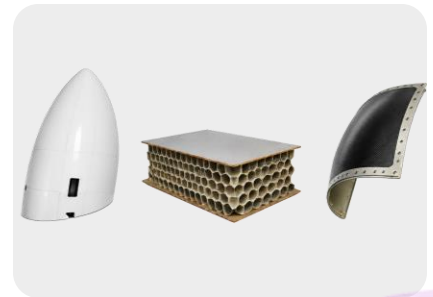




TeraNIM™-Aero

Industrial Terahertz NDT System for Aerospace Composite Inspection.



Automation-Ready

Non-Destructive

Non-Contact

Traditional Inspection & Challenges

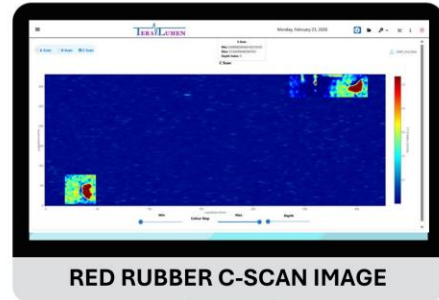
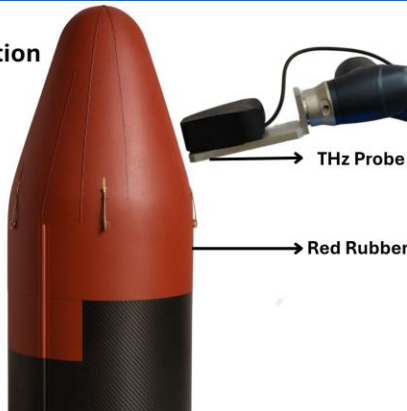
Visual Inspection

Tap Testing

Ultrasonic Testing

Now with THz Inspection

Red Rubber Inspection



Aerospace Applications:

- FRP/GFRP composite structures
- Radomes and multilayer dielectric structures
- Inhibition, EPDM Rubbers and bonded rubber layers
- Thermal protection materials and silica-based tiles
- Cork, aramid, siloxane based and low-density aerospace materials
- Honeycomb panels and bonded interfaces
- Protective coatings on composite or metallic substrates

Why THz for Aerospace:

- Non-contact, non-destructive
- Sensitive to coatings, bonded interfaces, and low-density materials
- Detects hidden defects and structural variations
- Supports repeatable, traceable inspection workflows
- Designed for continuous industrial operation

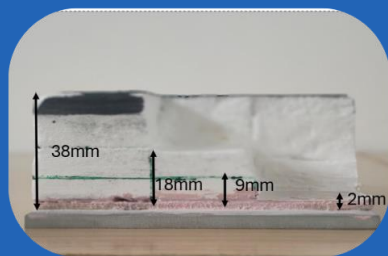
Inspection Outputs

- Single/Multi-layer thickness measurement
- Thickness Map (best for inhibitor layer; micron-level potential depending on setup)
- Bond Integrity Map (interface reflectivity + phase change indicators)
- Layer-wise thickness and interface mapping where dielectric contrast and SNR are sufficient.

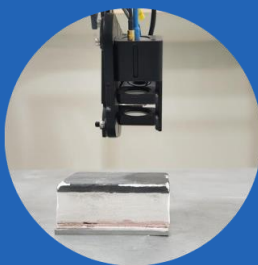
Industry Benefits

- Reduced rework and inspection uncertainty
- Improved confidence in component integrity
- Reduced material waste through better defect detection
- Supports traceable and repeatable inspection workflows
- Non-contact inspection of complex geometries

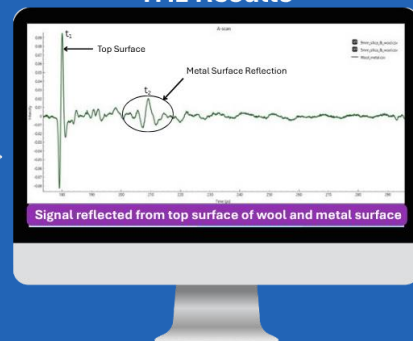
Silica tile sample



THz Imaging



THz Results



TeraNIM-Aero System Specification

Technology	Terahertz- Time Domain NDT system
THz Source	1550 nm femtosecond laser
Spectral Range	0.1 – 4 THz
Dynamic Range	> 60 dB
Thickness Range	20 μ m to 40 mm in polymer (RI = 1.5)
Scan Range	Up to 1200 ps
Fast Scan Window	100 ps
Fast Scan Speed	14 Hz in standard configuration
Measurement Time	Typically, 5–10 seconds per point, application dependent.
Probe Integration Capabilities	• Hand-held • Scanner • Cobot/Robot
Focal Spot	Focused: 2 mm Collimated: 6 mm
Probe Cable Length	2.5 m / 7.5 m
Smart Probe Features	Real-time standoff control, probe orientation monitoring, context imaging
Imaging Capability	Defect C-scan, 2-axis C-scan planning, data stitching / merge
Automation Readiness	Robot / cobot integration ready, automation I/O ready, high-speed sync I/O
Data Export	CSV, Excel, image export, report generation
Controller	Integrated display, Intel i5, 16 GB RAM, 1 TB storage
Support	Application recipe development, calibration, installation and on-site handholding
Power Input	110/240 VAC, 50/60 Hz universal AC input
Dimensions	Approx. 40 × 30 × 15 cm
Controller Weight	18 kg
Probe Head Weight	< 1 kg
Power	Mains, Battery (optional)
Operating Temperature	15 – 40 °C

*Note: Turnkey system is customizable based on application requirements.



INDIA'S FIRST TERAHERTZ COMPANY. TeraLumen Solutions, with its roots firmly planted in Indian soil, is a beacon of global excellence as a provider of medical-grade Terahertz diagnostic products, industrial-grade Terahertz testing solutions, and research-grade THz systems for a diverse array of markets.

Our mission is to design, develop, and deliver state-of-the-art Terahertz Imaging products and solutions that meet the exacting demands of Non-invasive Inspection across sectors such as Bio-Medical, Aerospace, Automotive, Defense, Energy, Pharma, Semiconductor, and Electronics.

-----MAKING TERAHERTZ ACCESSIBLE AND AFFORDABLE-----

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