

# **Beyond FMC/TFM: New Developments in The Advancement of Industrial Ultrasonic Testing**

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The Total Focusing Method family of ultrasonic imaging techniques, such as FMC/TFM, and PWI/TFM, are becoming increasingly industrialized and available for field applications. These techniques offer many benefits over conventional Phased Array UT; superior resolution, an overall improved ability to qualify and quantify defects, surprising simplicity of setups, and in some cases, breaking of attenuation and scattering noise. This presentation will review new developments in the advancement of TFM-based techniques that move past what is currently available in the industrial NDT market. These techniques will offer a wide variety of benefits, such as more efficient handling of complex surfaces, improvements in SNR (signal-to-noise ratio), improvements in near-surface and lateral resolution, and a continued addressing of the historic practical limitations to deployment. Depending on the specific application, these advanced imaging techniques can be employed manually, using automated and semi-automated scanning systems, as part of a large gantry or robotic system, or via remotely operated vehicle. Full industrialization and field-readiness of these techniques also requires the ultrasonic equipment manufacturer to provide a system that can handle the heavy data throughput and computation demands of these advanced imaging methods to achieve an inspection speed that makes their usage practical. Keywords: FMC, TFM, ATFM, PWI, APWI, VSA