



Код: 10307

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Piezoelectric Wafer Active Sensor Network for Aircraft Structures Damage Localisation: Pitch-Catch Method

Издательство DEStech Publications, Lancaster, 2011 год

7 стр; формат: 23,5 x 16 см; библиографический список: 9 единиц
ISBN: 978-1-60595-053-2

Mechanical flaws detection and damage severity quantification in aircraft's structures are ones among the major research axes that the aeronautic manufactures takes during theses last years. Our work in this field focuses on the development of a new damage diagnosis methodology based on the exploitation of specific guided wave propagation and on the capability of piezoelectric network actuators/sensors to generate/sense them. The proposed method allows a relative quick diagnosis using a smart comparison between a baseline captured before the commissioning of the plane and a damaged signal captured after N flight cycles. The major asset of this method is the capability to probe large structure within a minimum time and human interaction.

This paper brings examples of feasibility on aircraft structures specimens made of composite and isotropic alloys. The feasibility of the system is therefore demonstrated using a basic sensors/actuators network.

Ключевые слова:

Содержание.

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