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## Health Monitoring of the Helicopter Main Rotor Blades with the Structure Integrated Sensors

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This paper presents approach for structural health monitoring and damage detection in the main rotor blades of helicopters. In the blade structure several failure modes may occur which affect structural integrity performance. These failure modes are critical from the point of view flight safety and are mainly fatigue cracks and corrosion. For assuring safety NDT inspections are delivered. But for such structures NDT inspections are very time consuming and for some locations, results from inspections are difficult to asses.

For such reason study of the application for SHM techniques will be delivered for critical location monitoring with the use of:

- PZT (Piezoelectric Transducers) and guided waves for damage detection;
- FBG (Fiber Bragg Grating) sensors and stress/damage detection monitoring;
- CVM™ (Comparative Vacuum Monitoring) for local crack development monitoring.

Based on specimens made from helicopter blades, process of possibility of damage assessment will be presented as well as damage growth monitoring. Authors will deliver diversity of SHM techniques as well as elaborated techniques for signal analysis. Moreover correlation of recorded signals with NDT used for in service maintenance will be presented to compare reliability of received data.

That work is the first step for the SHM implementation for the structural integrity monitoring of the critical components used in aerospace.

**Ключевые слова:**

**Содержание.**

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