite Parts Manufacturing

Over the past decade, the aviation market has experienced a sustained period of significant growth. Global air traffic has risen at a steady rate, and commercial and military airplane manufacturers have undertaken several major programs (including the A350, A380, B787, and B777X). This development has been consistent despite ever increasing fuel prices and growing environmental concerns over emissions.

All of these factors have intensified the performance demands on aircraft manufacturers and their suppliers. High fuel prices and an increased focus on the environment have led manufacturers to develop new lightweight materials in order to build more efficient aircraft. Increased air traffic and the introduction of new airplane models puts pressure on the suppliers to maximize productivity, which they can achieve, in part, through faster inspection speeds.

High-speed inspection of composite parts is particularly difficult because of the complex geometries that are involved. To meet this challenge head-on, Olympus proposes its integrated instrumentation products, which have been especially designed for high-performance inspection systems.

Complex Geometry Inspection

Composite parts often feature diverse angles and surfaces that require the application of advanced inspection techniques. Olympus integrated instrumentation provides you with the necessary tools to meet these challenges.
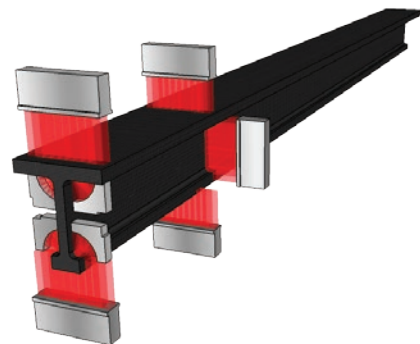
Corner Inspection

Corner probes are specifically designed for the inspection of corner sections on composite parts.
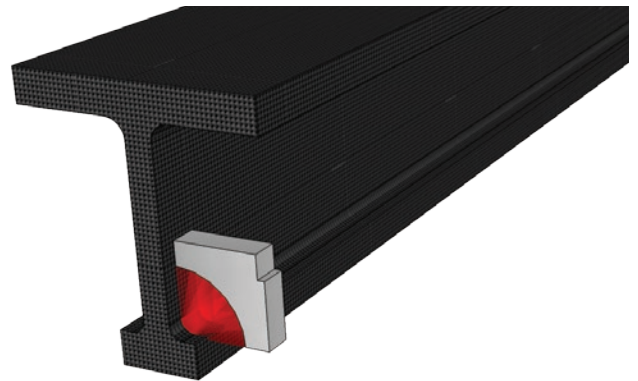
Full Volumetric Coverage

Use multiple probes to ensure full part coverage in a single pass. Consult the Olympus probe portfolio to determine which probes are best suited for your application.
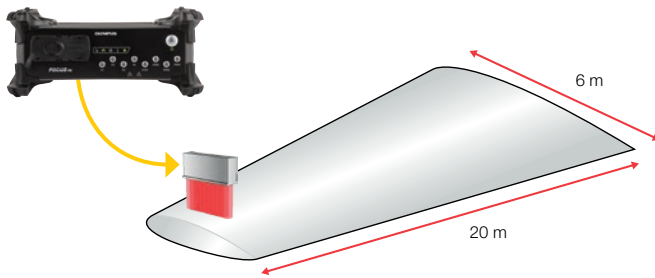
Honeycomb Structures Inspection

