

# **Advanced DDF for inspection of thick Aluminium and Titanium materials**

**Xavier Harrich<sup>1</sup>**

<sup>1</sup>Sales, Socomate International, France

FAAST is a UT Phased Array system especially designed to meet with the high productivity inspection needs, thanks to its outstanding capability at replacing multiple conventional Phased Array systems working in parallel. The FAAST technology has the capability to transmit multiple sound beams, multi-oriented and/or multi-focused in one single shot using standard 1D or 2D phased array probes. More features are integrated into the instrument, such the possibility to shot at different frequencies within the same shot. Furthermore, it allows to work in full parallel or by using several active apertures on the same probe. Hereafter is a list of applications where the FAAST technology brings added value within the Aircraft industry: Reference in Aircraft Industry for special alloy and titanium turbine disc inspection complying with Multi-zone testing procedures aiming at the detection of down to Ø0.4mm FBH at 2.5mm up to 140mm depth from the surface. Multi-zone testing procedure requests Multi-focused and/or Multi-oriented beams generation within a single spray throughout a 2D matrix probe, reducing thus considerably the inspection time per turbine disc. A feasibility study in Aircraft Industry for aluminium plate has been performed using the multiple focused aiming at the detection of Ø0.8mm FBH from 2mm up to 160mm depth from the surface using a single 1D linear 128 elements phased array probe with a width of 120mm. As the FAAST allows to generate all focusing delay laws in one single shot, the scanning speed can reach up to 700mm/s while the performances answer the Aircraft standards in terms of SNR. A feasibility study in Bars application has been performed using the multiple angles to detect Ø0.8mm FBH and longitudinal notch. By using a curved phased array probe, the FAAST generates the 0° and ±45° angles in one single shot allowing thus an increase of speed of 60.