

PROJECT

## ACONIT

### Actuators for Surge Control in Gas Turbine

**Funding:** European (Horizon 2020)

**Duration:** Mar 2020 - Aug 2023

**Status:** Ongoing

**Total project cost:** €1,599,628

**EU contribution:** €1,599,628



**Call for proposal:** H2020-CS2-CFP10-2019-01

[CORDIS RCN : 227381](#)

#### Objectives:

The objective of the ACONIT project is to design, manufacture and test actuators for flow control for an implantation in an aircraft engine. The actuators will fulfil aeronautics requirement in order to increase the Technology Readiness Level (TRL) in this domain. In particular, for the present proposal, one plans to focus on the extension of the stable operating range of axial compressor, allowing thus a reduction of the surge margin through postponing the stall onset.

To do so, the first objective of the work is to improve the knowledge of the flow physics of an efficient flow control system by joint numerical and experimental analysis performed in a low speed, single stage axial compressor. The results of this analysis will be used to derive the fluidic specifications for a high TRL actuators and control system. These specifications will be the base for the design and manufacturing of amplified Piezo-electric actuator prototypes whose fluidic performance and operational performance in an environment with vibration and controlled level of temperature will be precisely evaluated before manufacturing final actuators that will be integrated in a full scale engine test facility. Their performance will be evaluated in terms of Surge Margin Improvement as well as in terms of energy balance between the induced consumption and the machine performance improvements.

The consortium grouped for carrying out this project is composed of a SME (CTEC), two academic institutions (Bundeswehr University Munich and ENSAM) and a Research Center (ONERA). It groups skills ranging from internal flow analysis in turbomachineries, to flow control or actuators design, manufacturing and characterisations.

#### 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:

**Ecole Nationale Supérieure D'arts Et Metiers**

**Address:**

BOULEVARD DE L HOPITAL 151  
75013 PARIS  
France

**Organisation Website:**

<http://www.ensam.eu>

**EU Contribution:** €381,500

## Partner Organisations:

### Office National D'etudes Et De Recherches Aeronautiques

**Address:**

CHEMIN DE LA HUNIERE  
91120 PALAISEAU  
France

**Organisation Website:**

<http://www.onera.fr>

**EU Contribution:** €324,003

### Cedrat Technologies Sa

**Address:**

CHEMIN DU VIEUX CHENE 59  
38240 MEYLAN  
France

**Organisation Website:**

<http://www.cedrat-technologies.com>

**EU Contribution:** €408,750

### Universitaet Der Bundeswehr Muenchen

**Address:**

Werner Heisenberg Weg 39  
85577 Neubiberg  
Germany

**Organisation Website:**

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

**EU Contribution:** €485,375

## Technologies:

Aircraft design and manufacturing  
Electro-Mechanical Actuators (EMAs)

**Development phase:** Research/Invention

**STRIA Roadmaps:** Vehicle design and manufacturing

**Transport mode:** Air transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Other specified

**Geo-spatial type:** Other