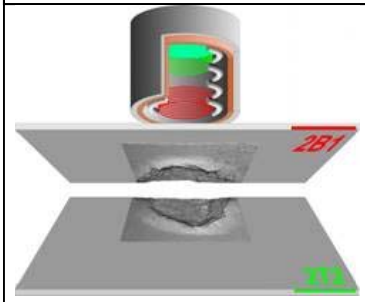
Cost Reduction by Advanced Non-Destructive Inspection of Aeronautical Structures (CANDIA)

(4th Framework Project)



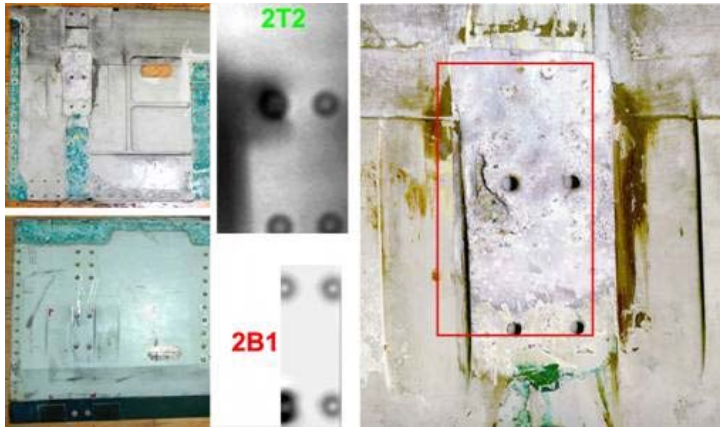
Eddy current sensor on a corroded double layer aluminium structure. Two kinds of corrosion are indicated. 2B1-corrosion starting from the bottom of the first sheet and 2T2 – corrosion starting from the top of the second sheet. The signals of these damages are superimposed by the lift-off and the spacing signal.

Introduction

Non-destructive inspection requirements can have a large impact on aircraft and operation cost. This calls for efficient NDT methods, that do not require long down times for in-service inspections, and are fast and reliable for production inspection. No single method can fulfil all requirements. In addition, an approach using knowledge based diagnosis systems will offer increased inspection reliability.

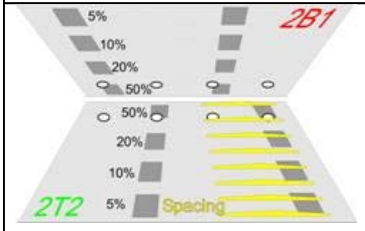
Objectives

- Reliable inspection methods for ageing aircraft
- Fast non-contact NDT methods for production inspection
- Rapid full field methods for in service inspection of advanced materials

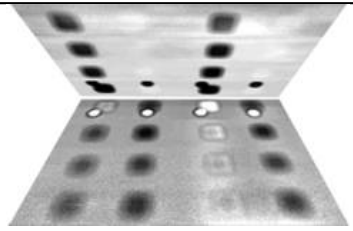


Damaged structure	EC images	Detail of the damaged structure

EC images of the corroded parts of a real aircraft structure



Calibration sample



EC images of the calibration sample

Partners

Sweden, France, Germany, Netherlands, Italy, Unided Kingdom, Spain

Contribution from IWF

Multi-frequency eddy current (EC) technique is developed to detect, to identify and to quantify hidden corrosion. Therefore, high penetration eddy current sensors are designed to be mounted on automatic scanners providing images of the material loss. These signals are processed and visualized using a LabView environment.