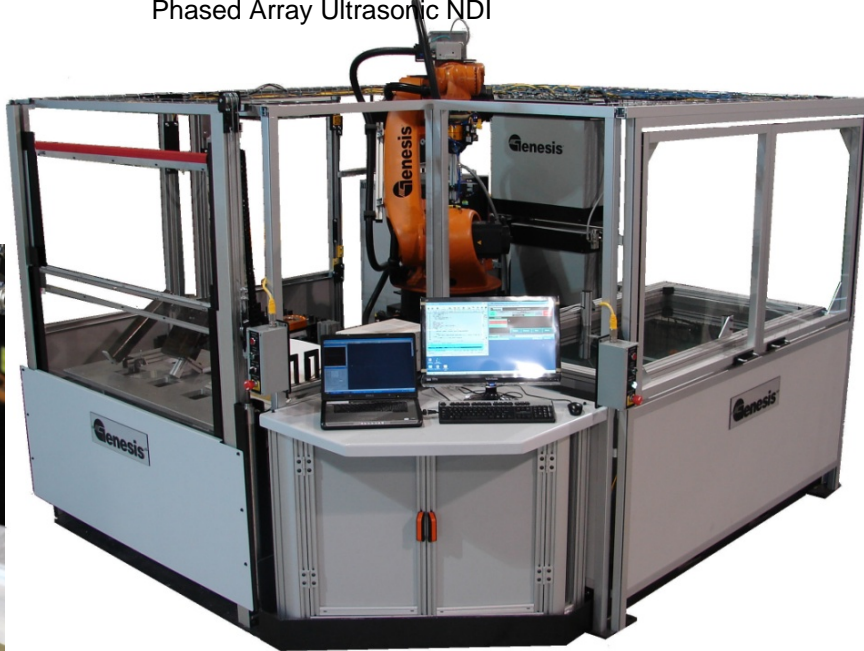


Genesis Case Study #: I-0167-005  
Application: Robotic Non-Destructive Inspection (NDI)  
Market Segment: Automation / Aerospace  
Product: Various Carbon Fiber Components  
Process: Phased Array Ultrasonic NDI



### Summary

A Genesis NSpect 210 system was been developed to demonstrate Robotic Non-Destructive Inspection (NDI) of carbon fiber components. Parts are robotically inspected using phased-array ultrasonic equipment configured both in through transmission and pulse echo modes. The robot is programmed to demonstrate its capability of taking the process to the part and the part to the process with a gripper. The NSpect 210 is a production test system developed to maximize productivity of composite parts inspection while maintaining integrity and reliability of the test performance and data acquisition.

### Project Challenges

- Create a flexible NDI system that can inspect a broad range of products with little to no hardware changeover.
- Develop a user-friendly operator interface while maintaining the ability to perform detailed post-process analyses.
- Incorporate state of the art technologies into a robust manufacturing system that is simple to understand and maintain.
- Meet and/or exceed the industry specifications for automated NDI.
- Minimize dead-time or non-value add time for ASNT Level III Inspectors
- Apply "Production" mentality to a process typically performed in a "Lab Environment"

### Genesis Solution

- Genesis NSpect 210 (two-station, single robot, no auxiliary axes) Robotic NDI System
  - Kuka KR30HA Robot with KRC 2 Controller
  - FlawInspecta High-Speed Ultrasonic Array and Imaging System
  - ANDSCAN Robot Acquisition and Analysis Software
  - VACRS Couplant System
  - 72" x 36" x 36" Water Tank with Filtration System and Diaphragm Pump (for Fill/Empty)
  - Stationary Table with Drip Tray
  - Automatic LifeGuard Door at Load Station
  - RIA 15.06 Compliant Safety System with Interlocked Doors and Gates
  - Allen Bradley-based Controls System
  - ATI Automatic Tool Changer Package
  - PC with 24" Monitor
  - Various Ultrasonic Phased Array Sensors