Research Associate

Department	Civil and Environmental Engineering (www.strath.ac.uk/civeng/)		
Faculty	Faculty of Engineering (www.strath.ac.uk/engineering/)		
Staff Category	Research	Reference No	455453
Reports To	Dr Neil Burnside	Grade:	7
Salary Range:	£33,309 - £34,304	Contract Type:	Fixed Term full-time 18 months or part-time 24 months (may be extended subject to funding)
FTE:	1 (35 hours/week)	Closing Date	08/07/2022

Job Advert

We are seeking to appoint a Research Associate for the EPSRC funded GigaWatt-Hour Subsurface Thermal Energy storAge: Engineered structures and legacy Mine shafts: STEaM. Civil and Environmental Engineering is a highly multidisciplinary department with a growing portfolio of research grants. The STEaM project brings together expertise in civil engineering, geomechanics, geochemistry and energy systems, from University of Strathclyde, the University of Edinburgh and 9 project partners. STEaM seeks to convert a far higher proportion of excess electricity into heat, providing flexibility and short term, interseasonal and multi-year storage. Pre-existing subsurface infrastructure is targeted to provide GWhrs of mine shaft thermal energy storage at lower cost and disruption. For safe and reliable heat storage, it is important to determine the hydrogeological and thermal characteristics of the flooded shaft, the wider mine system it is connected to, and the surrounding Carboniferous Coal Measures which play host to the mined void spaces.

The Research Associate will perform a detailed characterisation of the demonstration site using archived information from project partners and collection of new field data. You will perform lab analyses and simulation studies to determine the thermal properties of shaft-surrounding rock types and hydrogeochemical history of the mine water resource. You will create a national mine shaft inventory to evaluate the magnitude and geographical spread of the thermal storage opportunity and assess spatial relationships with curtailed wind supply and heat demand. Using legacy information, you will develop up to five separate case studies to evaluate variability in shaft architecture, construction and abandonment state and validate modelling activities in other work packages. You will also help lead development of best practice technical guidance for mineshaft thermal energy storage site appraisal and provide recommendations for preparation of active mines for post closure storage in regions around the world who are pursuing a low-carbon green energy transition.

You should be able to work both independently and collaboratively. Research will be written up for publication in collaboration with colleagues, and results disseminated via peer reviewed journal publications and presentation at conferences. You will join external networks to share information and ideas, inform the development of research objectives and to identify potential sources of funding.

To be considered for the role, you will be educated to a minimum of PhD level in an appropriate discipline, e.g., Geology, Earth Sciences, Hydrogeology, or cognate discipline. You will have sufficient breadth or depth of knowledge in groundwater resources, thermogeology, geochemistry, and geographical information systems and be developing the capacity to conduct individual research work, to disseminate results and to prepare research proposals. You will have an ability to plan and organise your own workload effectively and an ability to work within a team environment. You will have excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.

Job Description

Brief Outline of Job:

To perform an assessment of the UK-wide thermal storage opportunity within flooded mine shafts; explore variability in shaft morphology and condition, complete detailed characterisation of the project demonstration site; carry out hydrogeological site monitoring for project duration; provide robust thermal and hydrogeochemical parameterisation of predictive models via experimental work; establish a personal research portfolio and write research proposals as advised by the team leader; engage with industrial partners of this project for professional and knowledge exchange activities.

Main Activities/Responsibilities:

1.	Conduct independent and collaborative research in the resource assessment of flooded mine shafts, including determining appropriate research methods and contributing to the development of new analytical and modelling approaches.
2.	Plan and manage own workload, with guidance from the team leader as required.
3.	Inform the development of research objectives within the wider research consortium.
4.	Write up research work for publication, individually or in collaboration with colleagues, and disseminate results as appropriate to the discipline by, for example, peer reviewed journal publications and presentation at conferences.
5.	Collaborate with the wider consortium on the development of knowledge exchange activities by, for example, commercialisation of outputs.
6.	Identify sources of funding and contribute to the securing of funds for research, including planning for future proposals.
7.	Join external networks to share information and ideas, inform the development of research objectives and to identify potential sources of funding.
8.	Plan and manage own workload, with guidance from the team leader as required.
9.	Contribute in a developing capacity to Department/School, Faculty and/or University administrative and management functions and committees.
10.	Engage in continuous professional development

Person Specification

Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

E1 PhD (or equivalent professional experience) in appropriate discipline e.g civil engineering, geosciences, material sciences or cognate discipline.

E2 Good honours degree in civil engineering, geoscience, mining engineering or cognate discipline

Experience

E3 Sufficient breadth or depth of knowledge in Hydrogeology / Geochemistry / Multiscale Modelling / Geographical Information Systems to contribute to the development of research activities.

D1 Experience of knowledge exchange related activities

Job Related Skills and Achievements

E4 Developing ability to conduct individual research work, to disseminate results and to prepare research proposals.

E5 Ability to plan and organise own workload effectively

E6 Ability to work within a team environment

Personal Attributes

E7 Excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences

Other Relevant Factors

E8 Ability to work both independently and as part of a team

E9	Confident with enthusiasm for the project

Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted before interview without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (http://www.strath.ac.uk/hr/workforus).

Informal enquiries about the post can be directed to Dr Shangtong Yang, (Shangtong.yang@strath.ac.uk).

Conditions of Employment

Conditions of employment relating to the Research staff category can be found at: Conditions of Employment.

Rewards and Benefits

Our staff have access to a wide range of outstanding benefits that include financial rewards, family friendly and wellbeing benefits and career development opportunities, details of which can be found here.

Probation

Where applicable, the successful applicant will be required to serve a 9 month probationary period.

Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from Payroll and Pensions.

Interviews

Formal interviews for this post will be held at a date to be confirmed.

Equality and Diversity

We value diversity and welcome applications from all sections of the community.

The University currently holds a Bronze Athena SWAN award, recognising our commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.

University Values

The University's Values capture what we're all about: who we are, what we believe in and what we stand for. Our Values have been derived from how we act and how we expect to be treated as part of Strathclyde.