

## Specialist Research Technician

### REQ210608

**As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.**

### Job Description

**Job Grade: Technical Grade 6**

### Job Purpose

The Rolls-Royce University Technology Centre (UTC) in Combustion System Aerothermal Processes was established in 1991 (6 projects, 7 research staff/students), and has since grown by a factor of 4 to a mature research group of approximately 50 personnel including academics, researchers, technicians, a business manager, and admin support staff. In the last 12 months the UTC has had ~30 'live' research projects, with several additional contracts about to commence with a typical annual turnover of approximately £2.5M. A significant contributor to the enhanced capability and capacity of the group was facilitated by the building and commissioning of the Unsteady Fluids Laboratory in 2008 (~£3M development). The success of the Laboratory and its subsequent development means that, in conjunction with industrial and government support, significant further investment (~£15M) enabled the creation of the "National Centre for Combustion and Aerothermal Technology (NCCAT)". The open access Centre is responsible for providing the UK with the necessary capability to deliver new, low emission, combustion technologies for next generation gas turbine engines. The Centre undertakes:

Commercial Activities: Support industrial partners in the development of future low emission aerospace combustion systems by providing access to state of the art facilities and research expertise. This will also include 'fee for service' type activities.

Research Activities: Use the Centres' facilities to undertake strategic research to develop technology for the UK that is critical to the development of next generation combustion systems.

Training: To train current and future aerospace engineers in a critical skill area for the UK. This includes industrial engineers along with post-doctoral researchers including students that form part of a joint Centre for Doctoral Training (with Cambridge and Oxford Universities).

To do this the Centre must construct, maintain and operate highly specialised experimental facilities that incorporate various levels of technical complexity. For example, these will include standard research facilities (as expected in a laboratory environment) through to a range of specialised facilities and associated equipment, such as, facilities that incorporate elevated pressures/high temperatures (as typically occurs within a gas turbine engine), or sub-atmospheric conditions such as can occur at high altitude and in which a combustion system must demonstrate its ability to relight. Maximising the opportunities associated with the test facilities will also require the application of state of the art experimental techniques. Hence the technical staff will provide a role in helping to maintain these experimental techniques and, in particular, support their application within the bespoke and complex test facilities.

The position and responsibilities are to act within a five-person technician team supporting the research work of the Centre. Duties will include the need to lead and manage assigned research facilities and areas within the technology Centre, although an ability to provide "transient" and/or "global" support throughout the technology Centre will be fundamental. The post holder will have a major influence in maintaining the UTC's reputation for the scheduling and delivery of high quality, high impact and complex research.

## **Job Duties**

### Overview

- To be responsible for an assigned area of activity, whilst also being available for existing day-to-day technician duties within the Technology Centre.
- Production of intricate items (using various materials and appropriate techniques) for rig construction/modification, development of in-house instrumentation and application of skills to resolve complex problems using a wide range of mechanical disciplines and equipment.
- Provide advice and work with research, specialist and academic staff to define and develop technical approaches. This includes the design/construction of bespoke/specialist experimental apparatus and instrumentation to deliver novel technical solutions for the Centres' activities.
- In addition to traditional methods, utilise Computer Aided Design and Manufacturing techniques for the purpose of equipment design and test rig manufacture.
- To be knowledgeable of, and implement, current and future 'state of the art' manufacturing/production techniques (e.g. Rapid prototype manufacturing, Direct Laser Deposition) to deliver the Centre's current and future experimental activities.
- Work with visiting commercial engineers/customers using the Centres' experimental facilities to provide the required technical approaches that ensure commercial programmes can be delivered. This activity will demand an understanding of the needs of "live" engine programmes (as detailed by commercial customers) when working with sub-suppliers, and necessitate visiting external facilities/customers/suppliers as and when required.
- In conjunction with research staff, assist in the operation of test facilities and the acquisition of experimental data when required.
- Analyse/diagnose technical problems associated with the operation of specialist experimental facilities.
- To maintain and reconfigure when necessary specialist experimental facilities and associated operational hardware/plant and support the application, maintenance, calibration and repair of intricate experimental equipment (e.g. Particle Image Velocimetry (PIV), Phase Doppler Anemometry (PDA) and Planar Laser-Induced Fluorescence (PLIF) systems).
- Plan/programme the technical requirements for research projects including the preparation of costs (e.g. material and tooling estimates) from preliminary specifications and to subsequently review, monitor and confirm delivery schedules.
- Operation/maintenance/testing/fault diagnosis of workshop plant, machinery, tooling and consumable stocks within predefined budget allocations.
- Contribute to the workshop management and its efficient operation.
- Contribute to discussions on future experimental/strategic workshop and laboratory developments to ensure the Centres activities continue to be world leading.
- Assist in the scheduling and maintenance of the Centres infrastructure equipment and ensure general maintenance and security of buildings.

