NASA TECH BRIEF

Eddy Current Probe Measures Size of Cracks in Nonmetallic Materials

The problem:

To devise a nondestructive method for measuring the depth/width ratio of cracks in electrically nonconductive materials, such as ceramic insulation. The width of cracks can readily be measured, but there has been no known method for measuring the depth of cracks in such materials.

The solution:

The area to be inspected is covered with finely powdered iron and the test specimen is vibrated until the crack is filled. After removal of excess powder from the surface, an eddy current probe is used to measure the mass of metal in the crack. Comparison of the measurement with previously calibrated standards will provide data relating the depth and width of the crack.

Notes:

1. This method can be adapted for measuring cracks in metals. For example, iron powder could be used for cracks in aluminum. The dissimilar metal in the crack would give an eddy current reaction that would be measurably different from that of the base metal.
2. Inquiries concerning this method may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama 35812
   Reference: B67-10645

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: C. W. Musser
of The Boeing Company
under contract to
Marshall Space Flight Center
(MFS-14059)

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