



UNIVERSITY OF LEEDS

## CANDIDATE BRIEF

**Research Fellow in Railway Electrification, Faculty of Engineering & Physical Sciences**



**Salary: Grade 7 (£33,797 – £40,322 p.a.)**

**Reference: EPSEE1003**

**Closing date: 17 November 2019**

**Fixed-term for three years**

**We will consider flexible working arrangements**

# Research Fellow in Railway Electrification

## School of Electronic and Electrical Engineering

**Do you have an established research track record with the vision and drive to tackle new challenges? Are you passionate about delivering world leading research in one of the UK's leading research-intensive Universities?**

The University of Leeds along with external partners is investing around £70 Million in establishment of a new high-speed rail and system integration institute. A 10 acre site is being developed as a Rail Engineering/Technology campus, primarily for high speed rail research and including a systems integration and innovation centre in which School of Electronics and Electrical Engineering is contributing significantly.

This post is funded by our industrial partners to develop a three-tiered integration platform for a phased compatibility study and verification of both electrification plan and new equipment introduced in the railway system, as well as optimal design and integration of power supply system and equipment, given the complex legacy infrastructure and existing power supply systems in the UK rail network.

You will have a PhD (or close to completion) in Electrical & Electronic Engineering, Control Engineering, Systems Analysis or a closely allied discipline, with a strong background in software development, data collection and analysis, and system analysis, and a strong background in power system modelling and simulation.

### What does the role entail?

As a Research Fellow, your main duties will include:

- Developing a real-time monitoring and data collection system (with sensors, communications and databases) for power consumption and power quality assessment in traction power supply systems at both component and system levels
- Design and implementation of a supervisory control and data acquisition (SCADA) system to aggregate testing data (power consumption, power quality, EMC/EMI, vehicle dynamics) for future model validation and method development.
- Using collected data to build data-driven models for the planning, risk assessment, and compatibility control of future technologies





- Identifying the most critical locations for installation of portable EMC/EMI monitoring equipment.
- Developing an integrated modeling and simulation platform (IMSP), using collected data, appropriate software and data interfacing, that can capture and analyse scenarios arising in the electrification of the railway route. The developed system should have a visualization algorithm.
- Performing simulation-based compatibility and risk analysis of legacy components and new technologies over the whole system, based on current and future scenarios defined by our industrial partners.
- Analysing and quantifying the technical and economic benefits of the integration of SFC power supplies in the Transpennine Route Upgrade networks (e.g. impact to the power supply.)
- Designing and installing a real-time power system simulation platform to enhance the computational performance of the IMSP and allow for the Hardware-In-Loop(HIL) analysis interfacing with duty cycle models, signaling and communication models. Analysing the interactions and impact on signaling and communication.
- Liaising with academic and industrial partners, summarizing information on technology innovation and knowledge transfer aspects, report writing, research meetings and conference attendance, dissemination of results.
- Preparing papers for publication in leading international journals.
- Maintaining your own continuing professional development and mentoring less experienced colleagues as appropriate;
- Advising on technical content of training and education materials for railway engineers, technicians and maintenance staff;
- 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 close to completion) in Electrical & Electronic Engineering, Control Engineering, Systems Analysis or a closely allied discipline;
- A strong background in software development, data collection and analysis, and system analysis;
- A strong background in power system modelling and simulation;
- A proven track record of peer-reviewed publications in high impact factor journals;
- Good time management, planning and work pressure management skills;
- Excellent written and verbal communication skills, and presentational ability;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience with railway systems.

## 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:

[Prof Kang Li](#), Chair of Smart Energy Systems

Tel: +44 (0)113 3432045

Email: [k.li1@leeds.ac.uk](mailto:k.li1@leeds.ac.uk)



## Additional information

### Faculty and School Information

Further information is available on the research and teaching activities of the School of [School of Electronic and Electrical Engineering](#).

### A diverse workforce

The Schools in the Faculty of Engineering & Physical Sciences are proud to have been awarded the Athena SWAN [Bronze](#) or [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](mailto: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.

