Objective

The ACHEON project explores a novel propulsive system for aircrafts which overcome the main limitations of traditional systems introducing an effective and affordable vectored jet aerial propulsion with no part in movement. The project aims to overcome well known limits related to commonly known jet deflection system. The ACHEON system is based on the cumulated effects of three physical effects:

1. High speed jet mixing effects;
2. Coanda effect of adhesion of an high speed jet to a convex surface;
3. Coanda effect control by Electrostatic fields.

The strengths of the ACHEON concept are:
- Affordability: the deflection of the jet is realized without any moving part.
- Simple controls: the angle formed by the jet and the nozzle axis can be regulated by varying the velocity of two incoming jets;
- Precision: the Plasma Dischargers ensures an optimal control of jet attachment to the Coanda surfaces.
Possibility to be alimented by streams of any nature.

The ACHEON thrust vectoring propulsive concept can produce a wide possibility of future and innovative air-crafts concepts with enhanced capabilities which could shorten take off and landing spaces, enhance manoeuvrability, explore new concepts such as diffused propulsion systems or more radical solutions for future aeronautic transport.

The ACHEON Project aims to study the system and its components in a full structured systemic approach

1. to define:
- the system and its control methodology identifying it possible intrinsic limits and defining exactly fields of applications;
- control equations of the system as a function of both geometric and physical parameters;
- system design methods which could help to obtain better results on different sizes and architectures;

2. to explore the feasibility of:
- applications to traditional aerial vehicles architectures;
- applications to innovative aerial vehicle designs such as distributed propulsion;
- innovative aircraft optimized for thrust vectoring.

Field of science

/social sciences/social and economic geography/transport
/engineering and technology/mechanical engineering/vehicle engineering/aerospace engineering/aircraft

Programme(s)

Topic(s)

Call for proposal

FP7-AAT-2012-RTD-L0

Funding Scheme

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

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Last update: 12 December 2016
Record number: 103805

Permalink: https://cordis.europa.eu/project/id/309041/

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