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# Application of Vibrothermography in Nondestructive Testing of Structures

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Vibrothermography is a nondestructive testing method that monitors heat produced by damage under vibration and/or ultrasonic excitation in order to evaluate the structural health. The paper investigates practical aspects of vibrothermographic testing of structures. Measurements in two typical application areas of vibrothermography are presented and discussed. The examples are weld test specimens and a military aircraft fuselage skin. Measurements have been performed with use of an in-house vibrothermographic testing system. In case of welded specimens a series of carbon steel test samples with different flaw types have been investigated. In case of aircraft testing, field measurements have been performed on a wing and fuselage sections in order to assess the structural integrity. The paper discusses practical aspects related to field measurements with use of vibrothermography and presents thermal image processing techniques which allow to obtain the best flaw detection results. Applied image processing techniques allow increasing the quality and readability of the results coming from field measurements with low thermal response from the structure. The paper is concluded with a discussion on applications of vibrothermographic testing in Structural Health Monitoring applications.

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**Ключевые слова:**

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