

Smart Grid Sensors and Measurement Research Engineer

Joint appointment with the NATIONAL PHYSICAL LABORATORY (NPL)

Department	Power Networks Demonstration Centre (PNDC) (http://www.strath.ac.uk/pndc/), Department of Electrical and Electronic Engineering (http://www.strath.ac.uk/eee/)		
Faculty	Faculty of Engineering (www.strath.ac.uk/engineering/)		
Staff Category	Knowledge Exchange	Reference No	28277
Reports To	PNDC R&D Manager	Grade:	7
Salary Range:	£31076 - £38183	Contract Type:	Fixed Term (36 months)
FTE:	1 (35 hours/week)	Closing Date	Tuesday, 1 November 2016

Job Advert

The University of Strathclyde in Glasgow possesses a large internationally rated Engineering Faculty with a proud history of successful joint ventures with industrial and enterprise partners. As part of the University's strategic development, the Power Networks Demonstration Centre (PNDC) has been established in Wardpark North near Cumbernauld. The PNDC is a world-class facility with dedicated staff that will accelerate the adoption of new, 'smart' technologies within advanced power grids, supporting the increased accommodation of renewable energy, electric vehicles and demand side management. The £12.5 million Centre - the first of its kind in Europe – has been founded by the University of Strathclyde and leading energy companies including Scottish Power Energy Networks and Scottish and Southern Energy Power Distribution, with support from Scottish Enterprise and the Scottish Funding Council. With the addition of UK Power Networks, Vodafone, S&C Electric, Omicron, and Locamation, the Centre has expanded its membership to seven industry partners and this growth is set to continue.



The PNDC provides: a purpose-built platform for showcasing state of the art electrical distribution, generation, storage and demand side innovation; a rapid technology pipeline accelerating the proving and deployment of integrated smart grid solutions with commercial partners; a realistic and controllable test bed from primary plant to state-of-the-art control room for the development of emerging smart grid technologies that will support the realisation of a de-carbonised grid.

NPL is one of the UK's leading science facilities and research centres. NPL occupies a unique position as the UK's National Measurement Institute and sits at the intersection between scientific discovery and real world application. The Electromagnetics area, under the auspices of NPL's Centre for Carbon Measurements, is working on smart grids projects which focus on the application of measurements to the design and operation of smart grids.

The role of Smart Grid Sensors and Measurement Research Engineer (Knowledge Exchange Associate) is an exciting and unique joint appointment between PNDC and NPL to deliver partnership in the area of sensors and measurement. You will test new technologies and solutions in the field of electrical power systems through work on a wide range of technical projects, including implementation of new technologies in the field of smart grid, sensors testing, metrology, measurement circuits and algorithms,

state estimation. You will be primarily based at PNDC in Cumbernauld and may travel regularly to NPL in Teddington, with periods based at NPL as required.

You should possess a good honours degree in computer science, electrical engineering, or a relevant engineering/science subject, together with relevant professional experience or a completed PhD. You will have advanced knowledge of electrical power systems and an appreciation of the associated sensors and measurement technologies presently implemented at distribution and transmission networks, and be capable of applying this knowledge in a highly practical environment. Good evidence of technical writing ability and strong communication skills are important, as you work as a conduit between the PNDC and NPL. You must be a self-starter, you will be able to plan and conduct individual research and knowledge exchange activities in a structured fashion, as well as generate new ideas and concepts, and the capacity to work in a dynamically changing team environment.

Job Description

Brief Outline of Job:

You will undertake specific roles in power system modelling and simulation research/measurement projects, taking lead responsibility for some element/s of the planned research in order to generate new solutions to problems and issues. The role includes working with industrial and academic collaborators in the area of metrology for electrical smart grids, and dissemination of research results through appropriate high quality academic and professional publications and events.

