

Layer Identification and Enhanced Flaw Recognition for Eddy Current Bolt Hole Inspections

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One of most common inspections in aerospace is the inspection of bolt holes by rotating eddy current probes. The eddy current data is analyzed real time using the traditional impedance and sweep displays while actively interrogating the hole. Adequate POD is achieved, but the technique is prone to human performance variations. For many of these inspections, the layer where the defect resides must be known to determine whether repairs are necessary. The traditional eddy current displays do not have the resolution to identify layers, therefore a secondary manual measurement method needs to be employed to understand where the flaw is located, or the hole is conservatively repaired. High resolution c-scans and in-situ, dedicated data analysis displays for rotating probe and eddy current array data have been used for nuclear tubing inspections for over 25 years. These tools have an intrinsic value to POD. These displays and technology are now being incorporated in bolt hole eddy current inspections. This allows for easy identification of signals of interest, the ability to identify layers without the use of encoders, more accurate signal calibration, and visually understanding flaw morphology. This paper will provide greater detail on these topics as well as examples of field data showing the strong visual perspective available.