Job Description & Person Specification

Section 1
Role Overview

Job title:	Research Assistant or Research Fellow in Cryogenic Fuel Systems
Vacancy reference:	5432
Faculty /Professional Service Unit:	Faculty of Engineering and Applied Sciences
Theme:	Aerospace and Aviation
Job type:	Full time Fixed Term Contract until 30 September 2028
Hours of work:	37 hours per week, normally worked Monday to Friday. Flexible working will be considered.
Salary details:	**Research Assistant** (if PhD close to completion): Salary level 4 – range £29,950 to £35,019 per annum with potential progression to £40,984 per annum **Research Fellow** (if PhD obtained): Salary level 5 – range £38,655 to £46,492 per annum with potential progression to £53,108 per annum
Line Manager:	Dr Neys Schreiner, Lecturer in Low Emission Propulsion & Cryogenic Engineering
Start date:	As soon as possible

Section 2
About Cranfield University

Cranfield's world-class expertise, large-scale facilities and unrivalled industry partnerships is creating leaders in technology and management globally. Find out more about our unique impact, and our vision, mission and values here.

We aim to create and maintain a culture in which everyone can work and study together and realise their full potential. We are a Disability Confident Employer. We are committed to actively exploring flexible working options for each role and have been ranked in the Top 30 family friendly employers in the UK by the charity Working Families. Find out more about our key commitments to Equality, Diversity and Inclusion and Flexible Working here.

Section 3
About the Faculty of Engineering and Applied Sciences

The Faculty of Engineering and Applied Sciences is a leading provider of postgraduate-level engineering education, research and technology support to individuals and organisations. At the forefront of aerospace, manufacturing and transport systems technology and management for over 70 years, we deliver multidisciplinary solutions to the complex challenges facing industry. Visit our website here to learn more about the Faculty's current research activities, taught programmes and impact.

About the Centre for Aeronautics, Propulsion and Power

The Centre for Aeronautics, Propulsion and Power within the Faculty of Engineering and Applied Sciences at Cranfield University has a strong track record in power plant modelling and performance simulation research, as well as aircraft design, aerodynamics and control. Research activities in the past 50 years on gas turbine applications in power and propulsion cover virtually every aspect of the field, such as steady-state and transient performance simulation, diagnostics, novel cycles, engine control, advanced simulation methods and integration.

