

1.3.12. IMPACT OF ELEMENTS SENSITIVITY AND PULSE EXCITATION ON PHASED ARRAY IMAGING

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Ultrasonic inspection using phased-array technology is reaching a stage of maturity in many countries. Although most concepts used in conventional NDT still apply, phased-array has its own specificities that change the way we need to think about them. This paper presents the impact of the element sensitivity variation on the echo-transmittance curve pattern. It can be demonstrated that variations in elements sensitivity significantly change the usual echo-transmittance patterns found in conventional UT. Experimental results present typical curves for linear array and demonstrate how both angular corrected gain and time corrected gain features can compensate for these variations.

The second part of this paper revisits the way an array transducer can be excited. With the advances in transducer array manufacturing and material properties, NDT equipment manufacturers now have access to high quality, large bandwidth transducers. Experimental results using negative square pulsing, bi-polar pulsing and spike pulsing are presented with their impact on pulse duration, echo amplitude and overall signal quality.