

Job Description

Heat Network (KTP Associate)

School of Engineering

The Faculty of Engineering & Digital Technologies



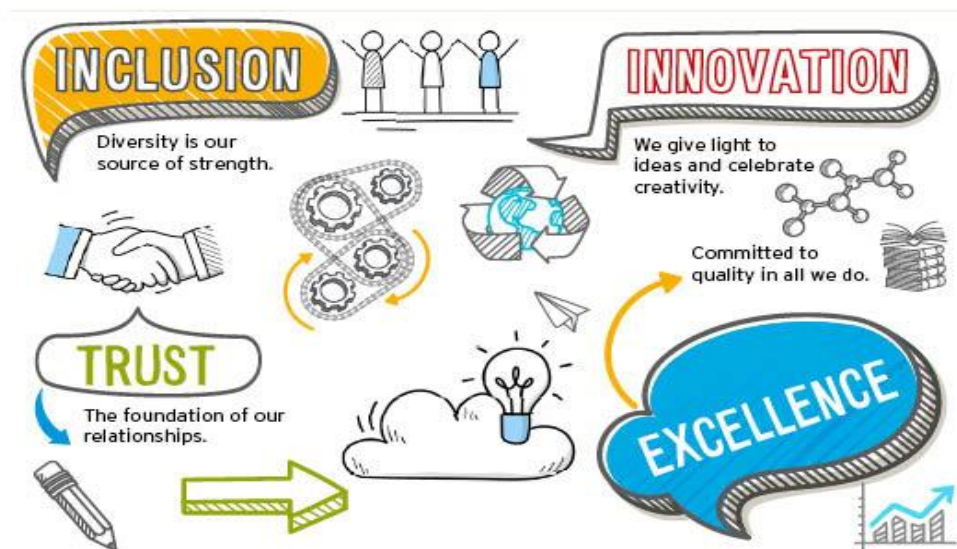
Brief summary of the role

Role title:	Heat Network (KTP Associate)
Grade:	Up to £ 34,000
Faculty or Directorate:	School of Engineering
Service or Department:	The Faculty of Engineering & Digital Technologies
Location:	Switch2Energy & School of Engineering
Reports to:	Assistant Professor Cuong Dao & Christopher Rutherford, R&D Systems Architect
Responsible for:	
Work pattern:	Full time - company office hours

About the University of Bradford

Values

At the University of Bradford, we are guided by our core values of Excellence, Trust, Innovation, and Inclusion. These values shape our approach and our commitment to making diversity, equity, and inclusion part of everything we do – from how we build our curriculum to how we build our workforce. It is the responsibility of every employee to uphold the university values.



Equality, Diversity, and Inclusion (EDI)

At the University of Bradford, we are guided by our core values of Excellence, Trust, Innovation, and Inclusion. These values shape our approach and our commitment to making diversity, equity, and inclusion at the heart of everything we do.

We foster a work environment that's inclusive as well as diverse, where staff can be themselves and have the support and adjustments to be successful within their role.

We are dedicated to promoting equality and inclusivity throughout the university and have established several networks where individuals can find support and safe places fostering a sense of belonging and acceptance. We are committed to several equality charters such as Athena Swan, Race Equality Charter, Disability Confident and Stonewall University Champions Programme..

Health, safety, and wellbeing

Health and Safety is a partnership between employee and employer each having responsibilities, as such all employees of the University have a statutory duty of care for their own personal safety and that of others who may be affected by their acts or omissions.

It is the responsibility of all employees that they fulfil a proactive role towards the management of risk in all of their actions. This entails the risk assessment of all situations, the taking of appropriate actions and reporting of all incidents, near misses and hazards.

Managers should note they have a duty of care towards any staff they manage; academic staff also have a duty of care towards students.

All colleagues will need to ensure you are familiar with any relevant Health and Safety policies and procedures, seeking advice from the Central University Health and Safety team as appropriate.

We are registered members of the University Mental Health Charter. This visibly demonstrates our commitment to achieving cultural change in student and staff mental health and wellbeing across the whole university, whilst supporting the vision of our People Strategy to create a culture and environment of transformational diversity, inclusion and social mobility, creating a place where our values come to life and are evident in our approach.

Information governance

Employees have a responsibility for the information and records (including student, health, financial and administrative records) that are gathered or used as part of their work undertaken for the University.

