

Alfa-Bird

Alternative Fuels and Biofuels for Aircraft Development

Coordinator: EU-VRI - The European Virtual Institute for Integrated Risk Management (EEIG)

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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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- 22 Graz University of Technology, **TU Graz**, Austria
- 23 University of Toronto, **TORONTO**, Canada

Partners participating through Main Beneficiaries: 5

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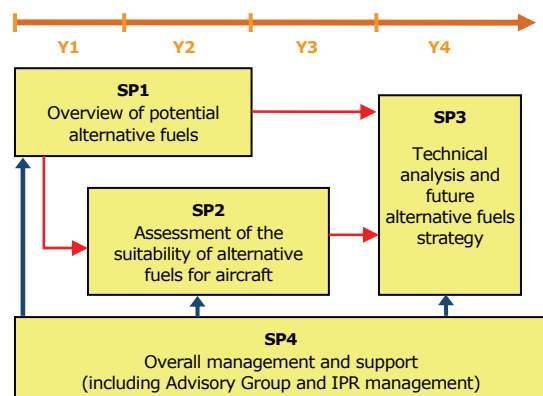
The project – basic idea and objectives

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).

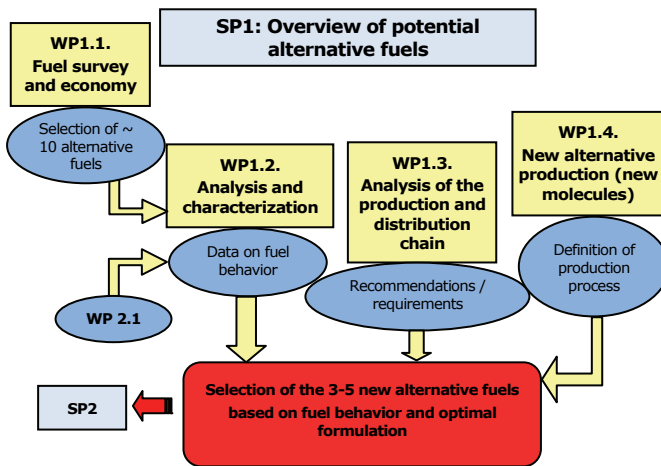
The main objective of ALFA-BIRD is to develop the use of alternative fuels in aeronautics with a long-term perspective, to help improving each country's energy independence, help lessening global-warming effects, and to help softening the economic uncertainty of crude oil peaking. ALFA-BIRD will investigate 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 petroleum 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



SP1: Overview of potential alternative fuels

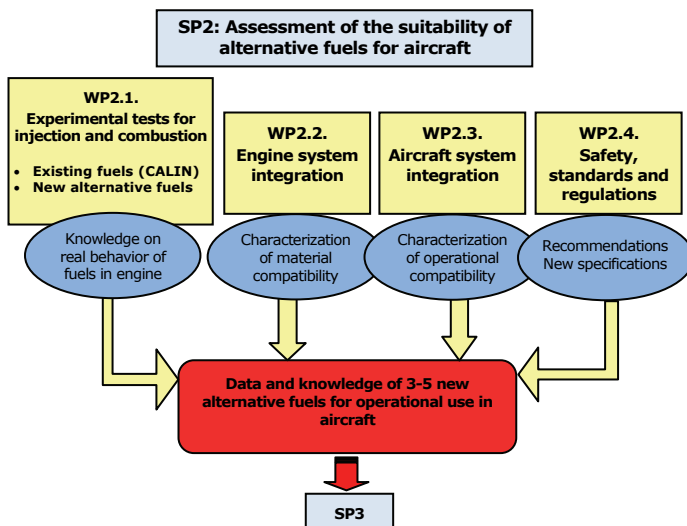
To provide a complete analysis of the development of new alternative fuels & biofuels for the aircraft industry.

SP2: Suitability of alternative fuels to the aircraft requirements

To assess the suitability of a 3-5 alternative fuels with respect to aircraft requirements.

SP3: Technical analysis and future alternative fuels strategy

To provide a strategy and implementation plan for alternative fuels in the aircraft industry, based on the results of SP1 and SP2, as well as an environmental and economical assessment.



Main innovations

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).

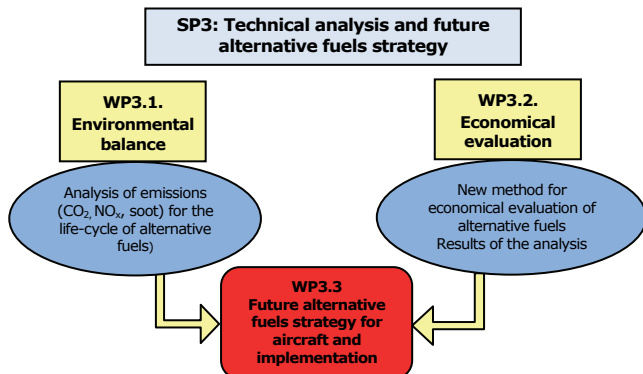
b) *Long term*:

- 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 and 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.



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