

4.2.8. MODERN APPROACH FOR COMPOSITE INSPECTION IN THE ROTORCRAFT INDUSTRY AND ROTORCRAFT MAINTENANCE

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Taking into consideration the increased usage of composites for aircraft structure there is a necessity for gathering information about structural integrity of such components. During the manufacturing of composites as well as during in service and maintenance procedures there is a possibility for damage occurrence. There is a large number of failure modes which can happen in such structures. These failure modes affect structural integrity and durability. In this work approach for detection of composites damage detection such as: delaminations, disbonds, foreign object inclusion and core damage has been presented.

In that article effort of manufacturers for the quality control as well as mobile inspections will be delivered. Modern detection is possible with the use of advanced P-C aided Non Destructive Testing methods. In this article diversity automated methods for detection of such damages were considered and will be presented. These techniques are such as: ultrasonic, mechanical impedance analysis, resonance, laser shearography, thermography, D-Sight, eddy currents.

NDI techniques delivered in the article are based on different physics phenomena. In this work detectability for selected methods and accuracy will be determined. Moreover discussion about advantages of different techniques for specific failure modes and materials will be delivered. Another point that will be presentation of approach for automated data analysis with the use of numerical data processing.

This work was done for the needs mostly of composite elements in the rotorcraft industry.