



DUAL TOWER TWELVE-AXES SQUIRTER BASED C-SCAN SYSTEM



The emergence of strong and stiff reinforcements like carbon fiber along with advances in polymer research to produce high-performance resins as matrix materials have helped meet the challenges posed by the complex designs of modern aircraft. The large-scale use of advanced composites in current programs of development of military fighter aircraft, sonar domes in ships, small and big civil transport aircraft, helicopters, satellites, launch vehicles, and missiles all around the world is perhaps the most glowing example of the utilization potential of such composite materials. Glass Fiber Reinforced Polymer (GFRP), Carbon Fiber Reinforced Polymer

(CFRP), Kevlar, and hybrid composites are commonly used for aircraft structures and components. However, these materials are at risk of experiencing damage. There are different types of damages possible in a composite such as fatigue, resin-rich region, resin starvation region, delamination, inclusion, and dis-bond between composite and honeycomb/foam sandwich structure, and accidental impact damages.

As the stiffness of composite components is relatively lower, compared to metals, the size of structures has to be increased leading to thicker section inspections. Also, the requirements for ultrasonic non-destructive

evaluation of more critical structural aerospace components have become more demanding. Complex-shaped composites with thick honeycomb or low-density foam cores with integral bond lines present a particular challenge due to their high attenuation of ultrasound.

Ultrasonic squirter based scanning systems are widely accepted as a technique for detecting the voids, blisters, de-laminations, and de-bound in single and multi-laminate structures, parts with non-uniform thicknesses tapered parts, honeycomb structure components made from the same or different materials. Large robotic gantry ultrasonic systems are now in common use for production

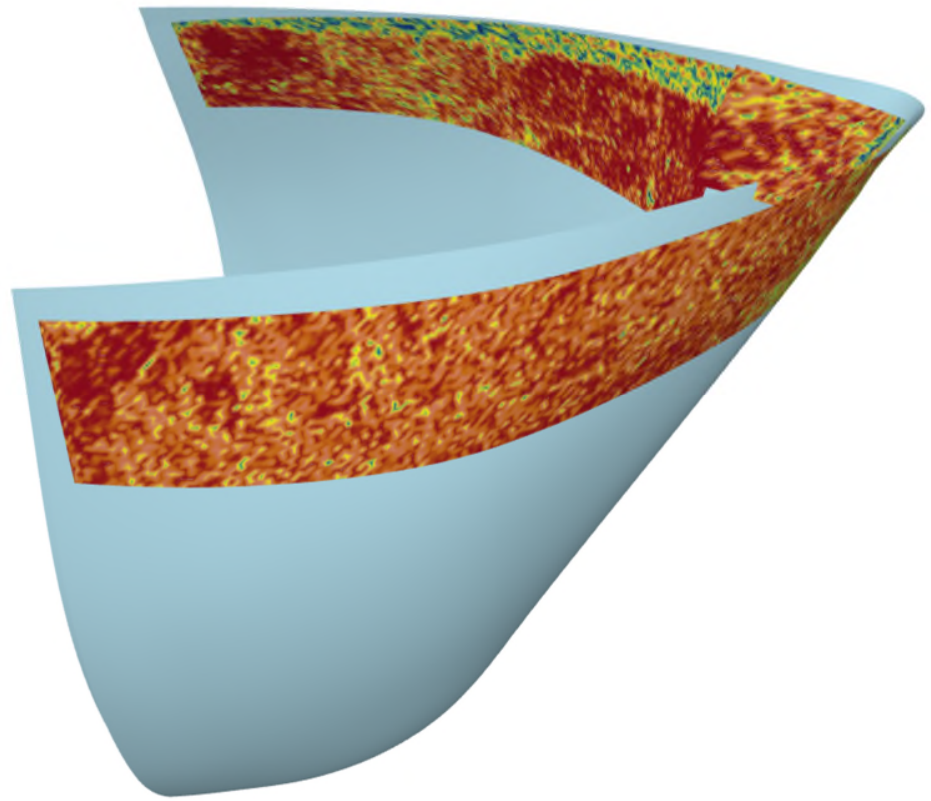


DAMAGE EVALUATION OF COMPOSITE SAMPLE USING
SQUIRTER BASED ULTRASONIC SYSTEM – APPLICATION NOTE

Damage
evaluation
of
composite
sample
using
squitter
based
ultrasonic
system -
Application
note

A Dhvani Research
Application Note

Chennai, INDIA



C-scan image with overlay model of a SONAR dome

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