



# Advanced Ultrasonic Detection And Sizing Training Program

An advanced ultrasonic training course designed for Level II, Level III and NDE management and Supervisor personnel. This course will present ultrasonic examination methods for flaw detection and Time of Flight (TOF) sizing methods and techniques in materials susceptible to Intergranular Stress Corrosion Cracking (IGSCC/SCC), mechanical fatigue and thermal fatigue. These methods can be applied to piping, plate, and vessel components in petroleum, chemical, fossil, nuclear, and aerospace industries or any industry involved in ultrasonic examination of metallic product forms.

This “hands-on” practical advanced ultrasonic course includes shear wave and refracted longitudinal wave techniques for detection, characterization, and flaw sizing. Detection and signal characterization techniques will cover the effects of echo dynamics, rise and fall time, and pulse duration for the identification of the ultrasonic signals.

Sizing applications will cover Time of Flight (TOF) and Delta Time of Flight methods for ID Creeping Waves, Tip Diffraction, Bi-Modal, and Focused Refracted Longitudinal and Refracted Shear Waves. These methods are very effective for sizing shallow, mid wall or deep flaws.

- ID Creeping Wave Method uses the effects of head waves and mode conversion to characterize flaws for non-quantitative sizing.
- Tip Diffraction Methods use diffracted signals generated by the crack tip to identify the depth of the flaw. This method is great for ID or OD connected cracks, very shallow cracks, and mid-wall cracks.
- Bi-Modal Methods use the effects of a combination of shear and longitudinal waves pulse trains to size mid-wall ID connected flaws.
- Refracted Longitudinal and Shear Wave Methods use focused L-Waves and Shear waves

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Mr. Davis has over 30 years experience in Welding, Welding Inspection and Non-Destructive Testing. Mr. Davis is a graduate of the US Navy Nondestructive Testing School and has author 4 handbooks on Nondestructive Testing with one on Advanced UT Flaw Sizing Methods. He is a contributor to the ASM Ultrasonic Handbook and a technical Editor for the ASNT Visual Handbook. Mr. Davis was formerly the Inservice Inspection Training Manager for Ultrasonic (IGSCC and Sizing) and Visual applications at the EPRI NDE Center in Charlotte, NC. He is an ASNT UT Level III and has past Level III Certifications in MT, PT, ET, RT (ASNT), LT and VE.