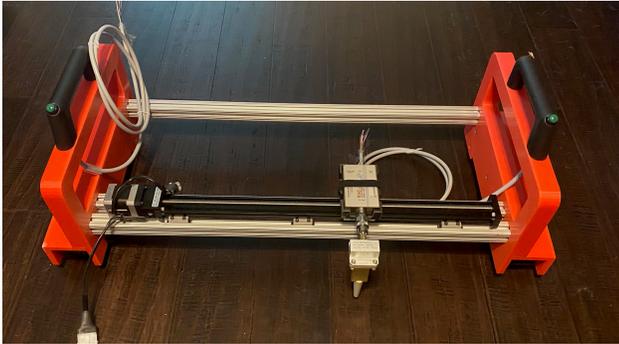




Advanced Microwave Imaging



Prototype Motorized Axis Portable
Scanner (MAPS) with AMWI System

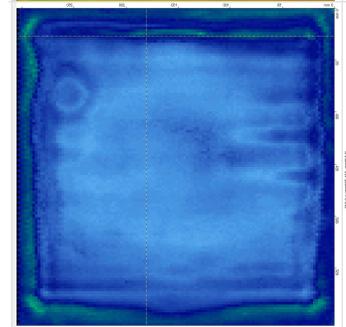
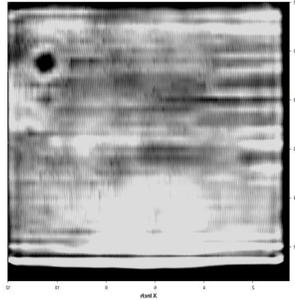
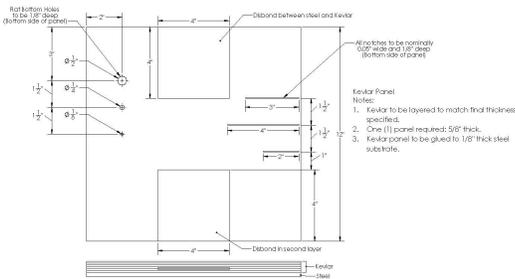
The application of electromagnetic radiation in the microwave frequencies, specifically for inspection services has been improved by Advanced Microwave Imaging (AMWI). Our specialized inspection equipment and methods couples multi-frequency data collection using Vector Network Analyzers with specifically designed antennae. The use of a bespoke antenna system for specific materials and conditions tremendously improves the response of the device and allows for enhanced defect detection and sizing.

The antennae are also designed with broadband features that provide for expanded frequency ranges that can be used during the inspection. The expanded frequency range provides multiple benefits. First the expanded frequency range increases the probability of defect detection by increasing the possibilities for a reflected signal from specific defect types. This is particularly true when comparing to older single frequency systems. Secondly, the increased frequency range provides for finer depth increment than a smaller frequency range.

Using a bespoke antenna/VNA system allows that system to be better matched to geometry, material, and inspection conditions. This provides for the best possible inspection situation and enhances results.

In the following images, a 300MM by 300MM - 15MM thick Kevlar panel with manufactured defects was inspected using two microwave systems, a single frequency microwave system operating at 10GHz and the latest AMWI multi-frequency system with matched antenna, operating at 6GHz to 14GHz.

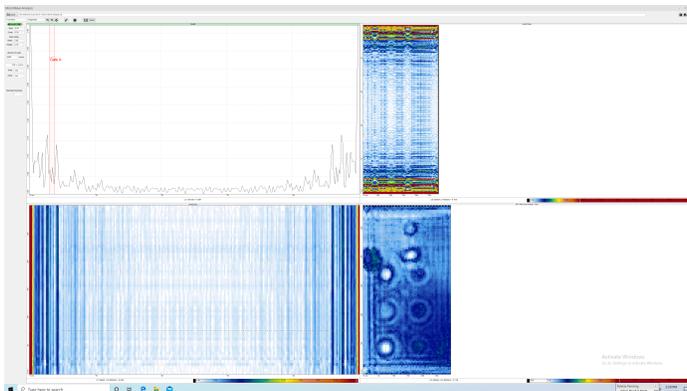
ADVANCED MICROWAVE



Single Frequency Image

AMWI Inspection System

In these images, the AMWI Inspection system inspection image shows essentially all of the embedded flaws whereas the single frequency image clearly shows only two of the flaws. Additionally the AMWI software allows for manipulating the image to create alternate views so that all of the embedded flaws show clearly in the images. Additionally, the depth of the defects can be ascertained in the AMWI image whereas in the single frequency image depth cannot be determined.



AMWI Inspection System Software

The image at left shows the versatility of the AMWI system and software to capture defects, size them, and determine their depth. The data was gathered over a frequency range of 6GHz to 14GHz. The High Density Polyethylene plate sample includes multiple back drilled holes some of which are filled with aluminum foil, some empty, plus a top and bottom surface metal indicator. The AMWI system was able to successfully capture all of the defects in a single scan image as well as determine relative depths. Note that the part is a 600MM by 300MM by 25MM thick and it was inspected in approximately 8 minutes.

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The system is fully field capable and ready for deployment. The combination of the VNA, specialty designed antennae, and software make this a uniquely capable inspection platform for your difficult dielectric material inspection applications. AMWI is ready to work with you on your application.

FOR MORE INFORMATION CONTACT

ADVANCED MICROWAVE IMAGING

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