



<b>Job title</b>	Research Associate/Fellow – Electromagnetic Simulation Techniques for Virtual Prototyping of Power Electronics	<b>Job family and level</b>	Research and Teaching Level 4 Training Grade/ Level 4
<b>School/ Department</b>	Faculty of Engineering, Department of Electrical, and Electronic Engineering	<b>Location</b>	University Park

## Purpose of role

To research and develop electromagnetic modelling techniques for electro-thermal simulation of power electronic systems. To work in collaboration with researchers at other UK universities and contribute to the development of power electronic simulation software.

	<b>Main responsibilities</b> (Primary accountabilities and responsibilities expected to fulfil the role)	<b>% time per year</b>
1	To deliver research as part of a collaborative team and contribute to the achievement of specific research objectives.	60%
2	To collaborate in writing papers for submission to journals and conferences and prepare progress reports on the results of research.	15%
3	To write technical documentation and prepare regular progress reports on the results of research.	10%
4	To assist in the co-ordination of research and related administrative tasks, including liaising with external project collaborators and providing assistance with supervision of doctoral students.	10%
5	To supervise undergraduate and/or postgraduate students' projects and placements, as appropriate. To participate in the assessment of student knowledge and co-supervise projects at Masters and PhD level.	5%
6	Any other duties appropriate to this post as required by their line manager	

## Person specification

	Essential	Desirable
<b>Skills / Training</b>	<ul style="list-style-type: none"> <li>• Good knowledge of electromagnetic theory.</li> <li>• The ability to implement numerical methods for solving electromagnetic problems.</li> <li>• An understanding of how to translate mathematical algorithms into functional, efficient computer code.</li> <li>• Research skills equivalent to those obtained through successful completion of a PhD.</li> <li>• Excellent social and communication skills.</li> <li>• Relevant IT skills for data processing and presentation of results.</li> </ul>	<ul style="list-style-type: none"> <li>• In depth knowledge of C or C++ programming languages.</li> <li>• Knowledge of the Partial Element Equivalent Circuit method for electromagnetic simulation, or other integral methods.</li> <li>• Knowledge of Fast Multipole Methods and their application to electromagnetic problems.</li> <li>• Training in the use of commercial simulation tools (finite element or equivalent).</li> <li>• A basic knowledge of power electronic systems.</li> </ul>
<b>Knowledge and experience</b>	<ul style="list-style-type: none"> <li>• Experience in a research environment.</li> <li>• Significant computer programming experience.</li> <li>• Experience with technical report writing and publication of research in high profile academic conferences and journals.</li> </ul>	<ul style="list-style-type: none"> <li>• Experience contributing to large software projects or developing software as part of a team.</li> </ul>
<b>Personal Attributes</b>	<ul style="list-style-type: none"> <li>• Ability to work independently, manage deadlines and prioritise tasks.</li> <li>• Ability to work well in a team.</li> <li>• Ability to communicate with researchers at other institutions and play a role in coordinating software development activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate creativity and leadership in problem solving.</li> </ul>
<b>Qualifications, certification and training (relevant to role)</b>	<ul style="list-style-type: none"> <li>• Good (2.i) first degree in electrical/electronic engineering, mathematics, physics or a related subject.</li> <li>• PhD or about to obtain (or equivalent) in power electronics modelling, applied electromagnetics, or a closely related subject.</li> </ul>	



The University strongly endorses Athena SWAN principles, with commitment from all levels of the organisation in furthering women's careers. It is our mission to ensure equal opportunity, best working practices and fair policies for all.

## Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people** Is always equitable and fair and works with integrity. Proactively looks for ways to develop the team and is comfortable providing clarity by explaining the rationale behind decisions.
- Taking ownership** Is highly self-aware, looking for ways to improve, both taking on board and offering constructive feedback. Inspires others to take accountability for their own areas.
- Forward thinking** Driven to question the status quo and explore new ideas, supporting the team to "lead the way" in terms of know-how and learning.
- Professional pride** Sets the bar high with quality systems and control measures in place. Demands high standards of others identifying and addressing any gaps to enhance the overall performance.
- Always inclusive** Ensures accessibility to the wider community, actively encouraging inclusion and seeking to involve others. Ensures others always consider the wider context when sharing information making full use of networks and connections.

## Key relationships with others