### Health and Safety

- Promote and develop continual improvement of health and safety procedures and safeguards.

- Advise research staff/students on the health and safety implications during the development of new and existing test rigs and infrastructure.
- Carry out statutory risk assessments, manual handling and COSHH assessments within the work areas. To aid research staff in the formulation of risk evaluation and control as required; ensuring that others comply with current health and safety regulations.

### Quality Control

The post holder will be required:

- To ensure that quality control and working procedures are implemented and reviewed as required in order to meet the necessary standards.
- To advise and assist with quality control record keeping and the maintenance/up-keep of any equipment utilised within the UTC, such as periodic servicing and calibrations.

### Teaching, Training, and Technology Transfer

- Provide technical teaching and share specialist experimental equipment repair/maintenance knowledge.
- To teach and supervise future Trainee Apprentice Technicians in all technical disciplines.
- To aid in the supervision and training of students, specifically in technical workshop disciplines.
- Meet the evolutionary requirements of the technical role e.g. Fuel compliance training “DSEAR and ATEX” standards.

### **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 Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University’s mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

## **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 – Test/Assessment Centre/Presentation

3 – Interview

### Essential Criteria

Area	Criteria	Stage
Experience	Substantial or significant industrial or laboratory experience.	1,3
	Served a recognised engineering apprenticeship with significant experience and proven track record in precision engineering.	
	Conversant in the use of AutoCAD, Nx or similar drafting design packages.	
	Significant experience in the use of a wide range of conventional machining techniques,	
	Knowledge of precision fabrication and assembly processes and experience in the design and production of bespoke items.	
	Experience in dealing with external suppliers of equipment and consumables for use in the production of test facilities or parts for test facilities.	
	Experience of monitoring budgets for consumable items as part of the workshop management activities.	
Skills and abilities	Excellent verbal and written communication skills, with a “strong” customer focus.	1,3
	Ability to integrate into a multidisciplinary team.	
	Flexible, willing and reliable with good time management and organisational skills.	
	Ability to work under pressure and to tight deadlines.	
	Utilising and interpreting contractor’s drawings to aid in the manufacture of items as/when required.	
	The ability to explain design ideas and plan clearly.	
	A comprehensive knowledge of relevant legal Health and Safety regulations.	
	Ability to observe confidentiality at all times.	
	Ability to produce solutions to engineering problems and draft detailed designs for manufacture, preferably using a modern CAD package.	
Training	Able to demonstrate commitment to developing career through personal and professional development.	1,3
	A willingness to undertake further training as necessary, and to adopt new procedures as and when required.	
Qualifications	HND or equivalent vocational level qualification in an engineering subject.	1
Other	Detailed understanding of the University’s Equal Opportunities policy at all times.	1

### Desirable Criteria

Area	Criteria	Stage
Experience	Experience of high pressure and temperature installations, control valves etc. for fluid transfer.	1,3
	Experience in the use/manufacture of instrumentation for use with fluid/aerodynamic and aerothermal test facilities.	

	Ability to programme and operate CNC machinery for the production of items if/as required.	
	Experience of electronics to assist in the production of lab items.	
	Experience of data logging equipment.	
	Knowledge or experience in the use and application of modern manufacturing techniques.	
	Experience in workshop management.	
	Experience in the use of laser equipment.	
	IT literate and experience in the use of standard office software.	
	Experience or knowledge of the storage, handling and use of fuels and petrochemical derivatives.	
Skills and abilities	Design, construction and modification of experimental equipment.	1,3
	Excellent laboratory skills.	
	Ability to undertake data analysis.	
	Ability to undertake day-to-day management of a project.	
	Experience of Health and Safety management.	
	Ability to use welding and fabrication techniques (e.g. MIG, TIG and oxyacetylene) for the production of lab items if/when required.	
Qualifications	Degree or equivalent level qualification in an engineering subject.	1
	Study or qualification in the use of computer packages used in the engineering environment.	
Other	Willingness to travel.	1

Stages in assessment: **1:** Application form at short-listing, **2:** Interview

## Conditions of Service

The position is full-time and open-ended. Salary will be on Technical Services Grade 6 £30,942 to £40,322 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 Grade 6 and above 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/>