Use pulse-echo and pitch-catch (through transmission) configurations on squirter systems to inspect parts containing honeycomb structures and/or with highly complex shapes.
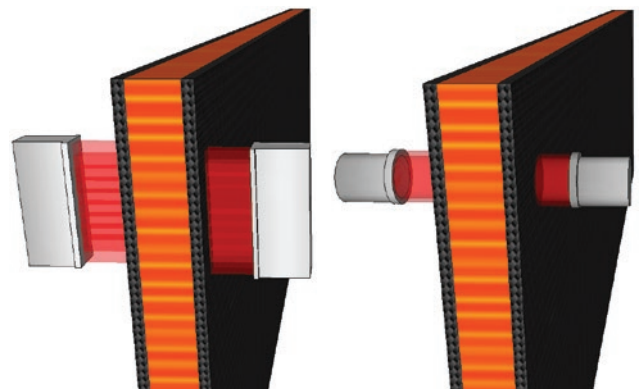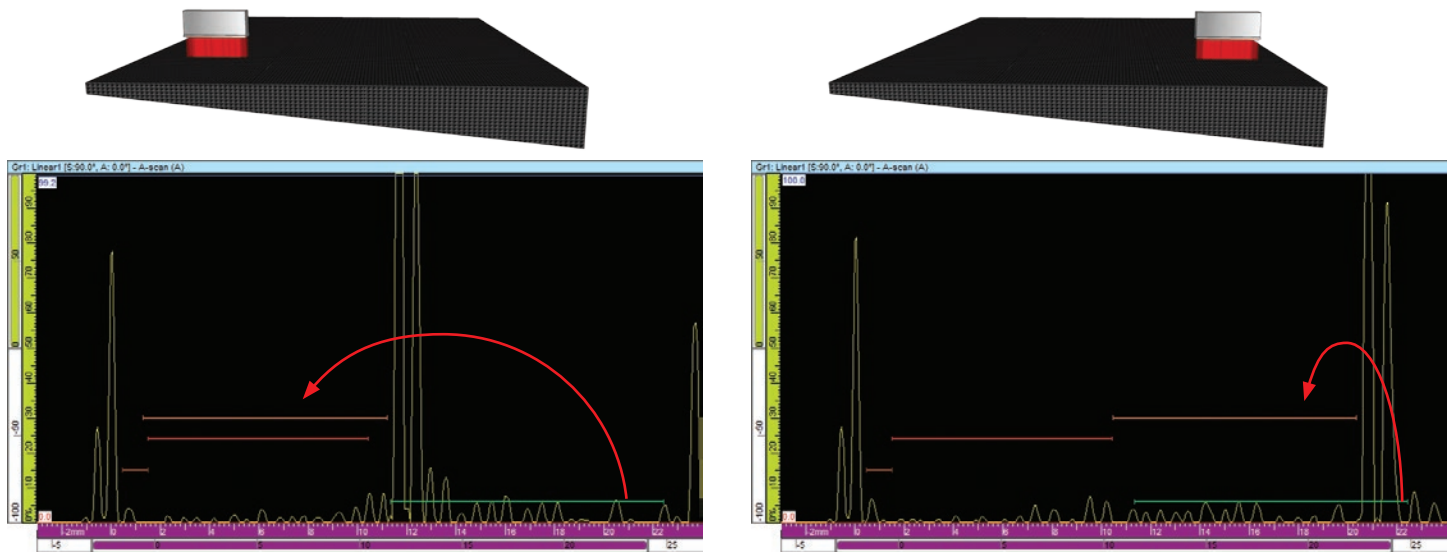
Unlimited Part Size Feature

6 m

20 m

The continuous inspection feature allows the inspection of very large parts without having to interrupt the inspection sequence. This feature enables data files to be continuously produced throughout the inspection, resulting in significant time savings.

Signal-to-Noise Ratio (SNR) Analysis

Get precise SNR analysis using the composite analysis FocusPC tools.

Advanced Detection Capabilities

Multiple gates with advanced synchronization and presynchronization capabilities provide you with effective tools to deal with difficulties that are common with inspecting complex geometries, including parts with varying thicknesses.
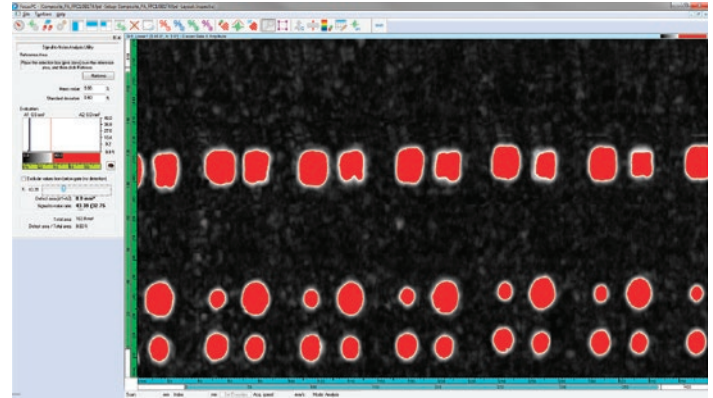

Linked gates automatically adjust their position to account for geometric variation in the part.

Additional Features

- Precise delamination sizing.
- C-scan merging.
- Software C-scan.
- Firing sequencer for ghost-echo removal.
- Customizable layouts.
- Many more…

Industry Software Compatibility

FocusPC™ software development kits (SDK) are compatible with the following industry software:

- Ultis (EADS)
- SCAN (Boeing)
- CIVA (ExteNDE)
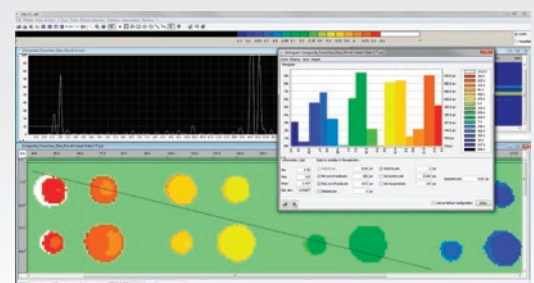
Screen courtesy of Airbus Group.