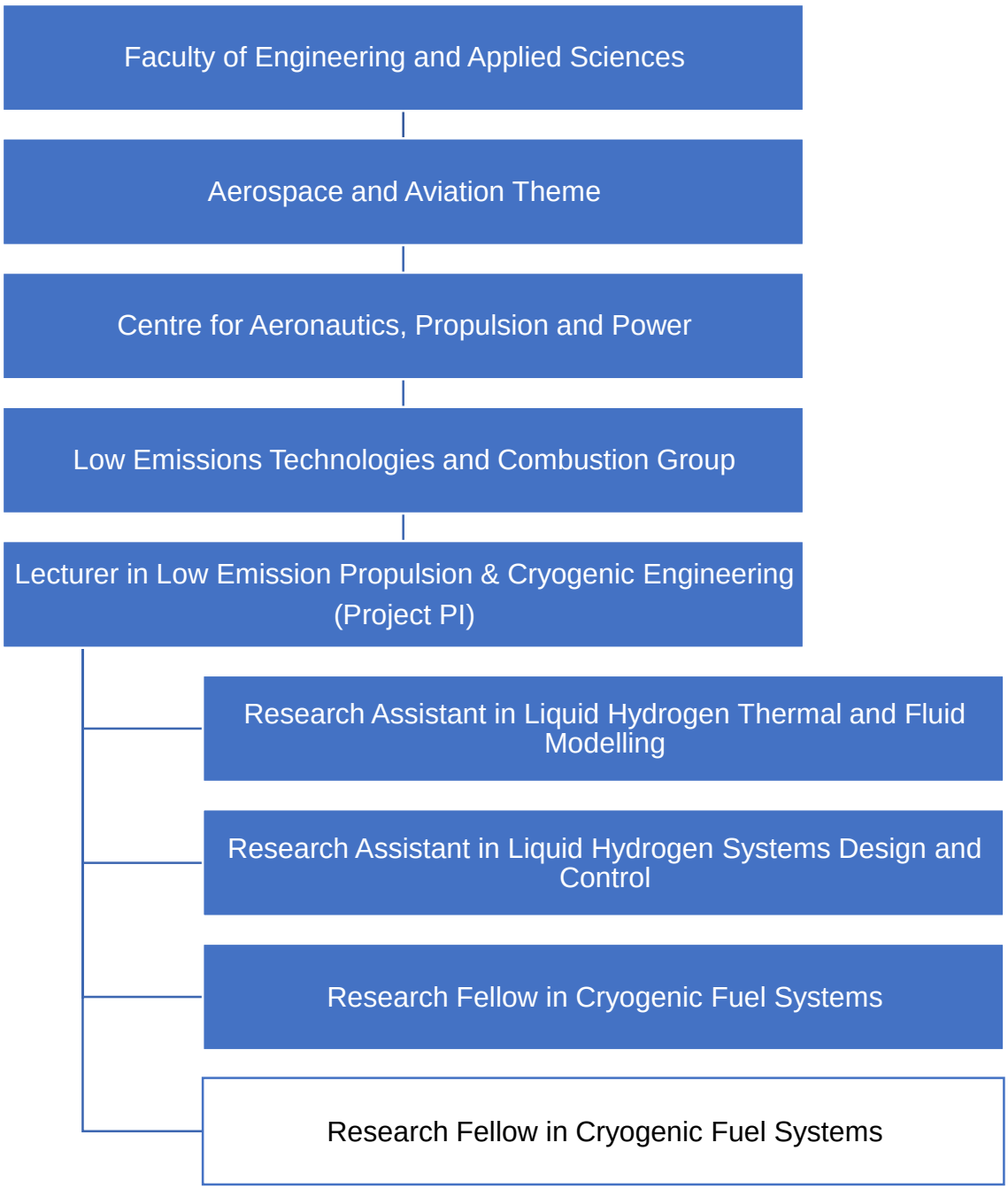
Extensive participation in various EU and UK based projects have strengthened and established the Centre as a key contributor to path-breaking research, while acquiring a peripheral view of the emergence of new technologies in the field. Staff of the Propulsion Engineering Centre also run a large and extremely successful international activity embracing applied research, industrial short courses and leading MSc and PhD programmed. The Centre is also host to the Rolls-Royce University Technology Centre for Aero Systems Design, Integration and Performance, testimony of the Centre's global visibility and extensive links with industry.

In the Centre, there are over 200 MSc candidates, more than 70 doctoral researchers, and over 100 academic and research staff. This provides a scale of activity to ensure longer-term commitment to key areas of research. The Centre's in-house performance simulation tools, developed over decades, and optimisation methodologies for the whole operating envelope, life and environmental impact have formed the basis of much of the research. During the last decade or more, there has been a considerable focus on novel airframes and novel propulsion and power systems, often in the context of climate change.

The work that will be undertaken by the successful candidate is related to research conducted by the Low Emission Technologies and Combustion Group within the Centre for Aeronautics,

Propulsion and Power. The Group is placed between academia and industry, and carries out research with strong scientific and industrial relevance. The core competence of the Group is a large experimental activity on combustion and cryogenic fuels, supported by key industrial partners. Find out more about the work of the Low Emissions Technologies and Combustion Group here.

Organisational Chart



Section 4
Job Details

Job Purpose

You will have a specific set of responsibilities within a designated research project. There will be a combination of research and teaching, with appropriate organisation and management in support of these activities.

Key Deliverables

Note: The specific requirements of the role will be differentiated depending on whether the PhD is close to completion (Research Assistant) or has been obtained (Research Fellow). Note that Research Fellows will be expected to undertake tasks for both levels. Bracketed sections in the table below indicate that these elements apply to Research Fellows only.

