

**London South Bank University**

**The School of Engineering**

**PhD studentship in sustainable smart energy systems**

**London South Bank University (LSBU)**

London South Bank University (LSBU) is a dynamic, inner-city university with a diverse multi-cultural population of some 17,000 students and around 1700 staff. For over 100 years the university has provided top quality teaching and learning, underpinned by relevant research and delivered in an environment that is focussed on the needs of its students and the great capital city of London. Our students and staff come from every part of the community and from all over the world, making our campus truly multicultural. The courses offered here are flexible and closely linked to the needs of industry and the professions, with particular specialities in health (nursing and allied health professions); computing, internet and multimedia, engineering, applied science and sports science; architecture, construction and estate management; business studies, management, tourism, hospitality and law; social sciences, arts, media studies, digital media and video production; English and a new exciting programme of Combined Honours degrees.

**School of Engineering**

The School of Engineering is a thriving community of scholars, proud of our successes both in the areas of teaching and research. Our vision is to be internationally and nationally renowned for supporting and shaping industry. This builds on our history, application focused research and curriculum, and our engagement with industry. The history of our university dates back over 125 years, and engineering education has always been at its heart. We have been encouraging women to study engineering since the 1920s and the institution began offering a dedicated women’s engineering course in 1930.

LSBU is the top modern university in London for world-leading and internationally excellent research in General Engineering as assessed through the latest [Research Excellence Framework (REF 2014](http://www.lsbu.ac.uk/research/research-excellence/ref-2014)). Through REF, 80% of this research has been awarded the highest quality ratings (4\* or 3\*) for its 'impact' (reach and significance). This research is pursued through the School’s internationally recognised Research Centres and Groups:

• Centre for Energy and Environment Research

• Centre for Advanced Materials

• Centre for Biomedical Engineering and Communications (BIMEC)

• Centre for Air Conditioning and Refrigeration Research

• Centre for Robotics

• Big Data and Informatics Research Group

• Design, Manufacturing and Transport Dynamics

This studentship is with the Centre for Air Conditioning and Refrigeration Research which has interests in sustainable heating and cooling and smart energy systems.

**The Project**

In response to climate change challenges and health issues associated with burning of fossil fuels for heating in cities London Mayor Sidiq Khan made the utilisation of waste/ secondary heat a major part of his 2015 manifesto to ensure a greener and cleaner London. It has been identified that there is more secondary/ waste heat available than is needed to heat our buildings. To exploit its potential to deliver green and clean energy to our urban communities, businesses and industry, a key innovation is the integration of secondary heat in novel smart energy systems.

This new exciting PhD research project will investigate the topics of secondary and renewable heat and cold utilisation for low temperature urban energy networks. In addition, flexible electricity supply, electric vehicles, demand side management and energy storage for integrated smart energy systems will also be investigated. Our project will investigate the feasibility of a novel urban smart energy system in London to connect flexible electricity demands such as heat pumps and electric vehicles to the intermittent renewable resources such as wind and solar power, combined with secondary heat sources, energy storage and smart grid control. The aim is to investigate and develop a novel sustainable smart energy system capable of delivering low carbon low cost energy. The project is in conjunction with Islington Council and builds upon previous demonstration and modelling studies of secondary heat use within Islington Council’s energy network.

The modelling work within the PhD will investigate how to integrate intermittent renewable supplies, secondary heat outputs, thermal and power stores and smartly control the whole energy system in order to achieve maximum network performance. Additional aspects of the research will involve the study of how smart electricity supply and storage systems connect and flexibly control individual assets such as heat pumps and electric vehicles. The candidate will be working on evaluating system architecture and control using a whole systems modelling approach for integrated thermal/power smart networks and to determine optimum system configuration and smart control strategies. Therefore, the PhD will support the development of new technical and non-technical solutions and approaches which can assists in improving energy security and resilience. The outcomes of the research will contribute towards proving low cost, low loss, flexible power/thermal distribution networks.

This project involves all of these smart energy related themes, which importantly will be undertaken in collaboration with a leading team of engineers and innovators in collaborating companies and organisations such as Transport for London, Islington Council, and E-Car Club. It is therefore an outstanding career opportunity for a recent graduate both to study for a PhD and also to gain valuable industrial and technical experience in a vibrant and developing international field of advanced engineering.

**The Candidate**

You should have a first or upper second class honours degree in an appropriate area such as engineering, product design, science or mathematics and environmental technology. Evidence of interest in sustainable energy systems, energy market analysis (energy policy issues affecting heat), heat pumps and heat recovery systems would be an advantage, as would experience/knowledge of any of the following:

Computer modelling (e.g. EnergyPro, COMSOL, Matlab, EES), thermodynamics/heat transfer, experimental research

**Key skills and selection criteria:**

* Good relevant first or upper second class honours degree in engineering, science or product design.
* Evidence of interest and experience in sustainable energy systems and energy market analysis, with knowledge of some of the following; thermodynamics, energy engineering and energy balance, heat transfer, and modelling.
* Experience of software packages
* Ability to research subjects using libraries, the internet and other information resources.
* Ability to analyse critically technologies and case studies and to use computer modelling to develop improved systems and performance predictions.
* Ability to analyse energy markets (energy policy issues affecting heat) to understand and evaluate the size and potential for growth of demand for waste heat sources in London.
* Ability to communicate in writing and verbally, the outcomes of the work to commercial industrial and scientific audiences.
* Ability to work within a team of both industrial and academic supervisors, to communicate flexibly to scheme players and leaders, at all stages within a structured timetabled project.
* Able to demonstrate an understanding of equality and diversity and their practical applications.

**The Award Detail**

The 3 year studentship is funded by LSBU and leads to the degree of PhD in Smart Energy Systems. The Studentship provides a tax-free maintenance allowance of up to £15,000 pa and includes tuition fees payable to the University. The studentship will also come with the opportunity of disseminating research outcomes on National and International conferences. The successful candidate will join an active research team, under the academic supervision of Professor Graeme Maidment, Dr Akos Revesz and Dr Gareth Davies. The opportunity to teach LSBU students will also be given to the successful candidate.

**Application Procedure**

Informal enquiries can be made to Professor Graeme Maidment, Dr Gareth Davies or Dr Akos Revesz

Email: maidmegg@lsbu.ac.uk, revesza2@lsbu.ac.uk, gareth.davies@lsbu.ac.uk,

Interested applicants should apply via email to Akos Revesz (revesza2@lsbu.ac.uk) with a CV application and covering letter highlighting how they meet the selection criteria above by 5 p.m. on 14 March 2019.

A short list of candidates will be invited for an interview and the successful candidate will be selected for an award in accordance with the University’s postgraduate admission requirements and meet the eligibility of Education (Fees and Awards) Regulations 1997.