

Alfa-Bird

Alternative Fuels and Biofuels for Aircraft Development

FP7/NMP – Nanosciences, Nanotechnologies, Materials and new Production Technologies:
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Coordinator: EU-VRI - The European Virtual Institute for Integrated Risk Management (EEIG), O.Salvi
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Start date: July 2008; End date: May 2012; Duration: 48 months
Budget: ~ 9,743,498,00million €; EC contribution: 6,822,685 million Euro

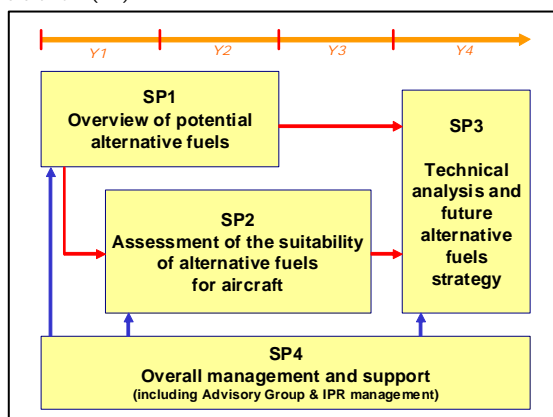
PARTNERS:

Main Beneficiaries (Partners): 23

- 1 European Virtual Institute for Integrated Risk Management, **EU-VRI**, Germany
- 2 Airbus France , **Airbus F**, France
- 3 Airbus SAS, **Airbus CE**, France
- 4 Airbus UK, **AUK**, United Kingdom
- 5 Avio S.p.A, **AVIO**, Italy
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- 14 MTU Aero Engines GmbH, **MTU**, Germany
- 15 Office National d' Etudes et de Recherche Aeronautiques, **ONERA**, France
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- 19 Snecma SA, **SNECMA**, France
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Advisory Board:

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The project – basic idea and objectives

ALFA-BIRD aims at developing the use of alternative fuels in aeronautics. In a context where the price of oil is increasing and with impact of fossil fuels on climate change, the sustainable growth of the civil aviation is conditioned by the respect of the environment. In this context, using biofuels and alternative fuels in aeronautics is a great challenge, since the operational constraints (e.g. flight in very cold conditions) are very strict, and due to the long lifetime of current civil aircraft (almost 50 years).

The main objective of ALFA-BIRD is to develop the use of alternative fuels in aeronautics with a long-term perspective, to help improving each country's energy independence, help lessening global-warming effects, and to help softening the economic uncertainty of crude oil peaking. ALFA-BIRD will investigate new approaches and new alternative fuels to power aircrafts with the possibility to revisit the fuel specifications and reconsider the whole aircraft system composed by the triplet: fuel, engine and ambience.

In operational terms, ALFA-BIRD addresses the following objectives :

