EXTENDED NON-DESTRUCTIVE TESTING OF COMPOSITE BONDS

Optimum bonding solutions for light-weight aircraft structures

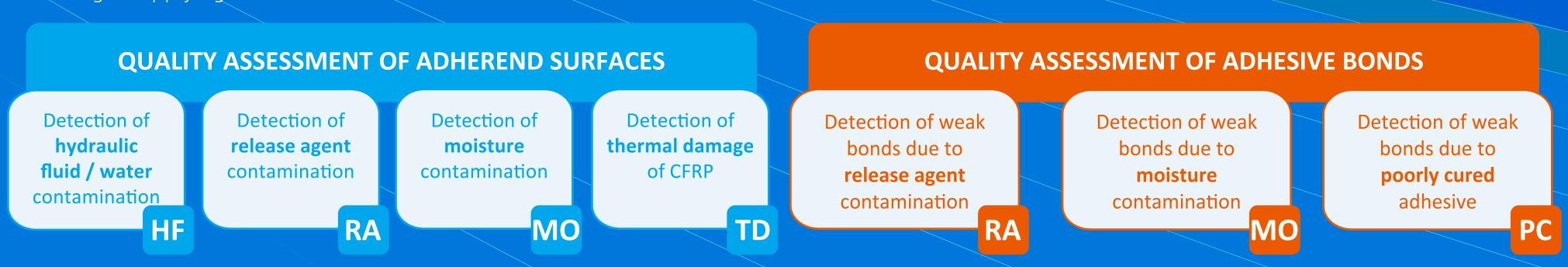
PROJECT OVERVIEW

A350AIRBUS

ENCOMB provided advanced non-destructive testing (NDT) methods for pre and post-bond inspection of CFRP aircraft structural components in order to establish a reliable quality assurance concept for adhesive bonding. State-of-the-art NDT techniques were screened and the most suitable ones were further developed and adapted to important application scenarios with regard to aircraft manufacturing and in-service repair.

IDENTIFICATION OF FACTORS INFLUENCING ADHESIVE BOND QUALITY

Five application scenarios were identified to be of primary importance for the aircraft manufacturers along with the requirements for extended NDT technologies applying to each scenario.



QUALITY ASSESSMENT OF ADHEREND SURFACES & ADHESIVE BONDS

Adherend surfaces were characterised with conventional laboratory analysis methods (spectroscopic and optical techniques, contact angle measurements) to analyse their physico-chemical properties resulting from sample preparation.

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Adhesively bonded samples were characterised with conventional NDT techniques (ultrasonic and x-ray inspection, µ-CT) to analyse their structural integrity resulting from sample preparation.

ENCOMB

SCREENING, ADAPTATION & VALIDATION OF ADVANCED NDT TECHNIQUES

Advanced NDT technologies for the detection of selected physico-chemical properties of CFRP adherend surfaces and the quality of the adhesive bonds were identified, verified, developed, adapted, and validated for their potential to comply with the application scenarios and requirements.

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