	Description of Deliverables	% of time
1	**Research:** Contribute to an ATI-funded project as indicated below. Design and develop test rigs for LH_2 fuel demonstrator studies at component and system level, including requirements capture, architecture selection, safety studies and commissioning plans with industrial partners. Project manage (and lead) rig-building activities, including but not limited to project planning, facility integration, part procurement, and hands-on build activities. Develop instrumentation and control systems for automated operation of the rigs. Operate (and supervise) rig operation through commissioning, modification and data generation phases. Write (and review) reports and deliverables, and prepare and present at project consortium level dissemination meetings. Write (and review) academic conference and high-impact journal publications.	70%
2	**Teaching:** Help develop (and deliver) teaching material on Cryogenics for new and existing MSc and short courses, and help with assessments. Co-supervise MSc (and PhD) students for projects related to Cryogenics Research and Innovation. Engage with Cranfield University-recognised academic practice development programmes.	20%

3	**General:** Support colleagues in finding funding opportunities, bid development and grant proposal writing. Contribute to the effective operation and collegiate atmosphere of the Group by supporting colleagues. Carry out other activities as directed by your line manager or the Group head. Ensure that Environmental, Health and Safety policies are adhered to as required by the Faculty and University.	10%

Please be advised that the percentages allocated for the key deliverables may be adapted to take into account the needs of the Faculty and / or University.

Planning and organising

You must adhere to delivering the research work within the timescales set by your line manager and demanded by the research contract, which requires regular review meetings and summary presentations and planning for the next period.

You will be self-directed and well organised. You should be able to develop a forward research plan for yourself over both short and extended timescales. You should have excellent project and time management skills, ensuring that milestones and deliverables are achieved to time and to high quality.

The role will involve short-term responsibilities, such as day-to-day project management, interaction with the wider project team, and organising project meetings. As different tasks will require different time periods for planning, flexibility and good coordination skills will be important.

Work will need to be clearly documented on a day-to-day basis, showing a clear development path for the project. On an ad-hoc basis, you may be required to assist with other related projects where your skills may be relevant.

Communicating and influencing

You will collaborate with other research institutions and with industry partners in the UK and Europe. You will need to be able to demonstrate excellent interpersonal skills to communicate with staff from all organisations across a wide range of disciplines to discuss project methodologies and to interpret results.

You will be expected to be able to articulate information about your work in a clear and concise manner, and to discuss problems constructively with your line manager and colleagues.

You will be expected to communicate scientific results effectively through reports and presentations at national and international meetings/conferences, and to prepare articles suitable for publication in high-impact peer-reviewed journals. There is an expectation that at least two peer-reviewed journal papers will be published from this project.

There will be opportunities to present project outputs at industry and science conferences through oral presentation, and a need to be able to actively contribute to workshops, technical meetings and seminars. A confident approach to presentation and delivery is required.

Problem solving

You are expected to already be a confident and independent researcher. You will be expected to be able to work independently for most of the time, with reference to the line manager and other project colleagues for points of clarification.

You will be expected to think through and solve problems which may be encountered, in terms of methodology, the analyses and development of models, and interpretation of results.

Most problems will be solved through experience, or through the guidance and mentoring available. You will be expected to discuss problems constructive with the line manager or other colleagues.

You will be responsible for ensuring that appropriate risk assessments are carried out for any new procedures to meet the University specification.

Decision making

I) Decisions you will take without reference to others

- Day-to-day management and planning of ongoing research within the overall specifications provided by the project terms of reference/proposal.
- Draft delivery of high-quality research and reports to deadline and quality.
- Writing draft journal and conference papers.
- Preparing material for jointly-authored papers and conference presentations.
- Active participation in the implementation of health and safety procedures in the areas in which you work.
- Drafting reports, minutes, actions and papers.
- Identifying, collating and communicating associated research papers and reports.

II) Decisions you will refer to your manager/colleagues

- Developing new research ideas, proposals, consultancy work, and identifying sources of funding.
- Balancing ongoing research commitments, project management and publication/proposal-related activities.
- Activities to enable the dissemination and exploitation of research results.
- Aspects potentially affecting the operation of the project or the outcome of the results, such that they will have influence on the success of the project meeting the goals.
- Budgetary issues related to research contracts.
- Decisions that involve modifications to contracted deliverables.
- Writing journal and conference papers – final submission.
- Research support for PhD and MSc students.

Guiding framework

The guiding framework for this role is the University's Corporate Plan – Ambition 2027.