Fast Inspection Speed

The constant increase in the production rates of commercial and military aircraft means that quality control must also be done at higher speeds. The scalability and general specifications of Olympus integrated instrumentation will help you to address this industry challenge.

High Performance Unit

Use the FOCUS PX™ to build a fast and efficient inspection system by benefiting from the high end specifications of this powerful acquisition unit.

| Up to	Up to	Up to
30 MB/s	**20** kHz	**4**
data throughput per FOCUS PX	PRF per FOCUS PX	FOCUS PX in parallel

Scalability

Use up to four FOCUS PX acquisition units in parallel to minimize cycle time and optimize system performance.

## Multiple-Probe Configurations

- Use multiple probes to ensure full part coverage in a single pass.
- Minimize cycle time while improving defect detection.
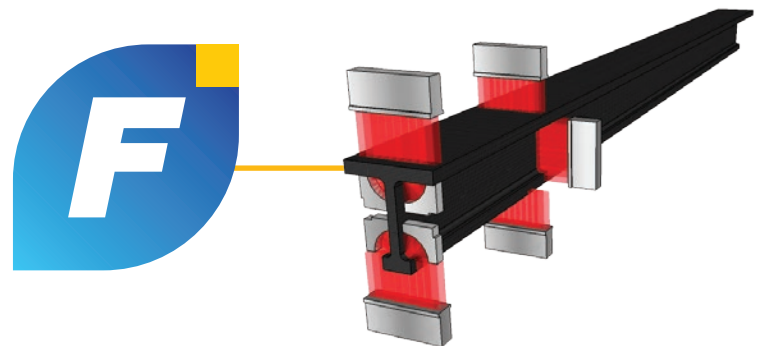
Powerful and Flexible Software

The FocusPC™ software was designed with powerful inspection features so that optimal inspection speeds can be reached. It can be easily integrated into typical industry software environments.

Flexible Integration	Workflow management using the SDK.
Multipod Configuration	Manage up to four FOCUS PX units from the same FocusPC interface.
Flexible Probe Management	Manage a high number of probes.
Optimized Inspection Speed	Firing Sequencer for ghost-echo removal.
Powerful Merging Features	Combine data from multiple inspections to accelerate the analysis process.
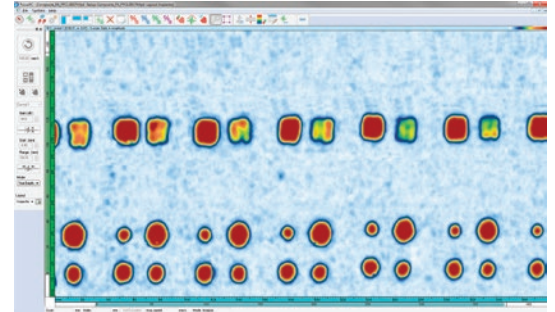
Full System Automation

Use the FocusPC Software Development Kits (SDK) to automate the workflow and improve system performance.
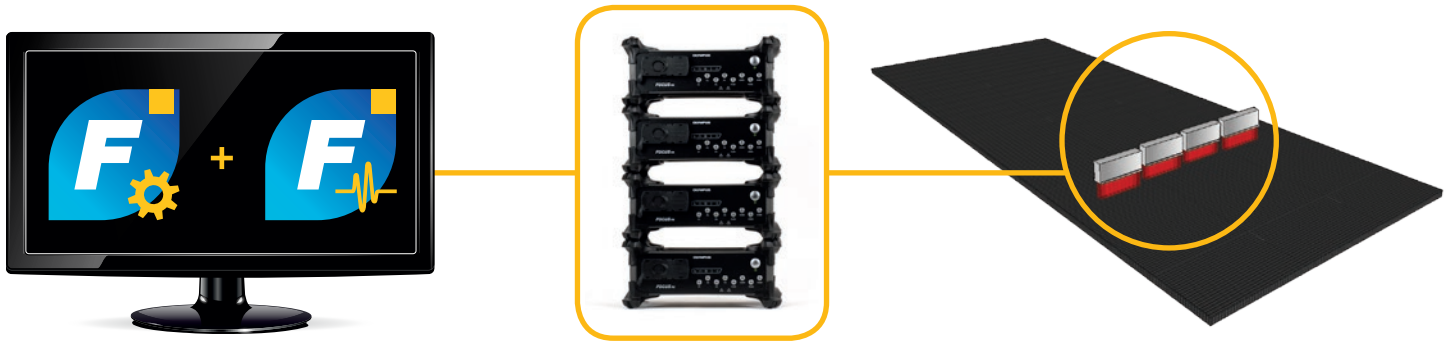
Customizable Data Analysis

Export raw inspection data to external data analysis software using the FocusPC SDK. Get more out of your inspection data by customizing the analytic process to meet your inspection requirements.

