



UNIVERSITY OF LEEDS

## CANDIDATE BRIEF

**Research Fellow in System Optimisation for Flexible Energy Solutions,  
Faculty of Environment**



**Salary: Grade 7 (£39,105 – £46,485 p.a. depending on experience)**

**Reporting to: Dr Emma Braham**

**Reference: ENVEE1798**

**Fixed-term - until 10 August 2025 - to complete time limited work**

**Location - University of Leeds (with scope for hybrid working)**

**We are open to discussing flexible working arrangements**

## Research Fellow in System Optimisation for Flexible Energy Solutions, School of Earth & Environment, Faculty of Environment

**Do you have a broad background in engineering or a related discipline? Do you want to make a difference by delivering research to underpin robust, sustainable and just climate and energy solutions? Do you have the ability to deliver a challenging project in a short timescale to support local decarbonisation and evidence-based policymaking?**

The University of Leeds has world-leading expertise in geothermal energy, heat networks, building energy systems and simulation, smart grid and optimisation of smart energy systems. In addition, the Faculties of both Engineering and Physical Science, and Environment, have an outstanding track record in shallow geothermal energy deployment via heat pumps and district heating networks, from a technical, social and policy perspective.

In response to the University's [bold climate crisis policy announcement](#) and the development of the Geothermal Campus Living Research Lab (GCLRL), we aim to harness this expertise to focus on the challenges relating directly to decarbonising the energy supply. This post is focussed on assessment and implementation of geothermal energy related solutions for the Leeds city area and the wider UK. We have a wealth of knowledge, expertise and skills to be applied to these areas as we work together with our [Sustainability Research Institute](#) and the [Priestley Centre for Climate Futures](#), towards a net-zero greenhouse gas emissions future for our campus and for Leeds City.

As part of our 'Geosolutions' programme linking Geoscience, Engineering, Social Science and Sustainability, the [School of Earth & Environment](#) has secured funding to use the GCLRL to explore the potential for geothermal energy to provide flexible, scalable solutions to offset the impact of increasing electrification from heat decarbonisation through geothermal heat provision and long duration energy storage.

Key system optimisation questions include:

- Would the integration of geothermal energy with the local electricity grid reduce renewable electricity curtailment and alleviate network congestion?



- How can optimisation models evaluating aggregated flexibility from geothermal sites and local end users be effectively used to evaluate future energy systems in relation to energy availability, urban power grid pinch points, users and heat networks in Leeds?
- How will energy user operation, shiftable demand within market frameworks and long-term energy storage capacity be used to update flexibility availability and electricity network headroom and inform cost-benefit analysis for future systems;
- How scalable and reproduceable are campus-based models across alternative urban users and systems in both Leeds and the wider UK?

## Main duties and responsibilities

As a Research Fellow, your main duties will include:

- Evaluating the correlation of campus thermal demand and geothermal resources and identify potential thermal demand centres;
- Developing a statistical model of UoL building thermal demand profiles and daily/seasonal climatic dependencies from existing data along with a heat pump system model for optimization studies;
- Modelling local distribution network and identifying local grid constraints at potential thermal demand centres during peak demand periods;
- Characterising UoL network constraints and potential market-driven interventions;
- Conducting optimisation studies of multi-timescale energy storage scenarios using thermal system, network and market models with realistic climate and network constraints;
- Working both independently and as part of a larger team of researchers and stakeholders, engaging in knowledge-transfer activities where appropriate and feasible;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;



- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students where appropriate, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

## Qualifications and skills

### Essential

As a Research Fellow you will have:

- A PhD or have accrued similar research experience in a relevant engineering area, or near completion - i.e. the initial thesis needs to have been handed in at the point of application in electrical engineering or thermal engineering or other closely allied disciplines;
- Experience bringing together and working with a variety of energy data electrical and thermal data;
- Good interpersonal and communication skills, both written and verbal and the ability to communicate effectively with a wide range of stakeholders;
- Excellent numeracy and well-developed analytical skills,
- A willingness to work with a range of data analysis and modelling software;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A proven ability to work well both individually and in diverse team;
- The ability to work unsupervised and to use your own initiative.
- A strong commitment to your own continuous professional development;
- A developing track record of peer reviewed publications in international journals.



### Desirable:

- Experience of pursuing external funding to support research;
- Experience of interdisciplinary research;
- Experience in working towards power grid or building thermal modelling;
- Knowledge of geothermal energy principles and technology;
- Experience of thermal analysis approaches;
- Experience in working in the energy sector.

## How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

## Additional information

Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information please visit: [www.gov.uk/skilled-worker-visa](http://www.gov.uk/skilled-worker-visa)

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information please visit: <https://www.gov.uk/global-talent>

Find out more about the [Faculty of Environment](#).

Find out more about the [School of Earth and Environment](#).

Find out more about our [Research and associated facilities](#).

Find out more about [equality](#) in the Faculty.



## Working at Leeds

We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our [Working at Leeds](#) information page.

## Our University

At the University of Leeds, we are committed to providing a culture of inclusion, respect and equity of opportunity that attracts, supports, and retains the best students and staff from all backgrounds *{and from across the world}*. Whatever role we recruit for we are always striving to increase the diversity of our community, which each individual helps enrich and cultivate. We particularly encourage applications from, but not limited to Black, Asian, people who belong to a minority ethnic community; people who identify as LGBT+; and disabled people. Candidates will always be selected based on merit and ability.

As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Environment we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian, people who belong to a minority ethnic community; people who identify as LGBT+; and disabled people. Candidates will always be selected based on merit and ability.

The Faculty of Environment has received a prestigious Athena SWAN silver award from [Advance HE](#), the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

## Working at Leeds

We are a campus based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements



of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our [Working at Leeds](#) information page.

### **Candidates with disabilities**

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at [foehr@leeds.ac.uk](mailto:foehr@leeds.ac.uk).

## **Criminal record information**

### **Rehabilitation of Offenders Act 1974**

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

