

Characterization of the acoustic response as basis for a certification procedure for reference reflectors in ultrasonic testing

Thomas Würschig¹

¹Project Engineering, Waygate Technologies, Germany

Reference reflectors are the basis for ultrasonic testing. According to the specific application, specifications define type, size, and shape of the reference. With increasing demands on the accuracy of the ultrasonic inspection systems, the quality of the manufactured references impacts more and more the extracted measurement results and in worst case limits the testing capabilities due to wrong assumptions on the performance parameters of the test system. The first part of this contribution contains an overview of current requirements concerning the quality of reference reflectors and points out existing gaps that need to be filled by updated specifications including both, a more detailed description of acoustic reflection behavior as well as a tracking of the reference quality over time. In the main part it is shown how to perform a qualitative and quantitative characterization of the acoustic response of different reference reflectors, starting from one-dimensional reference reflectors such as notches or side drilled holes. Besides a theoretical discussion, an exemplary setup for the performance of certification measurements is shown and the correlated certification procedure is described. The final part illustrates results obtained in the daily use. Besides individual measurements, a statistic evaluation for different reference types can be presented, thus giving deeper insight to the quality pattern for the manufacturing of reference reflectors.