Main Activities/Responsibilities:

1.	Research novel ideas and implement these in software and/or hardware in the loop simulation. Adapt knowledge in order to generate new solutions on a range of projects and services in order to generate income. Identify additional knowledge from outside of PNDC and NPL that can be applied to projects in order to solve problems.
2.	Undertake testing of conventional and non-conventional electrical sensor products in order to research advantages and disadvantages, suitability to solve specific problems, and any associated risks.
3.	Run power system simulations using simulation software, e.g. MATLAB, PowerFactory, PSS/O.
4.	Contribute to dissemination of knowledge internally and externally in order that PNDC, NPL and the wider scientific community are informed of current and future capability development in order to maximise academic impact and commercial and knowledge opportunities. This should be delivered through identifying and pursuing opportunities for dissemination through academic and professional publications, seminars, conferences, project meetings and other activities as agreed.
5.	Identify and communicate opportunities presented by technology developments requiring future research to both PNDC and NPL line management, and other colleagues as appropriate, in order to inform and influence future strategy,
6.	Identify and communicate market developments into the income generation process and inform future PNDC and NPL marketing and sales strategy.
7.	Ensure that in all activities safe standards of work are maintained and applicable business processes are followed to ensure customer satisfaction and compliance with applicable standards.
8.	Prepare and deliver presentations and papers describing personal and PNDC/NPL capabilities in order to communicate PNDC/NPL capability and hence maintain and maximise PNDC and NPL's joint and individual profiles.
9.	Other duties as may be assigned.

Person Specification

Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

E.1 Good honours degree (minimum class 2:1) and PhD or equivalent professional experience in Electrical Engineering

Experience

E.2 An excellent problem-solver, with a track record of achievement in an R&D environment

E.3 Experience of power system modelling, simulation and state estimation.

E.4 Experience of protection and control or sensors and measurement in a power systems environment.

E.5 Experience with the preparation of reports and technical papers.

D.1 Experience of working in, or for, the electricity supply industry.

D.2 Computer simulation or modelling experience (e.g. MATLAB)

D.3 Experience of preparing of R&D funding applications.

Job Related Skills and Achievements

E.6 A sound understanding of AC electrical theory and practice and the electrical supply system / smart grids landscape

E.7 Knowledge of protection, control, automation and/or measurement schemes

E.8 Developing ability to conduct individual research and knowledge exchange activity

E.9 High levels of initiative with the ability to apply knowledge in a highly practical environment, and to generate new ideas.

D.4 Good programming skills (e.g.C++, Python)

D.5 Knowledge/use of SCADA systems.

Personal Attributes

E.10 Excellent interpersonal and communication skills (oral and written), with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences.

E.11 The ability to work independently, with minimum supervision, and as part of a small team.

E.12 Enthusiastic self-starter and able to work to deadlines, with a customer focus.

Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted before interview without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (<http://www.strath.ac.uk/hr/workforus>).

Informal enquiries about the post can be directed to Alan Dunn, PNDC COO, Power Network Demonstration Centre, alan.dunn@strath.ac.uk.

Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from [Payroll and Pensions](#).

Relocation

Where applicable, the University offers a relocation package to support new employees who meet the eligibility criteria. The relocation package is offered as a contribution towards costs incurred, and is designed to be flexible, allowing staff to use the financial support available in the way that will be most helpful to them. Further details are outlined in the Relocation Policy.

Equality and Diversity

We value diversity and welcome applications from all sections of the community.

The University currently holds a Bronze Athena SWAN award, recognising our commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.



Conditions of Employment

Knowledge Exchange Staff

1. GENERAL CONDITIONS

Members of staff are subject to the Charter and Statutes and the Ordinances and Regulations of the University, published in the Calendar, and to any amendments or additions thereto approved by the University Court and, in the case of the Charter and Statutes, the Privy Council. Staff are also expected to familiarise themselves with, and adhere to, general University policies and procedures, as published on University web pages.

The University Court recognises Strathclyde Universities and College Union (SUCU) as the sole body with which it will negotiate and consult on all collective issues concerned with the terms and conditions of employment of Knowledge Exchange Staff. Such terms and conditions may be varied by the University Court after negotiation and consultation with SUCU.

Each member of staff is responsible for the proper performance of allocated duties to the person or persons specified in the member of staff's letter of appointment and any accompanying papers.

