FAA Workshop on Adhesive Bonding 26./27. October 2004

Presented by

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Composite Technology, Materials and Processes

Bonding Processes at Airbus
Introduction

A Single integrated European Company

- Transnational Organization (Engineering, Manufacturing, Procurement, etc.)
- Transnational Technology Development

AIRBUS
Bonding History

Fokker F28

CAA pre-treatment
Primer BSL 101
Phenolic adhesive (Redux 775)

Excellent in-service behaviour
Bonded Structures at Airbus

Bonding of metallic structures was introduced from the beginning of A300 manufacture

- Longitudinal joint (lap joint)

**AIRBUS A300 / A310 / A330 / A340**

- Circumferential joint
- Wing connection (doubler)
- Stringer
- Window doubler

**AIRBUS A321**

- Inner Flap

Al-Cu 2024 clad
Airbus Bonding History

Bondline corrosion till a/c 156
- CSA (chromic sulphuric acid) or pickling (quality aspects)
- Old epoxy adhesive (hot/wet not sufficient)

Massive corrosion, fast propagation along bondline, **not visible**
Many aircraft affected
In-service findings of a/c till 156

In-service + lead fleet inspection necessary
Bondline Corrosion

Test configuration:
Peel Specimen 200 x 25
Salt Spray Test
2024 CLAD

No bondline corrosion:
CAA / Phenolic (Fokker)
CAA / Al 2024 BARE
(Glare® configuration)

Pickling
poor
good

Corroded Area [%]

CAA +
old epoxy

CAA + BR127 +
new epoxy

Exposure in salt spray [d]
Additional measures to prevent bondline corrosion

- CAA also on edges
- wet installation of rivets
- bonding primer on anodised edges
- adhesive squeeze out
- reseted doublers

Bonding banned from bilge area
In-service findings of a/c after 156

Inspection of bondline for lead fleet investigation only
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