An employee must consult their manager if they have any doubts about the appropriate handling of the information and records with which they work.

All employees must always adhere to data protection legislation and the University's policies and procedures in relation to information governance and information security.

Employees will be required, when and where appropriate to the role, to comply with the processing of requests under the Freedom of Information Act 2000.

Criminal record disclosures and working with vulnerable groups

Depending on the defined nature of your work and specialist area of expertise, the University may obtain a standard or enhanced disclosure through the Disclosure and Barring Service (DBS) under the Rehabilitation of Offenders Act 1974.

All employees of the University who have contact with children, young people, vulnerable adults, service users and their families must familiarise themselves, be aware of their responsibilities and adhere to the University's policy and Safeguarding Vulnerable Groups Act 2006.

The University is committed to protect and safeguard children, young people and Vulnerable Adults.

Suitable applicants will not be refused positions because of criminal record information or other information declared, where it has no bearing on the role (for which you are applying) and no risks have been identified against the duties you would be expected to perform as part of that role.

About Knowledge Transfer Partnerships

A Knowledge Transfer Partnership (KTP) is a three-way project between a company, a university and a recently qualified graduate or post-graduate (known as an Associate), which enables the transfer of knowledge, technology and skills to which the company currently has no access. Supported by the University, KTP Associates manage strategic projects within the company.

A KTP can help graduates to enhance their career prospects by providing them with an opportunity to develop managerial and technical skills, manage a challenging project, which allows them to use their degree, and is central to an organisation's strategic development and long-term growth. Through this project, the KTP Associate plays a key role in managing and implementing strategic development in an organisation and transferring knowledge between it and the University.

Whilst the Associate owns the KTP project, they are supported by experienced staff from the company and the University. They are also assigned a KTP Adviser, who supports them in maintaining good working relationships within the Partnership and in planning their professional development in broad terms. KTP projects have a dedicated budget for training, which allows Associates to develop their personal and professional skills. All KTP Associates are also automatically registered in the KTP Diploma in Management Program, which provides a valuable degree level qualification (recognized by industry) from the Chartered Management Institute. For more information, visit www.ktponline.org.uk

Switch2 has been a heat-network (HN) company for 40 years, providing heat to local communities, with 1-in-3 UK homes with a HN meter installed being monitored by Switch2. Switch2's goal is to move from low-tech, plumbing-led maintenance strategies within the sector, to more high-tech, digitally-monitored strategies to improve efficiency, through better maintenance management.

This KTP is to develop an integrated Energy Digital Twin (EDT) for Switch2's complex community HN that can support future system designs, upgrade and optimisation options and to provide comprehensive EDT verification through 'hardware-in-the-loop' testing and development of realistic use cases validation.

The new EDT model will comprise of both physics-based and data-driven functional models that allow using condition monitoring data of multiple HN components and perform predictive failure analysis to improve the performance of the network throughout its lifetime.

At Switch2 Energy, we are looking to passionate individuals to join our dynamic team as we lead the charge in decarbonising the UK's residential heat networks. This is an opportunity to be at the forefront of a growing sector where your work directly impacts UK residential heat network schemes and, by extension, the planet.

Why Choose Switch2?

We are the UK's most experienced provider of comprehensive solutions for residential heat networks. Our expertise spans the entirety of system management—from design and build through to operations and maintenance, ensuring energy efficiency, the integration of renewable energy sources, and overall scheme performance. Focused on both local authorities, housing associations, and private developments, we strive to deliver exceptional value, minimising costs for residents while maximising environmental and organisational benefits.

Benefits

- Joining a well-established company with a friendly, welcoming atmosphere
- Company pension scheme
- Company Medical Insurance (Vitality)
- Free eye tests and flu vaccination
- Cycle to Work Scheme
- Electric Vehicle Scheme
- Childcare Voucher Scheme

- Company Savings Scheme
- Holiday Purchase Scheme
- Wide development opportunities, including structured training programs
- A choice of on-site, remote and hybrid working
- Diverse and community-minded organisation
- Smart casual dress code
- Free on-site parking
- Regular company events

Find out more about us on our website <https://www.switch2.co.uk> and LinkedIn feed <https://uk.linkedin.com/company/switch2-energy-limited>

Role holder: essential and desirable attributes

Qualifications

Essential	<ul style="list-style-type: none">• Level 7 qualification or equivalent qualification in a relevant discipline area or equivalent experience
Desirable	<ul style="list-style-type: none">• Holding or working towards a PhD degree in a relevant discipline area

