DEFECT DETECTION USING CAPACITIVE IMAGING

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ABSTRACT

Further details of a novel capacitance sensing technique are presented, which is capable of imaging defects within a range of materials, including insulators, conductors and fibre reinforced composites. Images can also be obtained underwater. Representative results from each of these separate classes of material are presented here. A specific advantage of this technique is that, by suitable design of the electrode geometry, the spatial distribution of the electric field, and hence the image resolution, can be adjusted for a particular situation. The skin depth into a specimen can be increased by reducing the frequency in the normal fashion. Secondly, images can be taken of objects and defects that lie behind a metallic barrier that would normally completely screen against conventional electromagnetic NDE techniques. Examples will be presented of experiments on real-life aerospace specimens, and the in-situ inspection of large civil structures.