



## Job Description

<b>Job title</b>	Research Associate
<b>Department/School</b>	Mechanical Engineering
<b>Job family</b>	Education and Research
<b>Grade</b>	7
<b>Reporting to</b>	Principal Investigator (PI) or Co-Investigator (CI)
<b>Responsible for</b>	There may be a requirement for: day to day supervision of other staff e.g. technical staff or, co-supervision of doctoral or undergraduate students
<b>Location</b>	University of Bath premises

### Background and context

Applications are invited for a Research Associate to work on the project entitled "SWIFT: Switch Inertance Fluid Technology" funded by Innovate UK.

New digital hydraulic technologies, such as digital displacement pumps, electro-hydraulic actuators, digital hydraulic converters, and digital hydraulic power management systems are being explored recently, driven by the need for highly energy-efficient and contamination-insensitive hydraulic systems. This project aims to raise the technology maturity of a digital switched inertance hydraulic converter using a high-speed 3D-printed hydraulic valve. Collaborating with Domin Fluid Power, the team is going to design and develop a smart controller for a high-speed 3D-printed valve and integrate it onto a switched hydraulic converter to evaluate the energy efficiency of digital hydraulic systems.

Applicants should have a PhD in Mechanical/Electrical Engineering or a related discipline with experience of control engineering. Proven experience in modelling and design. Successful applications will possess:

- Ability to organise the prioritise own workload to meet required deadlines
- Self-motivation
- Possess project management and technical communication skills
- Experience in some of the following areas with being a distinct advantage: hydraulic valve control, valve modelling, test rig design and validation.

Bath brings a wealth of expertise in digital hydraulic control together with decades of hydraulic experience from the UK's leading centre for fluid power research. Domin brings a proven record of valve design innovation and the ability to bring

that innovation to market, being the world's first company to offer an off-the-shelf product designed from metal Additive Manufacturing. At project completion, the consortium will deliver a working prototype at TRL5 and throughout the project will work closely with industrial sponsors to ensure alignment to industry needs.

### Job purpose

To provide subject-specific research expertise and undertake specific research work to a Principal Investigator (PI)/Co-Investigator (CI) and their research team for a specified grant/project.

### Main duties and responsibilities

	Responsible to the PI/CI for (as appropriate to discipline):
<b>1</b>	Conduct individual and/or collaborative research projects. Contribute to the design and execution of the project e.g. timetabling and meeting project milestones; participating in regular discussions with collaborative partners. Generate, collect and analyse existing data related to the project using qualitative and/or quantitative techniques.
<b>2</b>	Writing up results of research and contributing to the publication of results in high-quality peer-reviewed academic literature.
<b>3</b>	Disseminating results of research project as appropriate to the discipline through activities such as <ul style="list-style-type: none"> <li>• overseas research visits</li> <li>• conference presentations</li> <li>• public engagement activities</li> </ul>
<b>4</b>	Participate in departmental/group meetings and prepare and deliver presentations/seminars to project team, internal and external stakeholders or funders.
<b>5</b>	Assist with the supervision of postgraduate students and undergraduate project students and the assessment of student knowledge.
<b>6</b>	Continually update knowledge and understanding in field or specialism to inform research activity.
<b>7</b>	Identify sources of funding and provide assistance with preparing bids to funding bodies. Develop ability to secure own funding e.g. travel grants.
<b>8</b>	Contribute to the development of research objectives and proposals for own or joint research projects, with assistance of a mentor, if required.

<b>9</b>	Disseminate knowledge of research advances to inform departmental teaching.
	You will from time to time be required to undertake other duties of a similar nature as reasonably required by your line manager. You are required to follow all University policies and procedures at all times and take account of University guidance.

## Person Specification

Criteria	Essential	Desirable
<b>Qualifications</b>		
A PhD degree in subject area of direct relevance for the project, or equivalent significant relevant experience and professional qualification	√	
<b>Experience/Knowledge</b>		
Post doctoral experience		√
Demonstrated significant depth and breadth of specialist knowledge of subject matter to contribute to research programmes and to the development of departmental research activities	√	
Demonstrated awareness of latest developments in the field of research and in research design	√	
Demonstrated potential to publish in high quality, peer reviewed journals	√	
<b>Skills</b>		
Ability to prepare research proposals, to conduct individual research work and to disseminate results		√
Ability to organise and prioritise own workload to meet required deadlines	√	
Ability to write research reports and to effectively disseminate outcomes	√	
Excellent oral, interpersonal and written communication skills	√	
Proficiency in appropriate techniques (as appropriate to discipline)	√	
Proficiency in IT skills (as appropriate to discipline)	√	
<b>Attributes</b>		
Commitment to working within professional and ethical codes of conduct	√	
Innovation and developing creative solutions	√	
Commitment to excellence in research	√	

Enthusiasm and self-motivation	√	
Tenacity – working to achieve own and team objectives and to overcome obstacles	√	
Ability to be an effective team worker	√	
Commitment to safe working practices	√	