The University is committed to ensuring that its business is conducted in an open and transparent manner and will take all appropriate steps to address risks of bribery or corruption. Members of staff are required at all times to act honestly and with integrity and to safeguard the resources for which they are responsible. The University has in place a robust Public Interest Disclosure (Whistleblowing) Policy to enable concerns to be brought to its attention. This is available at www.strath.ac.uk/publicinterestdisclosure. Other relevant policies, e.g. Fraud Prevention and Conflicts of Interests, can also be found on the University's website.

Any member of staff may at any time be exposed to commercially sensitive information, information related to potentially valuable intellectual property or information which may otherwise be of a confidential nature. This information, which could be found anywhere in the University, may be written or disclosed orally, can include information of a commercial or technical nature, and may be owned by the University or by third parties. The University requires all employees to keep any such information confidential in the first instance and not disclose, publish or otherwise disseminate it without prior consent of the University. Such confidentiality obligations are commonplace and in the commercial interests of the University. When in doubt advice should always be sought from Research and Knowledge Exchange Services prior to disclosure.

The University operates probationary periods for new staff, the duration of which will be specified in individual letters of appointment. The normal probation period for posts in this staff category is 9 months for those at grades 6 and 7, and 12 months for grades 8 and above. Further guidance on probationary procedures is published at <http://www.strath.ac.uk/staff/policies/hr/>.

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Further information on the terms and conditions specified in this document and other staffing policies and procedures can also be found at www.strath.ac.uk/hr.

2. SALARY

Appointments are made at an appropriate salary point on the University's grading structure, with initial placing determined according to qualifications and experience. Increments are paid to staff on the 12 month anniversary of their appointment. Where this is not the first of the month, the increment will be paid on the first of the month directly

after the 12 month anniversary. This allows 1 progression to the next point on the salary scale until the top guaranteed point of the scale is reached.

Salaries are paid directly to staff members nominated bank account, normally on the second last working day of the month.

3. HOURS OF WORK

Working time is that required to fulfil the duties of the post. The University Court recognises that Knowledge Exchange staff carry out their duties in a variety of ways appropriate to the nature of their role, but expects work to generally be performed during normal working hours on week days. There are exceptions to this pattern which may involve contact at other locations or in the evenings, or at weekends, but these arrangements will be made with the agreement of the member of staff concerned.

Duties may, by arrangement with Head of Department/School/Director, include some teaching associated with the post (up to a maximum of 40 hours per semester) for which no additional payment will be made.

Additional work which does not fall within the scope of that described above may by arrangement attract payment which must be authorised and processed through the payroll.

4. HOLIDAYS

Annual leave entitlement is 31 days per year to be taken by agreement with the line manager. For staff members working on a part-time basis, holidays will be calculated on a pro-rata basis.

In addition to annual leave there is an entitlement to eleven public holidays per year which should be taken on days that the University is closed for this purpose. The University presently closes for four additional days over the Christmas and New Year period. **These additional days count against the annual leave entitlement.**

For staff members working on a part-time basis, public holiday entitlement will be calculated on a pro-rata basis.

Annual leave and public holiday entitlements should be taken in the leave year to which they relate. Up to five days leave can be carried forward into the new leave year subject to line management agreement. In exceptional circumstances, Heads of Department/School/Director may approve carry forward of accrued annual leave in excess of five days.

The University's expectation is that staff take all accrued holidays prior to their termination date. If staff have exceeded their entitlement the University will deduct an equivalent number of days pay from final salary payments.

5. SICKNESS ABSENCE

During any period of absence through illness or injury provided the appropriate notification and certification procedures have been followed the University will pay a member of staff (having taken account of the aggregate of all periods of absence due to illness during the twelve months immediately preceding the first day of the current absence) as follows:

Period of Continuous Employment at start of absence from work	Full Pay	Half Pay
Less than 1 year	1 month	1 month
1 year but less than 2 years	2 months	2 months
2 years but less than 3 years	4 months	4 months
3 years but less than 5 years	5 months	5 months
5 years or more	6 months	6 months

In order to manage the University's sick pay scheme the University requires to maintain sickness absence records on individual members of staff. When making payments after the expiry of statutory sick pay the University will deduct an amount equivalent to any benefit normally payable by the Department of Work and Pensions. For full details on the general University policy in this area please refer to the Sickness Absence Management Policy at www.strath.ac.uk/staff/policies/hr.

