A350 XWB Programme Update

Toulouse, June 5th

Presented by
Didier EVRARD
EVP - Head of A350 XWB Programme
A350 XWB Programme

- From FAL Start to First flight
- Readiness for Flight Tests
- Ramp-up and maturity
- -1000 update
Where we left off from last Innovation Days...

First assembled fuselage (ES) transfer to Station 40
Route to A350 XWB First Flight

Q3-12
- Nose Fuselage Power-ON
- MSN1 Fuselage junction
- EW wing testing in preparation

Q4-12
- MSN001 Wing / Fuselage junction
- Full A/C Power-ON
- Ground tests start

Q1-13
- Start of Virtual 1st Flight Campaign
- MSN001 Preparation for 1st Flight
- ES and EW test start

Q2-13
- Load Calibration on MSN1
- Ground Vibration Test on MSN1
- Electro-Magnetic Hazard test MSN3
Final Ground Tests on MSN001 / MSN003

- Fuel, Cabin pressurization and Radio Communication – **DONE ✓**
- Flight Loads calibration of wing and tails – **DONE ✓**
- Powerplant and APU Installation in Station 22 – **DONE ✓**
- Ground Vibration Test – **DONE ✓**
- Final systems upgrades and tests – **DONE ✓**
- Final checks and preparations – **ONGOING**

**Ground Tests on MSN001 done and A/C handed over to Flight Test May 31st**
Trent XWB engines first run June 2nd
A350 XWB Programme

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Structure Testing Pyramid for maturity at Entry Into Service

Design

Component demonstrators

2011 ✓

Sub-assembly demonstrators

2012 ✓

Full-scale airframe testing Preparation

2013

Flight test

Major Full Scale Tests under progress to complete Structure Test Pyramid
Virtual Full Scale Test to simulate before tests

Detailed non-linear model at full airframe level
Main structural Static tests on going

Full Airframe except dummy HTP, LGS, tail cone, Pylon & movables

LH wing box with dummies CWB, MLG, pylon and movables

Static Test for First Flight Clearance and Type Certification
EW Wing in Erding

1g Wing Bend Test for Flight Control Surfaces successfully completed end of March and 1.25 Limit Load beginning of May
Static Testing Aircraft in testing facilities

Real time monitoring

ES Static Test Airframe started end
March 2013

Airbus Innovation Days 2013
June 2013
Static Testing Aircraft

New concept of composite wing loading.

Lower Fuselage Loading

Fuselage Loading on Floor

Fuselage Pressure
Systems Testing Pyramid for maturity at Entry Into Service

- **Design**
  - Component demonstrators

- **2010 ✓**
  - Integration Bench Testing

- **2011 - 2012 ✓**
  - Function Integration Benches
  - A/C 0 (Iron Bird + Simu)
  - Flying Test Bed

- **2013**
  - Flight test

Final Integration Tests are aircraft level with First Flight Standards on going
System Testing on Aircraft 0

- Flight Control & Hydraulic Integration testing ongoing since May 2011
- Virtual First Flight tests started on 31\textsuperscript{st} Jan as per plan with FF System Standards
- Approx 700 virtual flight sessions performed

**Operational and Multi Systems tests sessions enabling to optimize tests efficiency and lead time**
First Flight Clearance and Operability Tests underway to prove Maturity
Trent XWB on test

12 engines, approx 4200 hours and 7400 Cycles completed in Engine Development Plan
Trent XWB Flying Test Bed for Maturity

- FTB1 Performance, Integration and Operability – Feb/Jul12
- FTB2 Hot Weather Campaign and Cold Days – Aug 12/Feb13
- FTB3 Icing and Drainage - Apr/Jun13

FTB3 Objectives:
- CS-25 Natural Icing
- Air Inlet Distortion
- Drainage
- Performance

Powerplant and Systems already tested on FTB with more test hours than ever achieved before and in hot and cold environment
Trent XWB Flying Test Bed

- Flight hours = 256 FH
- Run hours = 351 h
- 74 Flights performed

FTB3 Campaign started in May 2013
- Engine change on going
- Performance
- Air Inlet distortion
- Relight Optimization
- CS-25 Natural icing

Status end May '13
Fan Blade Out Test successfully passed
A350 XWB Programme

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FAL journey for Flight test aircraft

On track for EIS in second half 2014
Cabin Virtual First Flight

Integration Bench for Air Systems, Cabin & Cargo Systems

Cabin 0 and V&V Platform on track for Cabin Virtual First Flight
Transition from development to serial production

- **Design quality**
- **Supply Chain performance**
- **Aircraft maturity**
- **Customization**
- **Customer readiness**

**FAL START Ramp-up gates**

**Monthly Production Rate**

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June 2013

Airbus Innovation Days 2013
Intense Customization activities

4 Customization Definition Freeze declared since 2011

Pragmatic Customization deployment with more than 10 Customers in 2013
Catalogue enrichment 2011 – 2013

Where we started

- THALES TopSeries AVANT
- Panasonic eX3
- Sogerma
- Recaro
- Pinnacle
- CL3620
- Solstys
- 5751

2012

- Equinox
- Journey
- Arcus
- Cirrus
- Flex floor path marking
- Nespresso maker
- Bars
- Celeste*

2013

- Z300
- Panasonic eXlite
- THALES TopSeries AVANT lite
- Driessen
- Hybrite NELIs
- PYC 5810

Still expanding!

- Constant catalogue enrichment demonstrated
- High level of customer adherence to the catalogue

(*) Innovation proposal being processed
Configurator tool in pilot phase with early customers
Preparation to EIS

- Airline 1: Flight test conditions to mirror Airlines operations

  Flight Line

  Full refurbishment of flight line building to accommodate airline like operations

  Hangar for Working Parties and daily maintenance

  New hangar construction ongoing

- EIS preparation activities with launch Customer (Qatar Airways) on main areas (Training, Technical Data, material and logistics,...)
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A350-1000 outlook

- Design and technology insertion freeze
- Structure sizing in progress

Concept freeze
Design freeze
Final assembly start
First flight
EIS


New A350-1000 endorsed by the market
A350-1000 is a stretch of the -900

A350-1000 development from A350-900 is low risk
A350-1000 – Trent XWB-97 Powerplant

First engine run in one year
Wrap-up

- MSN1 close to its first flight
- Cabin flight test preparation started
- Route to EIS in H2 2014 is confirmed
- Maturity at EIS and production ramp-up are the next challenges
- 1000 development is low risk and on track

Still a lot of challenges ahead despite very good progress in the last year