A-scan data

C-scan data

Acquisition parameters
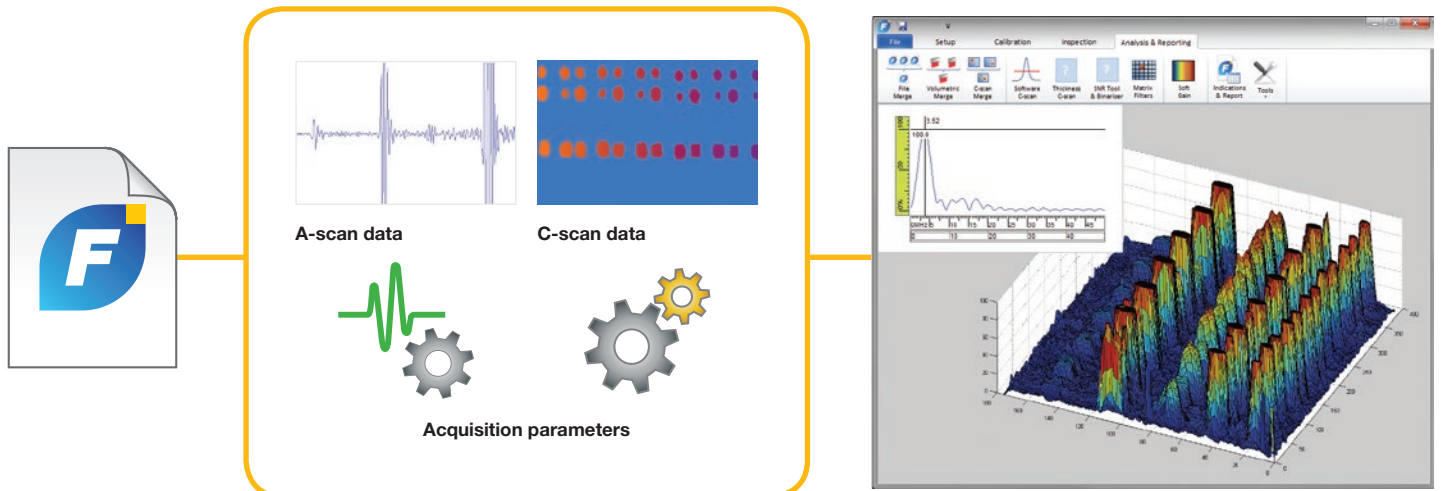
The Reference Composite Inspection Package

The FOCUS PX/FocusPC™ package is designed to meet the requirements of the most demanding inspection systems. Used for years by world leaders in the aerospace and defense industry, the field-proven FOCUS and FocusPC package has solidified its position as an industry standard.

Industry Reference Package

This is a reliable solution for high-end composite inspection applications, and the standard package for many of our aerospace industry clients.

Special Integrator Offer

Get a special price and customized training sessions based on your application requirements. Contact an Olympus representative to discuss the details.

