More Electric Aircraft Forum
(MOET Project Consortium)
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MOET Project: Background & Objectives

Thomas JOMIER - AIRBUS
MOET Project Coordinator
Background

FIFTH FRAMEWORK PROGRAMME


Airplane power optimisation studies

SIXTH FRAMEWORK PROGRAMME

MOET Project (2006 – 2009)

Development of more-electric-aircraft concept
MOET Consortium

Not only Work Package Leaders...

... the Consortium includes **62 Partners**
Objectives

Developing the “More Electric Aircraft” concept

**TOP-LEVEL OBJECTIVES:**

*Objective 1:* Define and validate new electrical networks up to 1MW

*Objective 2:* Resolve and validate transformation of users into all electrical solutions

*Objective 3:* Develop and validate power electronics enabler technology

*Objective 4:* Integration into aircraft

*Objective 5:* Develop a coherent design environment to support More Electric Aircraft design and validation

**EXPECTED RESULTS**

1 - Fuel burn: 2% less,
2 - Maintenance: 15$/FH cheaper,
3 - Unexpected delays for systems: 50% less for power systems
4 - Power electronics weight reduction: 50% less
5 - System improvement: enhanced competitiveness, manufacturing improvement, technology validation & standard proposals
System Architecture Working Group: Airbus aircraft

- Comparison

 Target Airplane
 More-electric bleedless airplane

 Reference Airplane
 Conventional bleed airplane derived from A320

- Allowed benefit assessment:
  - Weight
  - Drag
  - Engine SFC
  - Fuel Burn

- Released recommendations for future programmes
System Architecture Working Group: Smaller aircraft

Baseline platforms:
- last key-technologies and certification rules of recent programs

Reference Airplanes
- EUROCOPTER Super Puma
- ALENIA ATR 72-500
- DASSAULT F2000 EX-EASy

MOET airplanes
- MOET Helicopter
- MOET Regional a/c
- MOET F2000 EX-EASy
Modelling Working Group

- High Voltage DC network stability methods (Universities)
- MODELICA-based electrical system optimization tool (DLR)
- SABER Electrical simulation platform (Aeroconseil)
Power Electronics Working Group

Low power converter

Medium power converter

High power converter

High power converter

Shared and harmonised best practices
Released design & validation guidelines
Integration Test Rigs

- 2 Lab Test Rigs operational: Airbus-Toulouse, Alenia-Naples
- Running tests with equipment from several MOET Partners
Conclusion

- A lot of R&T achievements can already be capitalized but the objectives are not fully achieved.

- The All-Electrical aircraft is rather a long term trend to address the ACARE 2020 challenges. Intermediate more electrical solutions are feasible,

- Further improvement of technology performance is still on the critical path towards full achievement of the objectives (weight, thermal efficiency of components, power density of power electronic, …).

- New architectures have to be investigated instead of replacing existing functions by electrical one’s

- The All-Electrical aircraft is at mid term sight but time is critical and significant R&T effort is still required to secure its success in the given ACARE timeline.
Over 1000 MW flying Airbus worldwide at any time of the day!

- 15 models
- > 9,500 aircraft sold
- > 400 customers
- > 5,800 delivered

(as of end July 2009)
Thank you for your attention!

http://www.moetproject.eu