

TFM Inspection Techniques with FMC and PWI Firing on Stainless Steel and Dissimilar Metal Welds

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Over the last two decades, the phased array technique has completely changed the face of ultrasonic non-destructive testing in various industry segments. This now mature and widely adopted technology allows for highly efficient inspections on critical components in aerospace, oil & gas, heavy industry and nuclear power generation plants. Recent progress in instrumentation and software has made the use of real-time Full Matrix Capture (FMC) and Total Focusing Method (TFM) available directly from the phased array unit, while performing the inspections. But innovation in phased array hasn't stopped yet, and new algorithms, processing methods and features are being developed and introduced to better support new and challenging applications. This presentation will compare live TFM imaging with FMC (Full Matrix Capture) and PWI (Plane Wave Imaging) firing sequences for the inspection of stainless steel and dissimilar metal welds. Innovative hardware and software features and capabilities will be demonstrated in the context of industry specific inspection configurations. Various case studies will be presented, including discussions about phased array probe design parameters, selection of firing sequences and advanced focusing algorithms, inspection coverage and detection capability. In addition, considerations about processing power, data file size and resulting inspection speed for different inspection techniques and algorithms will be presented.