



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Design Optimisation of Safe and Effective Beehives for Sustainable Agricultural Pollination, Faculty of Engineering and Physical Sciences



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

Reference: EPSME1181

Location: Leeds campus

Closing date: Thursday 24 October 2024

Fixed-term for 27 weeks, between 23/12/2024 to 30/06/2025

We are open to discussing flexible working arrangements

Research Fellow in Design Optimisation of Safe and Effective Beehives for Sustainable Agricultural Pollination, Institute of Thermofluids, School of Mechanical Engineering.

Do you have a strong background in computational and experimental fluid dynamics and heat transfer and a knowledge of and interest in beekeeping? Are your skills relevant to on the flow and heat transfer within beehives? Do you want to further your career in one of the UK's leading research-intensive universities?

The beekeeping industry is still dominated by 1850's technology and is unable to meet its significant economic, environmental and regulatory pressures. Beekeepers want their honeybees to survive and thrive in a wide range of climates. There is now significant interest in insulated hives, in order to counteract the increasing rates of mortality in managed bee colonies. Honeybee keepers do not currently possess the information to choose which hives perform best thermally and manufacturers of hives do not have the tools to measure or optimise their designs. With climate change putting honeybees under increased thermal stress the demand for hives that thermally buffer the bees within will only increase.

This is a short-term position to work with an Australian beehive manufacturer, [HivelQ Pty](#), the provider of the HivelQ agritech system, and their team of beekeepers, industrial designers, and manufacturing experts to create extensively-validated and scientifically-rigorous guidelines for safe and effective beekeeping practice. The project will combine the University's expertise in beehive design, flow modelling and heat transfer and design optimization with HivelQ Pty's in design, manufacturing and sensing techniques to develop the most advanced, scientifically rigorous guidelines and software tools for hive design and configuration.

You will have a background with strong skills in analytical and computational modelling of flow and heat transfer relevant to the study of beehives, relevant experimental experience and extensive knowledge of and interest in beekeeping issues. You will use your skills in the interdisciplinary research area to communicate your findings to beekeeping conferences and societies.



What does the role entail?

As a Research Fellow, your main duties will include:

- Leading the development of computational flow and heat transfer models of industrial beehive designs using OpenFOAM;
- Working with the industry partner, HivelQ, to design computational flow models of their chosen beehive designs;
- Carrying out complementary experimental studies of beehives provided by the industry partner;
- Communicating the key findings to the industry partner and to appropriate beekeeping conferences, technical meetings and beekeeping societies;
- Reviewing direction of the technical work following feedback;
- Working with academic partners to develop software tools summarising results of the research;
- 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 relate such evaluations appropriately to your own research;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals and by presentation at national and international meetings;
- Working independently and as part of a larger team of researchers, both internally and externally, to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- 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:

- A PhD (or have submitted your thesis before taking up the role) relevant to the thermal design of beehives;
- A strong background in computational flow and heat transfer modelling and experience of using OpenFOAM;
- Experience of carrying out experimental work relevant to thermal design of beehives;
- Demonstrable knowledge of and interest in beekeeping;
- Experience of working with industry;
- The ability to work with scientists and researchers with a range of backgrounds and to be able to communicate effectively within interdisciplinary teams;
- Excellent communication skills both written and verbal, and the ability to communicate your research at national and international conferences;
- Good time management and planning skills, with the ability to meet tight deadlines and manage competing demands effectively without close support;
- A developing track record of peer-reviewed publications in international journals;
- A proven ability to work well both independently and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience of pursuing external funding to support research;
- Knowledge of UK beekeeping societies and experience of giving presentations to them.

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:

[Harvey Thompson](#), Professor of Computational Fluid Dynamics

Tel: +44 (0)113 343 2136

Email: H.M.Thompson@leeds.ac.uk

Additional information

Please note: If you are not a British or Irish citizen, 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.

Salary Requirements of the Skilled Worker Visa Route

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 [the Government's Skilled Worker visa page](#).

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information, please visit [the Government's page, Apply for the Global Talent visa](#).

Faculty and School Information

Further information is available on the research and teaching activities of the [Faculty of Engineering & Physical Sciences](#), and the [School of Mechanical Engineering](#).

Our University

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 Engineering and Physical Sciences 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 and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.



The Faculty of Engineering and Physical Sciences are 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

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.

Information for disabled candidates

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our [How to Apply](#) information page or by getting in touch by emailing HR via hr@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.

