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Active Thermography Method for Delamination Detection and Localisation in Composite Structures

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This paper presents an application of active thermography method for delamination detection in CFRP composite panel. The panel is a part of a AW-139 helicopter fuselage. For this purpose a optical excitation was used. This method based on exciting the composite surface with a single pulse from halogen lamps. Transmission method was investigated that was based on excitation of one face of the specimen and observing the infrared response on the second face of the specimen. The surface temperature distribution highly depends on the structure of the investigated composite specimen. This allows to determinate location of stiffeners, changes in thickness, internal composite structure as well as different types of damage (crack, delamination) occurrence.

During the investigation a whole composite sample face was excited by optical source. A back face infrared response was being continuously monitored using infrared camera SC-5600 FLIR. The monitoring was begun just before the excitation pulse started and finished when the sample cooled down. Three cases were investigated. Firstly, sample with one delamination due to impact damage and the next with two and three delaminations were investigated.

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Содержание.