

1.3.2. SIZING THE HEIGHT OF DISCONTINUITIES, THEIR CHARACTERISATION IN PLANAR / VOLUMETRIC BY PHASED ARRAY TECHNIQUE BASED ON DIFFRACTED ECHOES

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This report demonstrate and discuss the results of experimental works carried out with the scope to study a procedure for improving the characterization (planar – volumetric) and sizing the height of discontinuities detected by ultrasonic computerized systems like TOFD, PHASED ARRAY, C-B SCAN.

To comply with code case 2235.9 the acceptance criteria illustrated in Tab 1, 2, 3 shall be applied.

For TOFD the procedure for the calculation of the height is well determined and it is the most accurate with respect to any other ultrasonic technique. For PHASED ARRAY the procedures are on developing path.

The aim of the present experimental test is to found criteria for the calculation of the height where Phased Array Technique is used.

In addition the research has the scope to identify procedure for the characterization of discontinuities in planar and volumetric.

In previous work (reference 7), it has been demonstrated, that depending from the shape of the discontinuity diffracted echoes may be generated at the tip of the slit or from cylindrical hole.

Similar results have been theoretical demonstrated by Paul D. Wilcox, Caroline Holmes and Bruce W. Drinkwater (reference 8) followed by computer simulation.

The results of the experimental tests have been demonstrated two important achievements:

- 1 the distance between the diffracted echoes is proportional to the height of the discontinuity;
- 2 the ratio between the amplitude of the diffracted echoes could be considered a good criteria for the characterization of discontinuities in planar or volumetric.

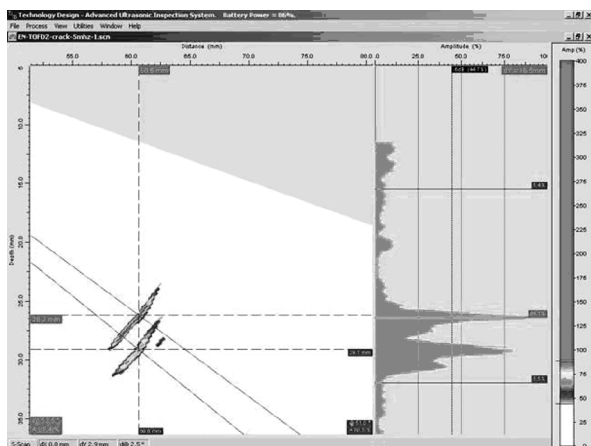


Fig. 1. Diffracted echoes from a planar indication