Advanced Hybrid Engines for Aircraft Development

Fact Sheet

Project information

**AHEAD**

Grant agreement ID: 284636

Status

Closed project

Start date 1 October 2011

End date 31 December 2014

Funded under:

**FP7-TRANSPORT**

Overall budget:

€ 2 990 508

EU contribution

€ 2 153 668

Coordinated by:

TECHNISCHE UNIVERSITEIT DELFT

Netherlands

Objective

"Future demands on the air transport systems dictate that aircraft should be less polluting, less noisy and more fuel efficient. Also, in the long term alternative fuels like biofuels and hydrogen will replace the traditional jet fuel. The ACARE in Europe has identified that CO2 emission and perceived noise levels should be reduced by half and NOx emission be reduced by 80% by 2020. However recent ACARE studies indicate that these targets cannot be achieved using current incremental technological improvements. As the new ACARE environmental and efficiency targets for 2050 will be even more demanding, there is an urgent need for breakthrough technologies.

The hybrid engine proposed in AHEAD is a novel propulsion system with a different architecture as compared to the conventional turbofan engine. The hybrid engine uses several unique technologies like shrouded contra-rotating fans, bleed cooling, dual hybrid combustion system (using hydrogen and biofuel under flameless conditions to reduce CO2 and NOx emission respectively). The hybrid engine proposed in AHEAD will constitute a leap forward in terms of environmental friendliness, will use advanced multiple fuels and will enable the design of fuel-efficient Blended Wing Body (BWB) aircraft configurations. The efficiency of BWB aircraft will be enhanced significantly due to embedded hybrid engines using the boundary layer ingestion (BLI) method. The project aims to establish the feasibility of proposed hybrid engine configuration and will demonstrate that the concept will substantially lower the engine emissions, installation drag and noise. The BWB configuration along with the proposed hybrid engine concept will bring
in the much required breakthrough in civil aviation. The project will also evaluate the effect of LH2 storage on BWB aircraft and its integration with embedded hybrid engines and the environmental gains achieved. Special attention will directed to evaluate the effect of H2O emission on the environment."

Field of Science

/engineering and technology/environmental engineering/energy and fuels/biofuels

/engineering and technology/mechanical engineering/vehicle engineering/aerospace engineering/aircraft

/engineering and technology/environmental engineering/energy and fuels

Programme(s)

FP7-TRANSPORT - Specific Programme "Cooperation": Transport (including Aeronautics)

Topic(s)

AAT.2011.6.1-2. - Propulsion

Call for proposal

FP7-AAT-2011-RTD-1

See other projects for this call

Funding Scheme

CP-FP - Small or medium-scale focused research project

Coordinator

TECHNISCHE UNIVERSITEIT DELFT

Address
Stevinweg 1
2628 Cn Delft
Netherlands

Activity type
Higher or Secondary Education Establishments

EU Contribution
€ 684 798

Website
Contact the organisation

Administrative Contact
Dunja Swierstra (Ms.)

Participants (5)
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<th>Address</th>
<th>Activity type</th>
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