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Damage Detection of the Adhesive Layer of Skin Doubler Specimens Using SHM System Based on Fibre Bragg Gratings

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This article is focused on the development of boron/epoxy patch repair of fatigue cracking on auxiliary stringer. Properties of the boron/epoxy patch and the adhesive layer were tested using Skin Doubler Specimen (SDS). SDSs were composed from the aluminum body and bonded boron/epoxy patches using FM 73 adhesive. Paper describes experience with embedding of the FBG sensors into the adhesive layer or composite patch during the specimens' manufacturing. Several types of the coating material for optical fibers were tested. Optical fibers with FBG were finally embedded into the adhesive layer between the boron/epoxy patch and aluminum body. For the disbonding detection using FBG and to verify the influence of the optical fiber upon the specimens' lifetime, fatigue tests were done. To compare different approaches for the disbonding detection, strain gauges and the method of acoustic emission were used as well.

Ключевые слова:

Содержание.

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