

Nondestructive Evaluation (NDE) of Composite-to-Metal Bond Interface of a Wind Turbine Blade Using An Acousto-Ultrasonic Technique.

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Abstract

An acousto-ultrasonic inspection technique was developed to evaluate the structural integrity of the epoxy bond interface between a metal insert and the fiber glass epoxy composite of a wind turbine blade. Data was generated manually as well as with a PC based data acquisition and display system. C-scan imaging using a portable ultrasonic scanning system provided an area mapping of the delamination or disbond due to fatigue testing and normal field operation conditions of the turbine blade. Comparison of the inspection data with a destructive visual examination of the bond interface to determine the extent of the disbond showed good agreement between the acousto-ultrasonic inspection data and the visual data.

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