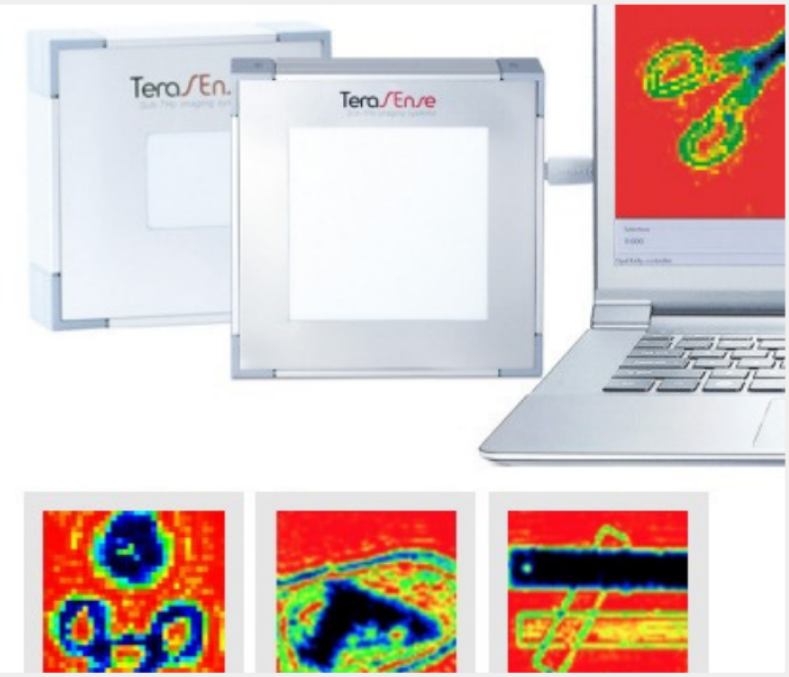
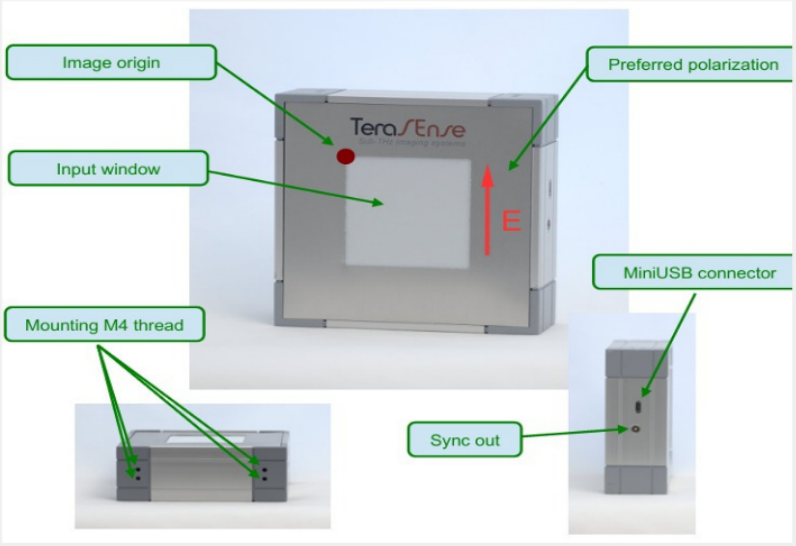
Unlocking Industrial Insights with TeraSense Terahertz Imaging

At **MTEKPRO Technologies Pvt. Ltd.**, we are committed to bringing advanced, innovative solutions that redefine how industries approach reliability, safety, and quality control.

In today's industrial landscape, **traditional inspection tools — X-ray, infrared, ultrasonic — each have limitations.** Our **Terahertz Imaging Solutions** in collaboration with our partners and OEM, **Terasense Inc., USA** introduces a new way of seeing: a **non-destructive, non-ionizing, real-time imaging solution** that empowers industries to inspect, monitor, and innovate with greater confidence.

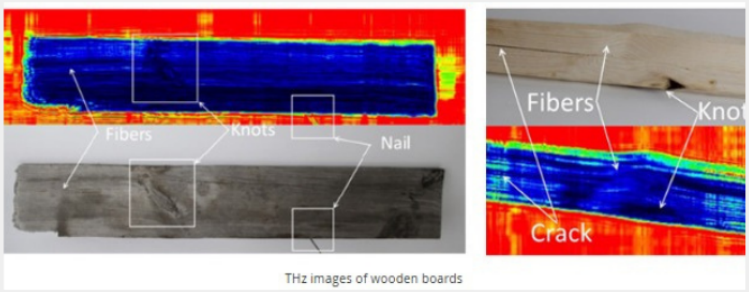




The technology behind It – Principle of Operation

Operating in the **sub-terahertz frequency band (50–700 GHz)**, the imaging solutions leverage TeraSense's patented semiconductor detector array technology. By detecting how THz waves are absorbed or reflected, the camera generates images that reveal structures invisible to visible or infrared light.

