INDIGO – Integration and DIGital Demonstration of Low Emission Aircraft Technologies and Airport Operations

**Type of award**  PhD Research Studentship

**Department**  Aerospace Engineering  
Fluids and Aerodynamics Research Group

**Scholarship Details**  £18,960 p.a. in 2022/23 subject to eligibility and confirmation of award

**Duration**  3.5 years

**Eligibility**  Home / EU / International

**Start Date**  From June 2023

**PhD Topic Background/Description**

We have **TWO** exciting PhD positions to carry out research on low-emission, next-generation aircraft technologies, as part of the EU-funded INDIGO project (Integration and Digital Demonstration Of Low-emission Aircraft Technologies And Airport Operations).

INDIGO is a H2020 European Research project, in collaboration with a number of universities and research institute across Europe. The main objective of INDIGO is to (i) to use multi-fidelity experimental and numerical tools to develop and assess technologies targeted for low-emission (noise and exhaust) aircraft; (ii) to establish a framework for evaluating the technologies with robust uncertainty quantification process. The project will specifically address read-world applications of technologies which can be readily assimilated by the aircraft and airport operations. The students will have access to our state-of-the-art aeroacoustic wind tunnel and high-performance computing facilities. The students will have the opportunity to work closely with research and industrial partners, attend workshops, consortium meetings, and present the results at relevant international conferences.

The PhDs will focus on experimental and numerical (digital-twin) studies of the low-emission, low-noise aircraft configurations with distributed propulsion systems:

1. **PhD1** will examine the aerodynamic performance and acoustic signature of the single and distributed electric propulsion (DEP) by performing a series of experiments. The experiments will make use of the aeroacoustic wind tunnel (part of UK National Wind Tunnel Facility), and advanced measurement techniques developed in-house to obtain a comprehensive knowledge of the DEP and furthermore, to explore potentially promising techniques for propulsion noise mitigation, applicable to next-generation aircrafts.

2. **PhD2** will employ a mixed-fidelity numerical tools to evaluate the single and distributed electric propulsion (DEP). The simulations will closely couple with the experiments and elucidate further the aerodynamic and aeroacoustic characteristics of these low-noise, low-emission aircraft configurations.
configurations. Furthermore, multi-fidelity numerical models will be explored using advanced
data-driven methods.

The PhDs will be supervised by teams from the University of Bristol and supported by experts from
the consortium.

**Candidate Requirements**

Applicants must hold/achieve a minimum of a Master’s degree (or international equivalent) in a
mathematics or engineering discipline. Applicants without a Master’s qualification may be
considered on an exceptional basis, provided they hold a first-class undergraduate degree. Please
note, acceptance will also depend on evidence of readiness to pursue a research degree.

The successful candidate will have knowledge of aerodynamics, fluid mechanics and programming.

If English is not your first language, you need to meet this profile level:

*Profile E*

Further information about [English language requirements and profile levels](#).

**Scholarship Details**

Funded by Horizon Europe H2020 for 3.5 years with an enhanced stipend rate. Funding is subject
to confirmation of eligibility and award.

For eligibility and residence requirements please check the [UKRI UK Research and Innovation](#) website.

**Enquiries**

For questions about the research topic please contact [Dr Nick Zang](#) or [Dr Beckett Zhou](#).

For questions about eligibility and the application process please contact PGR Engineering Admissions
[admissions-engpgr@bristol.ac.uk](mailto:admissions-engpgr@bristol.ac.uk)

**Application Details**

To apply for this studentship, submit a PhD application using our [online application system][www.bristol.ac.uk/pg-howtoapply]

Please ensure that in the Funding section you tick “I would like to be considered for a funding
award from the [Aerospace Engineering](#) Department” and specify the title of the scholarship in the
“other” box below with the names of the supervisor.

Interested candidates should apply as soon as possible.

Closing date for applications: **5 August 2023**