Experience, skills, and knowledge

Essential	<ul style="list-style-type: none">• Experience in doing research, from concept to delivery• Understanding modelling and numerical analysis• Ability to prioritise and coordinate own workload, managing own time and working to set deadlines• Experience of using a variety of IT packages to a high standard, including the following: word processing packages spreadsheets databases• Familiarity with engineering standards for designing and operating heating networks
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	<ul style="list-style-type: none"> • Ability to maintain, analyse and present information and data • Familiarity with object-oriented programming principles and developing modular code • Experience in using engineering modelling simulation software • Experience in using programming software • Experience in Knowledge of database systems • Familiarity with data analytics and data visualisation libraries for real-time visualisation of simulation results • Excellent communication and collaboration Skills within a research setting
Desirable	<ul style="list-style-type: none"> • Proficiency in numerical methods used in physics modelling and simulations • Ability to handle complex algebraic equations related to thermal energy transfer, heat exchangers and piping systems under varying conditions • Understanding of thermodynamics, fluid dynamics, and heat transfer principles applied to thermal energy networks (temperature distribution, mass flow rates, pressure drops, and associated losses) • Proficiency in engineering modelling simulation software, such as MATLAB/Simulink and SimScape simulation • Proficiency in programming software, such as Python including numerical computing libraries • Knowledge of database systems designed to handle large amounts of time-series data • Proficiency with data analytics and data visualisation libraries for real-time visualisation of simulation results, including creating interactive dashboards and plots effectively conveying system behaviour to users without a technical background.

	<ul style="list-style-type: none"> • Ability to effectively communicate complex technical ideas both verbally and in written documentation • Collaborative mindset with the capacity to work with stakeholders from various disciplines
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Personal attributes

Essential	<ul style="list-style-type: none"> • Discretion, sensitivity and understanding of confidentiality • Excellent time management skills • Strong relationship building skills • Approachable, engaging, and positive when working with internal colleagues and those we work with externally • Able to work effectively with others as part of a wider team • Committed to continuing professional development
Desirable	<ul style="list-style-type: none"> • Insert a list of the desirable personal attributes of the role holder

Main purpose of the role

We are looking for a skilled and motivated heat network engineer for a Knowledge Transfer Partnership between the University of Bradford and Switch2 <https://switch2.co.uk> This is a great opportunity to use your skills to create genuine ground-breaking solutions in the heat network industry. Heat Networks (HN) are central to the UK Clean Energy Transition, as current gas networks are being replaced by clean Heat Network alternatives powered by net-zero energy sources.

A Knowledge Transfer Partnership (KTP) is a three-way project between a company, a university and a recently qualified graduate or post-graduate (known as an Associate), which enables the transfer of knowledge, technology and skills to which the company currently has no access. Supported by the University, KTP Associates manage strategic projects within the company.

The focus for this project is to develop an integrated Energy Digital Twin (EDT) for Switch2's complex community HN that can support future system designs, upgrade and optimisation options and to provide comprehensive EDT verification through 'hardware-in-the-loop' testing and development of realistic use cases validation.

Main duties and responsibilities

Note: The list below may vary to include other reasonable requests (as directed by university management) which do not change the general character of the job or the level of responsibility entailed

1. Develop a digital twin model for community heat networks, which includes hybridisation of physic-based and data-driven functional models
2. Develop heat network reliability and diagnostic models for predictive failure analysis
3. Perform model verification and testing using historical operational and meter data
4. Further analysis of the digital twin model in realistic use case exploitation
5. Collaborate with our R&D team as well as company-wide experts to help deliver your work
6. Share and discuss findings and insights with key internal and external stakeholders

Reporting structure:

The Heat Network KTP Associate will report to Christopher Rutherford, R&D Systems Architect at Switch2 Energy Ltd. Christopher has 20 years of industry experience in R&D, with around 10 of those years spent working on energy related projects. He has been

working on machine learning projects at Switch2 Energy, ranging from time series data prediction to fine tuning large language models.

Christopher reports to George Bystryakov, Head of R&D. He is a qualified chartered engineer with an extensive background in management and delivery of industrial projects in the field of energy, data infrastructure and automation.

Both Christopher and George are business partner supervisors to the project.