School of Aeronautical, Automotive, Chemical and Materials Engineering

Loughborough University

Research Associate in Aerodynamic Experimental Database Development

Job Ref: REQ250708

Please note that, as part of the University's ongoing commitment to redeployment, this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Project Description

Job Grade: Specialist and Supporting Grade 6

Introduction

Loughborough University has recently been awarded more than £1M to expand the existing wind tunnel experimental database. This is part of a UKRI/EPSRC award to the National Wind Tunnel Facility (NWTF https://www.nwtf.ac.uk). This is a unique opportunity to design, build and test two references models at a number of UK academic wind tunnels.

There has been ongoing development of the experimental database on the NWTF website (https://www.nwtf.ac.uk/experimental-database/) and one of the tasks is to continue this effort of collating and presenting existing experimental data from UK academic wind tunnels.

The more challenging task is to develop two standard reference models that will be taken to six NWTF sites to test reproducibility across the tunnels. This is relatively common for industrial tunnels where companies will rotate a model across many similar facilities and confidentially compare results, but is rare in academic tunnels. We will build and test two reference models related to automotive and aerospace applications. Linked to this reference model testing is the activity to fully document the main low speed tunnels within NWTF. A key issue when undertaking CFD simulations of wind tunnel tests is adequate knowledge of the tunnel and of the upstream flow quality, this information is often missing, poor quality or out of date. At the first visit to the six partner sites, we will undertake an inlet flow quality survey, document recommended wind tunnel corrections and create a standardised definition of the tunnel geometry. These will then be added to the experimental database and linked to the relevant NWTF low speed datasets.

Finally, a world leading experimental database will need to be promoted to researchers and industry across the world to ensure a rapid uptake. This will involve social media, newsletters and blogs and representation at UK workshops and international conferences.

Job Purpose

To develop the experimental database for the EPSRC National Wind Tunnel Facility.

Job Duties

- To develop best practice guidelines for test planning, data collection, data recording and ease of use for CFD community
- To collect, curate and disseminate datasets that have been obtained from NWTF facilities.
- Promotion of the NWTF experimental database nationally and internationally

- Hosting of network meetings to improve dissemination and utilisation of experimental data
- In collaboration with other Universities, design two reference models related to automotive and aerospace applications that could be tested in a variety of wind tunnels.
- Work with technical staff to build and instrument the models.
- Work with other Universities to test the models at up to six NWTF facilities.
- Concurrently with the testing, undertake flow quality surveys at the wind tunnels and CAD definitions of these tunnels.
- To collaborate and work with other staff within the department, at Imperial College London and across the National Wind Tunnel Facility network.
- To write reports, conference and journal papers on the outcomes and make presentations on the work to relevant industrial research groups and at appropriate seminars/workshops/conferences etc.
- To engage in training programmes in the University (e.g. through Staff Development) and elsewhere as required.
- To undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.
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Points To Note
The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions
All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equity, Diversity & Inclusion policy and procedures at all times. Duties must be carried out in accordance with relevant Equity, Diversity & Inclusion legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Belonging and Inclusion, Health & Safety, etc.

There will be a requirement to undertake further training relevant to the role, both in laboratory techniques and specific Health and Safety related areas.

The post holder may be required to work outside of normal office hours if necessitated by the exigencies of the service.

Organisational Responsibility

Reports to: Principal Investigator

Person Specification

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1: Application; 2: Presentation; 3: Interview.

Essential Criteria

Area	Criteria	Stage
Experience	Recent relevant experience in an Academic or Industrial research and development environment.	1,3
	Recent experience of experimental fluid mechanics, such as rig design, undertaking measurements etc.	1,3
Skills and abilities	Ability to work independently and as part of a team.	1,3
	Ability to contribute to project reports and to make technical presentations to industrial and academic research groups.	1,2,3
	Ability to create concepts for aerodynamic models.	1,3
	Extensive knowledge of relevant techniques and methodologies.	1,2,3
	Proven organisational and project management skills and ability to work flexibly and independently.	1,3
	Proven communication skills and ability to interact effectively with other Universities, technical support staff and doctoral researchers.	1,2,3
	High level of IT skills including CAD and other mechanical simulation tools, programming and scripting.	1,3
Training	A willingness and ability to undertake further training, as appropriate and to adopt new procedures as and when required.	1,3
	Demonstrate evidence of continuing professional development relevant to the role.	1,3
Qualifications	PhD or equivalent experience in fluid dynamics.	1,3
Other	Commitment to observing the University's Equality, Diversity & Inclusion policies.	1,3
	Commitment to always observing Health and Safety regulations.	1,3
	An understanding of UKRI Open Access requirements.	1,3

Desirable Criteria

Area	Criteria	Stage
Skills and abilities	Familiarity with automotive and/or aerospace aerodynamics.	1,2,3
	Familiarity with python, Tecplot and web page creation.	1,2,3
Experience	Experience of experimental wind tunnel measurements for automotive and/or aerospace applications.	1,2,3

	Post doctoral research experience in fluid dynamics.	1,3

Conditions of Service

The position is full time and fixed term up to 31 December 2028. Salary will be on a Specialist and Supporting Grade 6, (£35,116 – £45,413 per annum) at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Academic and Related staff, details of which can be found here.

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html

In addition, the University is supportive, wherever possible, of flexible working arrangements.
We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see http://www.lboro.ac.uk/services/hr/athena-swan/