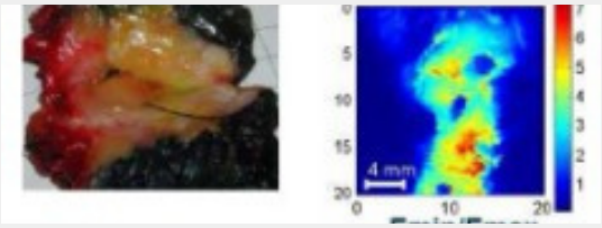
Industrial Applications



THz images of wooden boards

1. Non-Destructive Testing (NDT) & Quality Control

- Enables visualization of the internal structure of sealed products, packaging, and food items.
- Allows defect detection, contamination analysis, and material uniformity verification without damaging the sample.



2. Medical Imaging & Pharmaceutical Production QA Applications

- Facilitates **THz tomography** for studying superficial tissue layers—skin, vessels, muscles, and joints.
- Demonstrates potential in early detection of skin and breast cancers.
- Offers unique capability to assess **wound conditions through bandages or casts** in a safe and non-invasive manner.

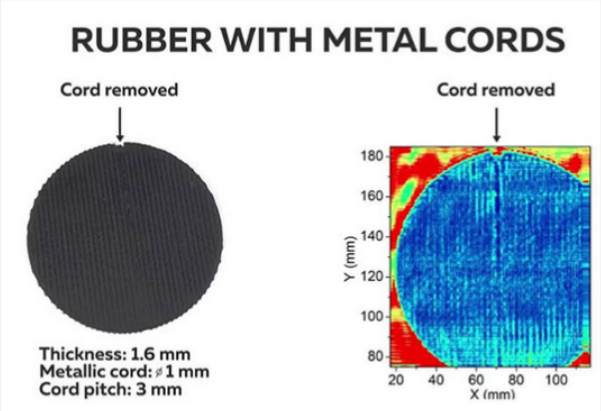

Dummy explosive belt

3. Security & Screening Applications

- Effective for people screening, luggage scanning, and parcel inspection. Unlike X-rays, THz radiation is non-ionizing and safe, while still capable of
- Detecting metallic, ceramic, plastic, and composite objects concealed under clothing or packaging.

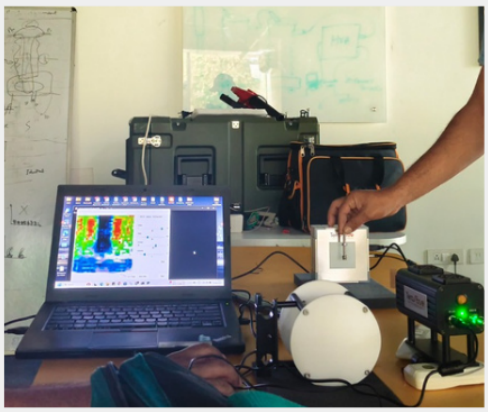
4. Scientific & Material Research

- Valuable for investigating **superconducting energy gaps**, plasmonic effects, and the creation of **metamaterials** operating in the THz regime..
- Widely applied in **spectroscopy of molecular vibrations**, lattice dynamics in crystals, and ferroelectric soft modes.

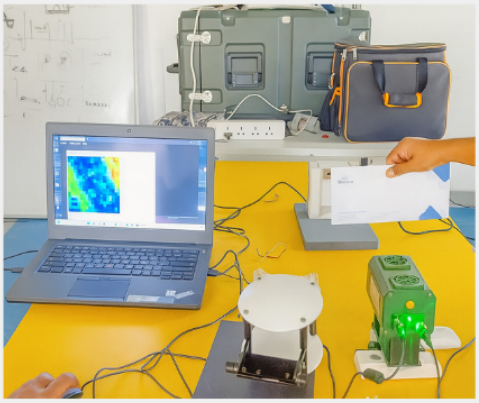


In essence, the **TeraSense THz imaging solutions open a new "window" for industries -** providing a **safer, smarter, and faster** way to look inside materials, processes, and products.

At **MTEKPRO Technologies**, we are proud to bring such advanced diagnostic solutions closer to Indian industries.



"Hands-on with the Terasense Tera-1024 setup — real-time terahertz imaging in action. A compact, non-ionizing solution enablingindustriestodetecthidden defects,enhancequalitycontrol,and ensure safer operations."



"The image shows thecapability of the Terasense Tera-1024todetect objects concealed in enclosures/bags orasin this case; an envelope"