UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Energy Geostructures, Faculty of Engineering and Physical Science



Salary: Grade 7 (£41,064– £48,822 p.a.)

Reference: EPSCV1173

Fixed-term for up to 9 months

We will consider flexible working arrangements

Research Fellow in Energy Geostructures, Faculty of Engineering

Heating and cooling of buildings is a key priority for global decarbonisation due to the scale of the demand and the current reliance on fossil fuels. Energy geostructures, where civil engineering substructures are connected to ground source heat pump systems offer a novel solution to this challenge. Appropriate design of energy geostructures requires consideration of the thermal behaviour and associated energy assessment. At the University of Leeds, our dynamic energy geotechnics team are leading research in this growing area. We would like to recruit someone to develop our research in design and analysis of diaphragm walls used for thermal energy extraction. Are you an ambitious researcher looking for a new challenge? Do you have expertise in ground energy systems and energy geostructures, especially their thermal analysis and design? Do you want to join an expanding research team at a leading UK university?

As part of an exciting EPSRC-FAPESP project, Efficient Ground Energy Systems in Diaphragm Walls in Challenging Conditions, led by Prof Fleur Loveridge, you will lead innovative research into the design and analysis of energy retaining walls used as ground heat exchangers. The project aims to encourage the adoption of energy retaining walls through provision of better guidance. It includes a mixture of laboratory and field scale testing and a range of computational techniques carried out across three Universities – University of Leeds, University of Dundee and University of Sao Paulo. In particular the project will:

- Understand the impact of temporary and spatial variation in ground properties on heat transfer and stress/strain conditions in the walls;
- Develop and test models of heat flow around the walls, as well as implement them for routine use;
- Develop and test new approaches for geotechnical design for energy retaining walls.

As a Research Fellow in Energy Geostructures on this project you will lead research in delivering new knowledge on the thermal design and performance of energy walls to facilitate rapid implementation of embedded retaining walls for widespread application. You will:






- Undertake numerical simulations of energy walls, and understand which modelling and ground condition simplifications are acceptable with reference to field data as appropriate;
- Develop, test and implement analytical models for planar heat flow around energy walls;
- Work closely with project partners at University of Sao Paolo and University of Dundee to integrate their inputs and outputs into your analysis;
- Collaborate with other University of Leeds researchers on development of energy systems modelling tools for energy walls;
- Take a leading role in production of project outputs including journal papers and accessible guidance for practice.

What does the role entail?

As a Research Fellow, your main duties will include:

- Generating and pursuing independent and original research ideas for the design of energy geostructures, especially energy walls.
- 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;
- Assisting in supervision of PhD students working in related areas;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Leading the preparation papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Participating in dissemination and knowledge transfer events, conferences, project meetings and workshops, including presenting and discussing your own research and that of the team;
- Working both independently and also as part of a larger team of researchers and industrial partners in the UK and internationally;
- 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, 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.

What will you bring to the role?

As a Research Fellow you will have:

- Completed a PhD (or have submitted your PhD thesis before starting the role), or equivalent research experience, in civil or mechanical engineering, or a discipline closely allied to energy geostructures;
- A strong background in thermal engineering simulation, including numerical and analytical techniques;
- Experience of a range of appropriate commercial and/or open source software for numerical and/or analytical techniques;
- Knowledge of ground heat exchangers and/or energy geostructure design and analysis approaches;
- Ability to take the initiative in developing your own research;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- A track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually and in a team;
- Willingness to travel within the UK and internationally to collaborate with academic and industrial project partners;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience of interdisciplinary research;
- Experience of pursuing external funding to support research;
- Experience of supervision of others;

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.

Contact information

To explore the post further or for any queries you may have, please contact:

Fleur Loveridge, Professor of Geo-Energy Engineering (https://eps.leeds.ac.uk/civil-engineering/staff/861/professor-fleur-loveridge)
Tel: +44 (0)113 343 2248
Email: f.a.loveridge@leeds.ac.uk

Additional information

Faculty and School Information
Further information is available on the research and teaching activities of the Faculty of Engineering and the School of Civil Engineering.

A diverse workforce
The Faculty of Engineering is proud to have been awarded the Athena Swan Silver Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our equality and inclusion webpage provides more information.

Working at Leeds
Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on 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 disclosure@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.

