

**THE UNIVERSITY OF MANCHESTER**  
**PARTICULARS OF APPOINTMENT**  
**FACULTY OF SCIENCE & ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING**  
**RESEARCH ASSOCIATE IN HIGH VOLTAGE ENGINEERING**  
**VACANCY REF: SAE-027276**

**Salary:** £36,924 - £45,163 per annum depending on experience

**Hours:** Full Time (1 FTE)

**Duration:** Fixed Term for 12 Months

**Location:** Oxford Road, Manchester

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**Enquiries about the vacancy, shortlisting and interviews:**

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**Background**

The University of Manchester (UoM) lies in the heart of Manchester and has been created by bringing together the Victoria University of Manchester and UMIST, two of Britain's most distinguished universities, to create a powerful new force in higher education. The Department of Electrical and Electronic Engineering has over 70 academic staff and is one of the largest departments of this type in the country, a particular strength of the department being power engineering. The Power and Energy Division has a reputation as an international leader in high voltage testing and power systems innovation. It collaborates very closely with many industrial partners in the energy networks sector and home to a multi-million research funded by industry, the UK government, and the EU. More than 20 academics and over 120 PhD students, post-doctoral researchers and visitors contribute to the world-leading and innovative output from the Power and Energy Division, with a multi-million research portfolio.

We are currently seeking a post-doctoral research associate to work on a 12-month project related to insulation systems for high voltage dry type transformers. This project is funded through University of Manchester Impact Accelerator Award (IAA) in collaboration with IST Power. The research will be performed at the new UoM Engineering campus Development on

Oxford Road in Manchester; however, some travel to the IST Power office in Leicester will also be expected.

### **Job Description**

Transformers used in DC systems often have to withstand combined AC and DC stresses. It is known that the electric field distribution and degradation process under DC stresses are different to that under AC stresses. Furthermore, the bond between conductors and insulation can become a weak point in the dry type transformers and could lead to discharges that would eventually cause the transformer failure. Through experimental and modelling approach this project will study the electrical endurance limitation of the insulation material and the impact of interface phenomena between solid insulation and windings on the insulation degradation and lifetime.

As part of the project, you will be expected to:

- **Design and Develop Experimental Platforms:** Create an experimental setup to evaluate the dielectric performance of solid insulation under different operational conditions.
- **Characterize Insulation Degradation:** Utilize the platform to monitor and assess the degradation and breakdown processes in solid insulation materials.
- **Model and Simulate Breakdown Mechanisms:** Apply modeling and simulation techniques to understand breakdown mechanisms, focusing on microscopic processes affecting material integrity.
- **Investigate Interface Phenomena:** Study the impact of interface between solid insulation and winding materials on insulation degradation process.

### **Key Responsibilities, Accountabilities and Duties:**

To perform the following activities in conjunction with and under the guidance of the Principal/Co Investigators:

1. Plan and conduct assigned research in accordance with the project deliverables and research strategy. Ensure regular research progress and project deliverables according to the project plan.
2. Document research outputs including analysis and interpretation of research data, maintaining and documenting models, writing technical reports, and producing presentation as appropriate.
3. Develop regular publications of international quality in high profile journals and conferences.
4. Contribute to the presentation of work at industrial meetings, international and national conferences, at internal and external seminars, colloquia and workshops organised by the project consortium/School.
5. Collaborate/liaise with colleagues from the research consortium, academic and industrial partners and students.
6. Keep up to date with current knowledge and recent advances in the field/discipline.

7. Post holders are required to familiarise themselves with the University's Equality and Diversity policies and to actively support these wherever possible.

These key tasks are not intended to be exhaustive but simply highlight a number of major tasks which the successful candidate may be reasonably expected to perform.

### **Person Specification – Essential Knowledge, Skills and Experience**

The successful candidate:

1. Will hold a PhD qualification (or equivalent) in Electrical Power Engineering (though other backgrounds will be considered if subject knowledge and experience is considered relevant to the project).
2. Will have experience delivering experimental based research projects related to transformer insulation systems.
3. Will have experience delivering modelling based research projects related to transformer insulation systems
4. Will have experience working in a high voltage laboratory
5. Will have a strong track record of publishing research papers.

### **Desirable – Knowledge, Skills, Experience and qualifications**

- Experience of developing new experimental test systems.
- Experience working in a laboratory environment.
- Experience working on industrially focused projects and reporting to industrial stakeholders.

### **Working for the University of Manchester**

The University of Manchester strives to make our community a welcoming, caring and enthusiastic one, fuelling ambition with opportunities and support to help us all achieve our personal and professional goals.

Our diverse job opportunities include an attractive [benefits package](#) with family-friendly policies that provide for flexible working. We care deeply about career and personal development, offering a structured induction programme for new staff, an annual performance and development review, staff training for all career stages and mentoring opportunities to support your career development.

We have a genuine commitment to [equality of opportunity](#) for our staff and students, and are proud to employ a workforce that reflects the diverse community we serve.

As a global institution, situated at the heart of a lively, [culturally diverse city](#), we welcome applicants of all nationalities. To help international job applicants plan for life in the UK, we have put together some useful [information on passports and visas](#), travel to the UK, accommodation and a number of other practical considerations.