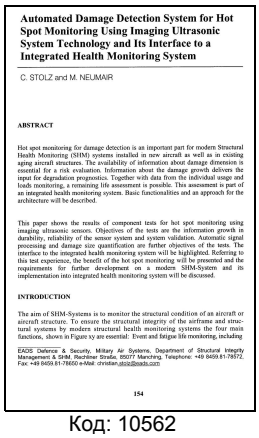

Automated Damage Detection System for Hot Spot Monitoring Using Imaging Ultrasonic System Technology and Its Interface to a Integrated Health Monitoring System

C. STOLZ and M. NEUMAIR

ABSTRACT

Hot spot monitoring for damage detection is an important part for modern Structural Health Monitoring (SHM) systems installed in new aircraft as well as in existing aging aircraft structures. The availability of information about damage dimension is essential for a risk evaluation. Information about the damage growth delivers the input for degradation prognostics. Together with data from the individual usage and loads monitoring, a remaining life assessment is possible. This assessment is part of an integrated health monitoring system. Basic functionalities and an approach for the architecture will be described.

This paper shows the results of component tests for hot spot monitoring using imaging ultrasonic sensors. Objectives of the tests are the information growth in durability, reliability of the sensor system and system validation. Automatic signal processing and damage size quantification are further objectives of the tests. The interface to the integrated health monitoring system will be highlighted. Referring to this test experience, the benefit of the hot spot monitoring will be presented and the requirements for further development on a modern SHM-System and its implementation into integrated health monitoring system will be discussed.

INTRODUCTION

The aim of SHM-Systems is to monitor the structural condition of an aircraft or aircraft structure. To ensure the structural integrity of the airframe and structural systems by modern structural health monitoring systems the four main functions, shown in Figure xy are essential: Event and fatigue life monitoring, including

EADS Defence & Security, Military Air Systems, Department of Structural Integrity Management & SHM, Rechtner Straße, 85077 Manching, Telephone: +49 8459 81-79572, Fax: +49 8459.81-78650 e-Mail: christian.stolz@eads.com

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C. Stolz, M. Neumair

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Ключевые слова:

Содержание.