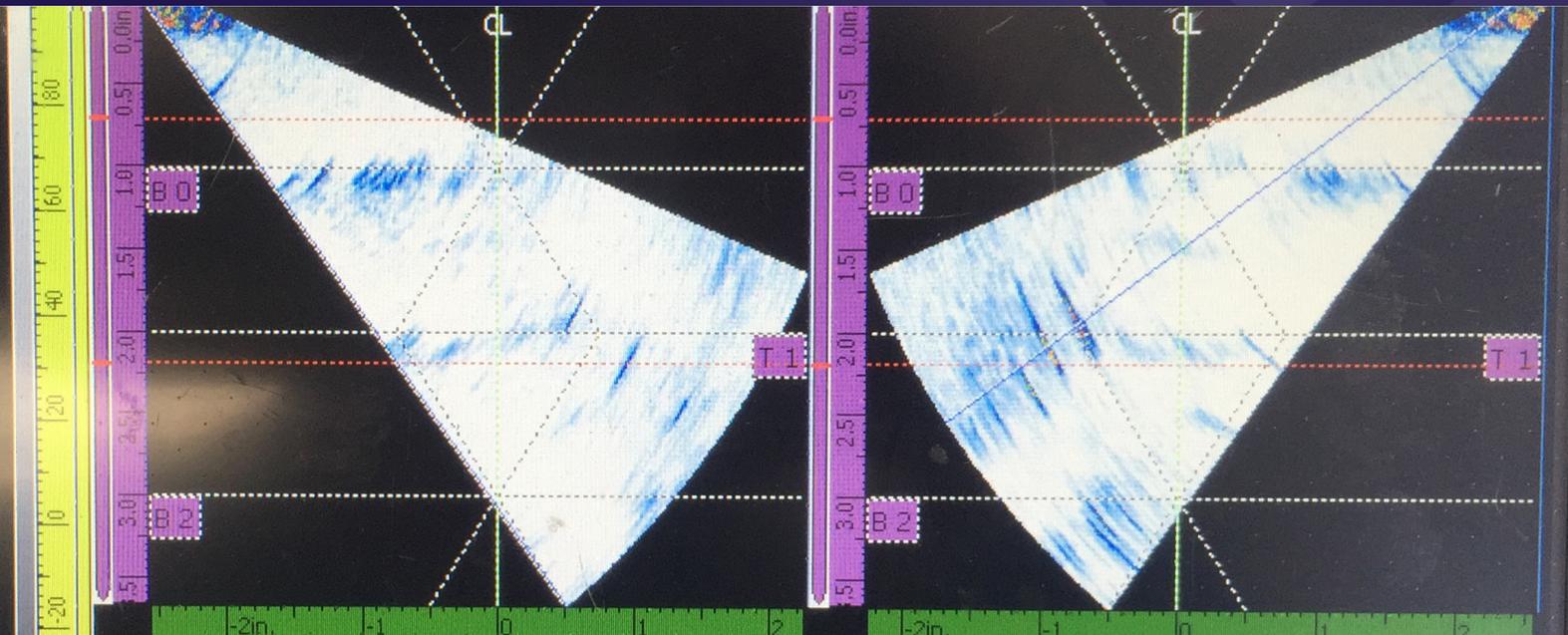




VERSA
INTEGRITY GROUP

Nondestructive Examination Services

ADVANCED ULTRASONICS



In addition to conventional UT and automated ultrasonic testing, Versa Integrity Group offers several advanced ultrasonic flaw detection techniques, including PAUT and TOFD.

Phased Array Ultrasonic Testing (PAUT)

PAUT utilizes multiple elements inside of a single probe housing to produce a wide array of angles to inspect for discontinuities.

PAUT's ability to steer and focus sound allows technicians to size indications more accurately than with conventional techniques. Another benefit of PAUT is that you are able to create a larger wave front with the multiple elements. This can assist with the penetration of sound into materials that were previously not able to be inspected using conventional ultrasonic techniques.

PAUT data can pinpoint the location of an indication inside the specimen. Showing height, length, depth from surface, and allowing better characterization of flaws than conventional ultrasonic techniques. Additionally the data can be encoded and then be stored as a permanent record of the inspection. Having encoded data also assists in monitoring flaw growth for in-service defects.

Unlike radiography, a PAUT crew can work alongside other crafts, as there is no harmful radiation, allowing for more productivity out of worksites with multiple workgroups.

Encoded Phased Array equipment can come in all shapes and sizes. The scanners can vary from manual encoded scanners that are very versatile to fully automated scanners that are more elaborate. The type of scanner(s) that you would utilize vary on the acceptance criteria, configuration of the part to be inspected, access to the part to be inspected, and the amount of welds being examined. Either manual or automated scanners can be configured to do a wide range of configurations and part thicknesses.

Aside from the safety benefits of phased array, this inspection method can give faster results of the inspection. The data can be reviewed immediately after the scan is complete. This can help with detecting any welding issues in high production environments, as we can detect the issues earlier helping with reducing rework.

Welds can be inspected while the component is still hot (up to 550° F).

Time of Flight Diffraction (TOFD)

TOFD is an ultrasound technique that was designed in the 1970's as an alternative to conventional shear wave techniques and its primary application is for greater accuracy of sizing cracks. TOFD is utilized as either a standalone technique or in conjunction with Phased Array or UTSW examinations.

The TOFD technique measures satellite radiated pulses or tip diffracted energy that is generated when the defect is detected with compression waves. Defects can be detected at the ID and OD of the part; the accuracy of sizing is decreased within the lateral wave and back wall dead zones.

TOFD is often typically used on parts where the geometry is the same on both sides of the weld, such as pipe to pipe welds or plate to plate where the thickness is the same either side of the weld. Thicker materials often require multi zone focused applications.

TOFD has a variety of applications; the most common is rapid inspection of welds seams. The advancement in technology has allowed TOFD examine materials that were previously not able to be inspected with ultrasonics, for example, materials with coarse grain structures.

TOFD has helped with the inspection of thicker parts that were not previously able to be inspected with ultrasonics due to the attenuation. TOFD can still be utilized to inspect thin materials as well.

THE UNIFIED SOLUTION.

Versa Integrity Group is expanding operations to cover the areas that are close to our clients. If you need solutions to your complex NDE, inspection, and reliability challenges, we have an office that can quickly and conveniently meet your needs.