The Faculty of Engineering and Applied Sciences is the principal reference point for all our activity, and sets out our ambitions, operating strategy and tone of delivery. It supports the University's Corporate Plan, which is focused on the application of scientific excellence in a financially viable operating environment.

There are established working practices, processes, systems and procedures that you will learn and that must be used. Alterations to any of these must be agreed with the line manager. You can expect close support from the line manager in research, career development, mentoring, project management, and publications/proposals.

Our Performance and Development Review scheme (PDR) provides a set of objectives agreed with the line manager for the year ahead, and expected SMART targets.

Duties and responsibilities should be carried out with due regard to, and in compliance with, the General Data Protection Regulations, Health and Safety, and the Equality Act 2010. All staff must confirm to the requirements of the Financial Manual. The role will be subject to normal Faculty and University systems and procedures. A very high emphasis is placed in particular on conformity with Health and Safety, environmental and ethical policies of the University.

There may be occasions when existing procedures may not cover new circumstances, and where you need to work collaboratively with the Head of Centre, academic staff and the Faculty Support Administrators to develop new processes for the future.

You must respect the fundamental code of conduct for academic and scientific work. You may be privy to confidential information relating to staff and students, and it is imperative that absolute discretion and confidentiality is shown at all times.

For specific projects, there will likely be documentation which will outline the tasks, milestones and deliverables related to the project. If applicable, the specific responsibilities of each of the participants in the consortium would also be outlined in a consortium agreement/grant agreement.

Impact

The role will be focused on meeting the aims and objectives of the project.

It is very important to conduct high-quality research to maintain and enhance the reputation and performance of the University and Faculty. This will have impact on colleagues in related areas of research and could facilitate further internal and external collaborations.

No direct responsibility for budget or other staff/students is associated with this role. However, opportunities to co-supervise PhD/MSc students will be provided, and we expect all our postdoctoral researchers to take an active role within the Institute, and more widely within the Faculty, to both inform others of their ongoing work and to make best use of existing knowledge and expertise. There will also be scope to develop linked project bids and to work with colleagues in responding to research calls, as appropriate.

You will be expected to present work at national and international meetings/conferences, and to write peer-reviewed journal papers.

Section 5
Am I suited to this role?

Criteria	Essential	Desirable
Education / Qualifications	PhD (obtained or near completion) in Aerospace or a related discipline, with a focus on experimental work.	PhD in multiphase flow, sloshing, or similar topic. MSc in Aerospace-related field. AFHEA or equivalent teaching qualification.
Experience	Fluent in experimental methods for multiphase flow or cryogenic fuels, in particular in rig design and build. Strong analytical skills in thermodynamic and/or fluid dynamic systems. Track record of delivering research projects sponsored by either the public or private sectors. Preparing, editing and submitting high-quality research outputs. If PhD obtained, peer-reviewed publication track record, and/or presentation at well-known international conferences.	Experience and demonstrated success of building a research team and delivering research results. Experience of teaching, supervising and supporting postgraduate students, e.g. through research supervision, lecturing or tutorials. Experience of managing research projects. Presentation at major national or international conferences.
Knowledge	Comprehensive knowledge of experimental control and instrumentation. Knowledge of recent research developments in multiphase flow measurement and control. Practical knowledge of the design and implementation of safe experimental systems.	Knowledge of Health and Safety Legislation as it relates to the role. Understanding of, and contribution to, broader University management processes. Knowledge of academic standards in the UK Higher Education sector. Detailed understanding of the contemporary challenges facing the sustainable aviation sector.
Skills / Aptitudes	Ability to communicate complex information clearly in English, and to encourage commitment to learn in others.	High-quality lecturing skills. Skills in motivating colleagues and students.

	Excellent project and time management skills, ensuring that milestones and deliverables are achieved on time and to high quality. Excellent teamworking and interpersonal skills. Proven ability to undertake original research. Ability and “drive” to produce high-quality manuscripts with others. Ability to find appropriate solutions to academic and technical problems.	Proven ability to develop business opportunities and attract research income from multiple types of client.
Values	Ability to demonstrate our values: Ambition, Impact, Respect and Community.	Engagement in collegiate working environment: open communication, shared responsibility, mutual respect, and recognition of contribution of others.
Other	The willingness and ability to travel and work both within the UK and beyond, with both national and international partners.	