

PROJECT

## ACUHRA

### Advanced Cavities Using High Resolution Additive

**Funding:** European (Horizon 2020)

**Duration:** Jul 2020 - Dec 2022

**Status:** Ongoing

**Total project cost:** €899,321

**EU contribution:** €899,321



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

[CORDIS RCN : 229411](#)

#### Background & policy context:

Around 15 % of total losses in turbine efficiency can be linked to leakage flows through seals that are installed in the flow paths of the turbine. New manufacturing processes based on additive manufacturing offer a great opportunity to improve both the sealing capability and the control of the swirl factor during re-ingestion of the combusted products. The EU-funded ACUHRA project plans to produce lightweight components for swirl control using additive manufacturing. The ultimate aim is to promote the design of more efficient low-pressure turbines. The project will combine high-fidelity computational fluid dynamics tools and experimental tests to evaluate the design of the new components.

#### Objectives:

The work will focus on the use of additive manufacturing to produce lightweight innovative components to for swirl control to facilitate the design of more efficient low pressure turbines. The Consortium's predominant aim is of delivering key technical advancements to the EU **aerospace** sector that will advance the knowledge and control of flow in LPT seal cavity geometries.

This will be achieved through the use of high fidelity CFD, combined with novel optimisation, additive design and manufacture. A comprehensive experimental verification program will also evaluate experimentally the concept designs and provide a substantiated appraisal of concepts.

#### 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:** €335,958

#### Partner Organisations:

**University Of Bath****Address:**

Claverton Down  
Bath  
BA2 7AY  
United Kingdom

**EU Contribution:** €449,989

**Added Scientific Limited****Address:**

UNIT 4, ISAAC NEWTON CENTRE, NOTTIN  
NOTTINGHAM  
NG7 2RH  
United Kingdom

**EU Contribution:** €113,375

**Technologies:**

Additive manufacturing  
Additive Layer Manufacturing

**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