



Job Description

Job title	Research Associate
Department/School	Mechanical Engineering
Job family	Education and Research
Grade	7
Reporting to	Principal Investigator (PI) or Co-Investigator (CI)
Responsible for	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
Location	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 applicants 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	
Main duties and responsibilities	
	Responsible to the PI/CI for (as appropriate to discipline):
1	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.
2	Writing up results of research and contributing to the publication of results in high-quality peer-reviewed academic literature.
3	Disseminating results of research project as appropriate to the discipline through activities such as <ul style="list-style-type: none"> • overseas research visits • conference presentations • public engagement activities
4	Participate in departmental/group meetings and prepare and deliver presentations/seminars to project team, internal and external stakeholders or funders.
5	Assist with the supervision of postgraduate students and undergraduate project students and the assessment of student knowledge.
6	Continually update knowledge and understanding in field or specialism to inform research activity.
7	Identify sources of funding and provide assistance with preparing bids to funding bodies. Develop ability to secure own funding e.g. travel grants.
8	Contribute to the development of research objectives and proposals for own or joint research projects, with assistance of a mentor, if required.

9	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
Qualifications		
A PhD degree in subject area of direct relevance for the project, or equivalent significant relevant experience and professional qualification	√	
Experience/Knowledge		
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	√	
Skills		
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)	√	
Attributes		
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	√	