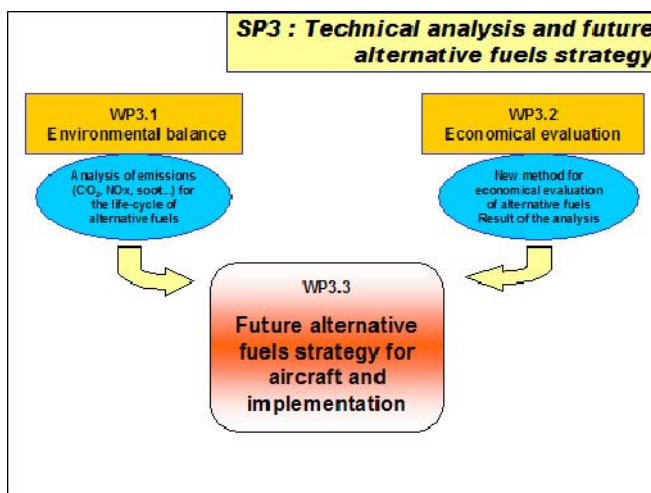
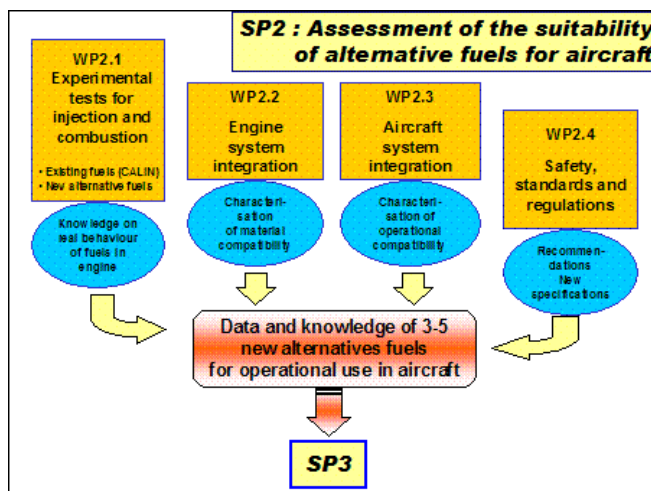
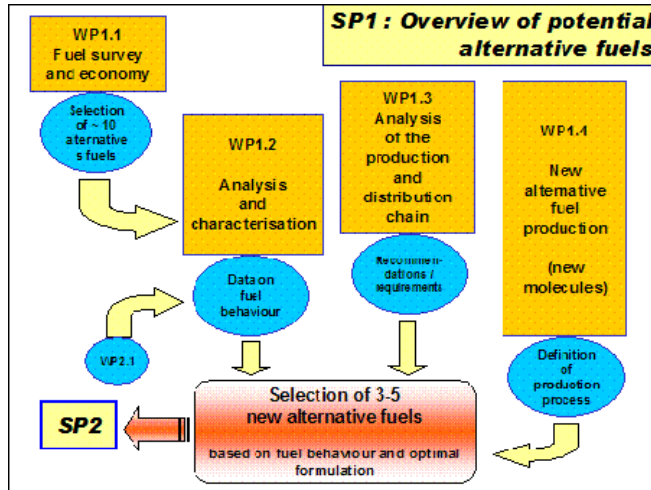
- To identify and evaluate possible alternative fuels to kerosene, considering the whole aircraft system ;
- To assess the adequacy of a selection of up to 5 alternative fuels with aircraft requirements, based on series of tests and experiments ;
- To evaluate the environmental and economical performance of selected alternative fuels
- To set the path towards industrial use of the "best" alternative fuels.

Project structure and main planned achievements

The main innovations that ALFA-BIRD will provide consist in :

1) New alternative fuels for aircraft

a) *Short term* : Blend with kerosene and bio-fuel (treated plant oil) ; in this context the knowledge and the experience of Sasol gained through the qualification of synthetic fuel adds value to the project (WP1.2 and SP2)



b) Long term :

- New molecules: fatty acids produced by fermentation processes will enlarge availability of candidates to be used as fuel for aircraft (WP1.4).
- Definition of best formulation thanks to the knowledge gained during the experimental study of alternative fuels characteristics and properties (WP1.3 & WP2.1)

2) **Redefine the requirements of Jet fuels** to optimize the supply chain (including production), the use and the operability of alternative fuels (WP1.3 and SP2)

3) **Long term strategy and implementation plan** for the use of alternative fuels for aircraft

4) **New methodology and corresponding tools for eco-efficiency assessment** taking into account the whole life-cycle analysis.

Subproject 1 OVERVIEW OF POTENTIAL ALTERNATIVE FUELS: The main purpose of this sub-project is to provide a complete analysis of the development of a new alternative fuel industry. All the aspects related to technology, costs and availability should be evaluated. As the purpose is related to climate change, biofuels will be the main target of the evaluation.

Subproject 2 ASSESS SUITABILITY OF ALTERNATIVE FUELS TO THE AIRCRAFT REQUIREMENTS: The main purpose of this sub-project is to assess the suitability of a given alternative fuel with respect to aircraft requirements. The reduction of the overall impact on the environment is also of primary importance. The fuel candidates will have been identified within SP1 and their ability to power aircrafts will be investigated in the present sub-project.

Subproject 3 TECHNICAL SYNTHESIS TO SET NEW STANDARD REQUIREMENTS FOR THESE ALTERNATIVE COMPONENTS: The main purpose of this sub-project is to provide a synthesis on the alternative fuels that will have been developed within SP 1 and SP 2 for aircraft applications. Additionally, an economic evaluation will provide some insight into the related costs, and expected availability. Also a technical synthesis will be performed, in order to set new standard requirements for these alternative components

Contact



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