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V. Janapati, K. Lonkar, F.-K. Chang

Design of Optimal Layout of Active Sensing Diagnostic Network for Achieving Highest Damage Detection Capability in Structures

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An investigation is performed to develop a methodology for optimizing the layout of piezoelectric transducers based actuator-sensor network that will maximize the detection capability of a given SHM system for a hot spot in aerospace structures. The method utilizes a simulation tool for wave propagation as a basis to integrate pre-selected diagnostic algorithm with an optimization tool to maximize the probability of detection (POD) for a given damage size in a structure. The proposed method minimizes the number of actuators and sensors while maximizing POD through the selection of optimal location for each sensor and actuator. Fatigue cracks in metallic structures were studied in this investigation. This paper will highlight the method as well as some results for metallic structures.

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Ключевые слова:

Содержание

Abstract
Introduction
Method of approach
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Conclusion
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