

PROJECT

## ACHIEVE

### Advanced mechatronics devices for a novel turboprop Electric starter-generator and health monitoring system

**Funding:** European (Horizon 2020)

**Duration:** Jan 2017 - Jul 2021

**Status:** Complete

**Total project cost:** €900,591

**EU contribution:** €900,591



**Call for proposal:** H2020-CS2-CFP03-2016-01

[CORDIS RCN : 207250](#)

#### Objectives:

The ACHIEVE Consortium will bring together their world-leading expertise in the design and manufacturing of electrical machines for aircraft Advanced Generation Systems (AGS), integrated Power Electronics (PE), advanced control systems and intelligent thermal management, to develop an innovative advanced mechatronic device for electrical power management system of Turboprop.

The ACHIEVE Consortium will combine their world-leading expertise in the technical areas of PE, AGS and their control, as well as in modelling and simulation for aerospace applications. The aim of ACHIEVE is to develop an innovative mechatronic system with functions of generating, multi-functional, more efficient, reliable, compact and lighter and hence contributing towards higher performance and more efficient and greener turboprops

The topic of advanced mechatronics devices is to support the CS2 Engine ITD WP3 “Business aviation / Short range regional Turboprop Demonstrator” programme led by Turbomeca. The WP3 aims to acquisition of technologies for a high performance turboprop engine in the 1800-2000 shp class for business aviation and short range regional applications. This project will deliver a novel advanced mechatronics device which will be integrated to the developed engine. The developed mechatronic device is essentially an electrical starter/generator system with functions including motoring, generating, power transmission, health monitoring and communication.

The concept of ACHIEVE is to design, manufacture and test an innovative and integrated mechatronic device which is capable of performing motoring, generating, power transmission, health monitoring and signal communications. The mechatronic device is essentially made of an electrical machine, an electronic power converter and associate controllers. Moving from the state-of-the-art brushed 28Vdc generator, the system developed within the ACHIEVE will be brushless with higher power density, lower weight and higher TBMO.

#### 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:

**The University Of Nottingham**

**Address:**

University Park  
Nottingham  
NG7 2RD

United Kingdom

**EU Contribution:** €469,351

### Partner Organisations:

#### **Nema Limited**

**Address:**

15 A CHICHESTER BUSINESS CENTRE CHICHESTER STREET  
Rochdale  
OL16 2AU  
United Kingdom

**EU Contribution:** €288,990

#### **Power System Technology**

**Address:**

ZONE ARTISANALE LA PAILLERIE  
61340 BERD'HUIS  
France

**EU Contribution:** €142,250

### Technologies:

Aircraft propulsion  
Electrical power management of turboprop  
engine

**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