

PROJECT

CA3TCH

Comprehensive Aerodynamic-Aeroacoustic Analysis of a Trimmed Compound Helicopter

Funding: European (Horizon 2020)

Duration: Dec 2015 - Nov 2019

Status: Complete

Total project cost: €799,000

EU contribution: €799,000



Call for proposal: H2020-CS2-CFP01-2014-01

[CORDIS RCN : 199448](#)

Background & policy context:

CA³TCH considers the full external aerodynamic behaviour of a compound rotorcraft to be developed. Aerodynamics - and aeroacoustics as well - have to be investigated by full-featured simulations including coupling to structural simulation and flight mechanics. This “Digital Wind Tunnel” approach examines the performance of the projected aircraft long before first hardware exists. This allows to differentiate various alternatives as well as to drive the design process according to the detailed analysis of the flow field.

Objectives:

The primary goal of the project is to establish the simulation technology required to support productively the aerodynamic design and development of LifeRCraft, from rough estimates to detailed design and analysis at different flight states, until the point of first flight. Additionally, beyond the specific economic application to this compound configuration, the project will significantly improve the ability of helicopter simulations to answer particular questions in the development process, regarding aerodynamic or aero acoustic optimisation, flight mechanics properties and even handling qualities to a certain extent. Publication and dissemination efforts will spread this enhanced capability to related areas, from fixed wings to wind turbines, just to name a few.

CA³TCH starts with some necessary tool enhancements and continues with the application to increasingly complex, detailed and refined configuration models. Afterwards, not only large-scale simulations will be run, rather a very large part of the project’s added value consists of the rigorous analysis and interpretation of the results obtained.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Universitaet Paderborn

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33098 Paderborn
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Organisation Website:

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EU Contribution: €799,000

Technologies:

Aircraft operations and safety
Aircraft simulator technology

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport

Geo-spatial type: Other