**JOB DESCRIPTION & PERSON SPECIFICATION**

## 1. Job Information

**Post Title:** **Research Fellow**
**Grade:** **7**
**Salary:** **Competitive starting salary range from £38,784 up to £42,254 per annum (dependent upon experience) with the potential to progress. A discretionary range for candidates with exceptional experience can be discussed/considered.**
**Mode:** **Fixed term Until 31/01/2028, Full Time**
**Ref No:** **3880**

The role of Research Fellow typically includes a range of duties and responsibilities from those itemised below, depending on the requirements of the post. Additionally, any specific requirements of this post are summarised within the section headed "Job Purpose".

Job Purpose

The Centre for E-Mobility & Clean Growth (CECG) at Coventry University is seeking a motivated and talented Research Fellow to join an industry-led collaborative research project focused on battery intelligence for battery energy storage systems (BESSs). Fully funded by Innovate UK for 12 months, the project will investigate advanced battery testing, modelling, and intelligent state estimation, with an emphasis on physics-guided artificial intelligence (AI).

Working closely with academic researchers and industry partners, the successful candidate will contribute to the development and validation of innovative methods for battery performance assessment, condition monitoring, and battery management systems (BMS). The research will combine experimental investigations, mathematical modelling, data analysis, and AI-enabled algorithms to address practical challenges in battery characterisation and operational monitoring.

Duties and Responsibilities

1. Plan and conduct battery testing and experimental investigations to characterise battery performance, dynamic behaviour, and ageing.
2. Develop, implement, and validate battery models to support performance analysis, state estimation, and intelligent battery monitoring.
3. Design, develop, and evaluate AI-based and physics-guided algorithms for battery SOC and SOH estimation.
4. Process, analyse, and interpret laboratory test results and operational battery datasets to identify relevant features, degradation indicators, and state-dependent behaviour.
5. Investigate the integration of physical battery models, experimental evidence, and data-driven methods to improve the accuracy, robustness, and generalisability of battery state estimation.
6. Work collaboratively with Coventry University researchers and industry partners to establish technical requirements, address practical challenges, and demonstrate the relevance of research outcomes to industrial applications.
7. Contribute to technical reports, research publications, project meetings, and presentations for academic and industrial stakeholders.

8. Support project planning, milestone delivery, dissemination of findings, and the identification of opportunities for further research and industrial exploitation.
9. Contribute to impact activities of projects, under the direction of the Principal Investigator. Contribute to REF impact rated nationally/internationally excellent.
10. Communicate complex research information using a range of methods and media, including to the public where appropriate. This may include material of a specialist or highly technical nature.
11. To undertake the publication of your research results and outcomes with a view to developing a national/international profile. To publish in a variety of formats including via the project's website and through singularly-authored and collaborative peer-reviewed papers.
12. Undertake supervision of staff. Co-supervise projects at Masters Level and supervise research students with support.

AND other such duties as are within the scope and spirit of the job purpose, the title of the post and its grading.

## 3. PERSON SPECIFICATION - RESEARCH FELLOW

| ATTRIBUTES | ESSENTIAL | ADVANTAGEOUS |
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| ***Education/ Qualifications*** | A PhD in Electrical Engineering, Electronic Engineering, Control Engineering, Computer Science, Energy Systems, Applied Mathematics, or a closely related discipline;.<br><br>Or a relevant bachelor's or master's degree combined with equivalent relevant research or industrial experience. | |
| ***Experience (Paid and Unpaid)*** | Demonstrable experience in at least one of the following areas: battery testing and characterisation, battery modelling, state estimation, artificial intelligence or machine learning, or battery data analysis.<br><br>Research sufficient to produce excellent, high-quality publications and to communicate the results of their work to the wider public.<br><br>Previous experience of active involvement in research at university or industry levels. | Hands-on experience with battery cyclers, battery characterisation, laboratory testing, or the development of battery test protocols.<br><br>Experience with SOC/SOH estimation methods, including Kalman filters, state observers, machine learning, deep learning, or hybrid physics-informed approaches.<br><br>Experience analysing time-series battery data, including dynamic current profiles, voltage responses, temperature measurements, and operational data. |

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| ***Research/Publications Special Interests*** | Ability to write up research for publication in high profile peer reviewed journals and present at national/international peer-reviewed conferences and events.<br><br>Ability to analyse experimental or operational datasets, interpret results, and communicate technical findings clearly.<br><br>A record of disseminating research outputs at appropriate conferences<br><br>Interest in and enthusiasm for the subject matter of the project(s) | Familiarity with equivalent-circuit models, electrochemical models, or other physics-based battery modelling approaches.<br>Ability to collaborate with other researchers and produce appropriate collaborative outputs.<br><br>Knowledge of lithium iron phosphate (LFP) batteries, including their characteristic flat open-circuit voltage regions and voltage hysteresis, would be particularly advantageous. |
| ***Job-related skills/ Aptitudes*** | Practical programming and data-analysis skills using Python, MATLAB/Simulink, or comparable scientific computing tools.<br><br>Knowledge of battery technologies, particularly lithium-ion batteries, BMS, battery performance, or battery ageing.<br><br>Competency to conduct individual and collaborative research projects<br><br>Ability to manage time and work to strict deadlines. | Research project management skills.<br><br>Ability to manage a research project including supervision of the work of others and/or provision expert advice and guidance to teams<br><br>Ability to identify sources of funding and contribute to the process of securing funds, with collaborators if required |
| ***Interpersonal Skills*** | Strong analytical and problem-solving skills, with the ability to plan and deliver research tasks independently and work effectively within a multidisciplinary team.<br><br>Excellent interpersonal, oral and written communication skills, using a range of media.<br><br>Highly self-motivated and organised, flexible, independent, innovative, creative thinker and able to tolerate working with different styles. | Commitment to public engagement and knowledge exchange. |
| ***Other Requirements*** | Able to take responsibility for developing their own career in | |

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| | partnership with the University. | |