PROJECT

PROPTER

Support to aerodynamic analysis and design of propellers of a compound helicopter

Funding: European (Horizon 2020)

Duration: Dec 2015 - Mar 2019

Status: Complete

Total project cost: €409,253

EU contribution: €409,253

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

CORDIS RCN : 199578

Objectives:

PROPTER addresses the analysis and design of propellers operating in the complex flow field around a compound helicopter where a strong interaction with airframe and lifting rotor occurs. The objectives are well-thought out to ensure (i) sound understanding of the physics of the interactional flow, (ii) appropriate advancement and deployment of high-fidelity CFD methods for obtaining high confidence results, and (iii) smooth integration of the generated knowledge into the industrial environment. These objectives are referenced throughout the proposal giving a coherent chain from concept to implementation formulated to achieve the main project goal: propeller design optimized for implementation in a compound helicopter.

PROPTER encompasses an analysis and design process with a wide range of physical complexity and method fidelity, from a rather simple configuration (isolated propeller) but challenging task (propeller design for multiple flight cases), to a complex configuration (propeller-rotor-airframe) involving a complex unsteady interactional flow. It deploys the best of two worlds of CFD software: (i) ENFLOW, a research code developed at NLR in various European and national research programmes, and (ii) ANSYS-FLUENT, a commercial code used at the topic leader. A code-to-code comparison, both for analysis results and design results, will give a sound understanding of the modelling and best practices applied. This forms the basis to achieve high confidence for the numerical results and their integration in the industrial environment.

PROPTER consortium, National Aerospace Laboratory (NLR) and Delft University of Technology (TUD), provides complementary expertise, skill and infrastructure vital to the project's success. To be executed in good coordination with the topic leader, PROPTER is essential to the success of the LifeRCraft project in opening up new mobility roles that neither conventional helicopters nor fixed wing aircraft can currently cover.

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:

Stichting Centrum Voor De Ontwikkeling Van Transport En Logistiek In Europa

Address:
Van Nelleweg 1
3044 BC Rotterdam
Netherlands

Organisation Website:
http://www.cetle.org

EU Contribution: €245,395

Partner Organisations:

Technische Universiteit Delft

Address:

.
2600 GA Delft
Netherlands

EU Contribution: €163,858

Technologies:

Computer-aided design and engineering
CFD tools for rotary wing aircraft

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport

Transport policies: Other specified

Geo-spatial type: Other