FOCUS PX Specifications and Ordering Information

Phased Array Channels	16:64PR: 64 16:128PR/32:128PR: 128
Number of pulsers	16:64PR/16:128PR: 16 consecutive elements 32 :128PR: 32 consecutive elements
Conventional UT Channels	4 dedicated UT channels (8 connectors for pulse-echo and pitch-catch configurations support)
Data Acquisition Rate	Up to 30 MB/s (1 FOCUS PX unit) Up to 60 MB/s (2 to 4 FOCUS PX units)
Acquisition Speed	Up to 20 000 12-bit A-scans/second of 750 points each
Amplitude resolution	8-bit / 12-bit
Maximum number of A-scan samples	16380
Real-Time Data Compression	1 to 2000 ratio
Rectification	FW, HW+, HW–, and RF
Filtering	Digital band-pass, high-pass and low-pass filters
Video	Smoothing (digital)
Voltage	PA: 4 V, 9 V, 20 V, 40 V, 80 V, and 115 V; UT: 50 V, 100 V, and 190 V
Gain	PA: 80 dB (46 dB analog + 34 dB digital) UT: 120 dB (digital)
Pulse Width	PA: 30 ns to 500 ns (steps of 2.5 ns) UT: 30 ns to 1000 ns (steps of 2.5 ns)
Bandwidth (–3 dB)	PA: 0.6 MHz to 17.8 MHz UT: 0.25 MHz to 28 MHz
Number of Beams	Up to 1024
Pulse Repetition Frequency (PRF)	1 Hz to 20 kHz
Real-Time Averaging	PA: 1, 2, 4, 8, 16 UT: 1, 2, 4, 8, 16, 32, 64
Number of Gates	4 for detection; 1 for synchronization
Encoder	2 axes (quadrature, clock direction)
Network interface	1000BASE-T
Size (W x H x D)	With bumpers: 30.7 cm × 13.5 cm × 23.6 cm (12 in. × 5.3 in. × 9.3 in.) Without bumpers: 27.6 cm × 9.2 cm × 23.1 cm (10.9 in. × 3.6 in. × 9.1 in.)
Weight	With bumpers: 4.8 kg (10.5 lb) Without bumpers: 4.2 kg (9.2 lb)
DC Power Requirements	18 VDC
IP Rating	IP65

Ordering Information

Part Number	Description
FPX-1664PR	FOCUS PX 16:64PR + 4 UT channels
FPX-16128PR	FOCUS PX 16:128PR + 4 UT channels
FPX-32128PR	FOCUS PX 32:128PR + 4 UT channels
FPX-OPT-2	Accessories for 2 FOCUS PX multipod configuration
FPX-OPT-3	Accessories for 3 FOCUS PX multipod configuration
FPX-OPT-4	Accessories for 4 FOCUS PX multipod configuration

FOCUS PX front view

FocusPC Specifications and Ordering Information

FocusPC Feature

Standard Analysis

- Metric and US customary units
- Multigroup combined display
- Ability to zoom in/out of the display
- Predefined weld-overlay display
- Selectable information groups (readings)
- Off-line gate adjustment
- Off-line software C-scans
- Ability to display and edit indication tables
- Ability to add/delete entries in indication tables
- Built-in report generator
- Ability to modify/create color palettes
- Ability to view TOFD groups
- Phased array and TOFD combined display
- Off-line TOFD calibrations
- Off-line lateral-wave (LW) synchronization
- Export data to text file
- Data file merge

Advanced Analysis

- Volumetric merge tool (automatic or manual)
- Software gain adjustment
- Layout creation
- Ability to save custom layouts
- Ability to display rebounds (skips)
- Ability to display polar view
- Zone tool for statistical measurements
- Ability to open multiple files simultaneously
- C-scan merge tool
- Off-line TOFD lateral wave (LW) removal
- Off-line Scan/Index/Sound axis calibration
- Signal-to-noise ratio (SNR) analysis tool
- FFT calculation

In order to control a FOCUS PX instrument, you need to have FocusPC 1.0 inspection and analysis software (FPC-10-F).

Industry-Compliant Software

Owing to its extensive features and flexibility, FocusPC™ is an economical solution for your composite inspection applications.

Build your System… Your Way

Get inspection systems that are customized to match your inspection requirements.

FocusData Software Development Kit

The FocusData SDK gives direct access to the inspection data (A-scan, C-scan and Thickness) and most important acquisition parameters. This data can be imported in external application-dedicated software and used for customized data processing and display.

FocusControl Software Development Kit

The FocusControl SDK allows external software to locally or remotely control FocusPC, allowing the development of application-dedicated user interfaces that can automatically control the inspection workflow and improve operator efficiency.

OPTIONS AND ACCESSORIES

Part number	Description
FPC-10-F	FocusPC 1.0 inspection and analysis software
FPC-10-A	FocusPC 1.0 analysis software
FDATA	FocusData SDK
FCONTROL	FocusControl SDK
FPC-INTEG	FocusPC 1.0 Full, FocusControl, FocusData and on site training and support (special pricing)

Worldwide Partners

Olympus has a wide network of trusted partners that can provide you with a high-end solution for your inspection needs.

Developing a new solution?
Contact Olympus at: **Info.IntegratedInstruments@olympus-ossa.com** for special Integration Packages including the FOCUS PX, FocusPC, FocusControl and FocusData SDK along with customized training sessions and support.

Manual Inspection

Olympus offers an extensive portfolio of manual inspection products that can be used for prove-up testing to complement your automated inspection solution.

OmniScan MX2

OmniScan SX

EPOCH 650

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