

PROJECT

SABRE

Shape Adaptive Blades for Rotorcraft Efficiency

Funding: European (Horizon 2020)

Duration: Jun 2017 - May 2021

Status: Complete

Total project cost: €6,033,399

EU contribution: €6,033,399



Call for proposal: H2020-MG-2016-Two-Stages

[CORDIS RCN : 209720](#)

Objectives:

Shape Adaptive Blades for Rotorcraft Efficiency (SABRE) will develop ground-breaking new helicopter blade morphing technologies which will reduce helicopter fuel burn, CO₂ and NO_x emissions by 5-10%, while also reducing noise emissions. SABRE will help Europe achieve its ambitious aviation emissions goals whilst also sharpening its competitive edge in the rapidly growing international helicopter market.

It will achieve this ambitious objective by removing one of the most fundamental limitations on helicopter performance: the need for rotor blades to have a single fixed geometry which is inherently a compromise between widely different operating conditions. SABRE envisions shape adaptive blades which can continuously change their shape to optimise performance in all conditions. SABRE has a tightly cross-linked, dual stream research approach with emissions-focused rotor performance analysis running concurrently with morphing technology development. The analysis stream will combine comprehensive rotor analysis, high-fidelity aerodynamic and structural solvers, detailed morphing mechanism models, and emissions models, creating the most detailed, transdisciplinary, and comprehensive model of its type. The technology development stream will mature a selected group of novel, beyond state-of-the-art, helicopter focused morphing concepts through a carefully considered program of modelling, design and experimental testing efforts. The achievable performance of the morphing concepts will be fed back into the emissions analysis, and the analysis stream will guide the development of the technologies towards configurations which minimize emissions.

SABRE is highly ambitious in both its objectives and its approach. The project has strong industry support, and brings together the ideal consortium to achieve its objectives; with world-leading experts in rotorcraft and morphing structures backed up by a clear project plan, robust management procedures, and excellent facilities.

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:

University Of Bristol

Address:

BEACON HOUSE QUEENS ROAD
BRISTOL
BS8 1QU
United Kingdom

Organisation Website:

<http://www.bristol.ac.uk>

EU Contribution: €1,233,541

Partner Organisations:

Swansea University

Address:

Singleton Park
Swansea
SA2 8PP
United Kingdom

EU Contribution: €779,184

Technische Universitaet Muenchen

Address:

Arcisstrasse 21
80333 MUENCHEN
Germany

Organisation Website:

<http://www.tu-muenchen.de>

EU Contribution: €1,098,618

Deutsches Zentrum Fr Luft Und Raumfahrt E.v

Address:

Linder Hoehe
51147 KOELN
Germany

Organisation Website:

<http://www.dlr.de>

EU Contribution: €1,127,555

Centro Italiano Ricerche Aerospaziali Scpa

Address:

Via Maiorise s/n
81043 CAPUA (CE)
Italy

Organisation Website:

<http://www.cira.it>

EU Contribution: €1,100,000

Technische Universiteit Delft

Address:

.
2600 GA Delft
Netherlands

EU Contribution: €694,501

Technologies:

Aircraft design and manufacturing
Morphing wing

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport

Geo-spatial type: Other