6. PENSIONS

New members of staff, aged under 75, will be admitted automatically to membership of the Universities Superannuation Scheme (USS) on taking up appointment. If you are already in receipt of a USS pension you will join USS in accordance with pension auto-enrolment regulations. USS requires a contribution from the member, currently 8 per cent of pensionable salary. A contribution, currently 18 per cent of pensionable salary, is paid by the University. From 1 April 2016 all members are part of the career revalued benefits scheme called the USS Retirement Income Builder. From 1 October 2016 a threshold, initially of £55,000 a year, will apply to the maximum salary that counts towards the USS Retirement Income Builder. From the same date a new defined contribution section of the scheme called USS Investment Builder will open and any contributions above the threshold will be invested in this section. The exception to automatic membership of the pension scheme applies if your post is located out with the UK in an EU member state. If this is the case membership of USS is not available to you.

New members of staff may opt out of USS within three months of taking up appointment and will then be treated as if they had never been a member of the scheme. After three months members of staff who wish to withdraw from USS during their employment will be required to give a minimum of 28 days' notice in writing to the University. Any member of staff who wishes to opt out should contact the Pensions Section, Finance, in the first instance (pensions@strath.ac.uk). Please note that if you are a member of Pensions Plus and withdraw from USS with less than two years of membership, or cease employment with the University and have less than two years of USS membership, the option of a refund of pension contributions will not be available to you. Instead, USS must provide you with a pension benefit that is payable from your retirement date.

The University reserves the right to alter or withdraw Pensions Plus as it sees fit or as required to comply with legislative changes. Withdrawal or amendment of Pensions Plus will not affect your membership of USS. If you do not wish to participate in Pensions Plus but wish to remain in the pension scheme please contact the Pensions Team who will provide you with a non-participation form.

Information regarding pension scheme membership can be found on the Pensions pages of the University's website. Full information regarding USS can be found on the USS website – www.uss.co.uk

7. PLACE OF WORK AND RESIDENCE

Members of staff will be based on the John Anderson Campus, unless otherwise stated in the letter of appointment. The Department/School in which the post is initially placed will be specified in the letter of

appointment although there will be an expectation to work at such other places as required in the course of employment.

If the need arises for members of staff to work outside the UK for a period (or periods) of more than one month then such arrangements will be subject to mutual agreement. Members of staff would then be provided with a statement in advance setting out the terms covering such periods of employment.

The University does not normally place specific restrictions upon the place of residence of members of staff. All staff are, however, expected to reside in a location which is compatible with the satisfactory fulfilment of all the duties associated with their appointment.

8. CONSULTANCY/FURTHER ACTIVITIES

To support the strategic objectives of the University and to facilitate individual professional development, the University encourages staff to engage in professional activities with outside bodies related to their field of work. In many cases, such activity will be approved on the basis that it represents University knowledge exchange activity and should therefore be treated as part of the individual's overall workload and managed through the University's systems. It is also recognised that there will be some cases where an activity is entirely separate from the University and should thus be notified/approved as a personal business activity. For further information please refer to the "University Procedure in relation to Work for Outside Bodies including Consultancies", which forms part of the employment contract and can be accessed at <http://www.strath.ac.uk/hr> www.strath.ac.uk/hr

9. DISCIPLINARY AND GRIEVANCE PROCEDURES

Further information on the University's disciplinary and grievance procedure can also be found at www.strath.ac.uk/policies/hr or on request from Human Resources.

10. NOTICE AND TERMINATION

Members of staff are employed on the conditions indicated in individual letters of appointment and any accompanying papers. The University is not obliged to give notice of termination or continue any employment beyond the end of that period. Where the period of the contract of employment is for one year or less it may be terminated short of the fixed term period by one months notice on either side. Where the period of the contract of employment is for more than one year, or where there have been a further contract or series of contracts immediately consecutive, the employment may be terminated short of the fixed term period by three months' notice on either side, except during the probationary period when the notice period is one month.

If the appointment is for a fixed term it will expire at the end of the period without the necessity for notice.

Revised April 2016