Training PhD Students: Exchange Visits

The Supergen Flexnet Consortium plans to train around 30 PhD students – in electrical engineering, economics and social psychology – between October 2007 and September 2011. We intend to create a group of researchers who are comfortable with working across disciplines (having received some training in all three of our areas), and have broad experience of the challenges facing the electricity industry as it moves towards a low-carbon future.

One aspect of this is that we want all of our students to experience work in a different environment for around a month during their training. This might be another university department within the Consortium, or at one of our industrial partners. Visits to a company or institution outside the Consortium can also be considered. The student might visit their host for a month-long block, or for the same amount of time, spread over a longer period. The visits should take place at a mutually convenient time during the second year of the student's training, at a point when they have already developed their skills, but before they are distracted by the pressure of an approaching submission deadline. We wish to identify a suitable exchange partner for each student by the end of their first year.

The work to be undertaken would be suggested by the host, and would need to be acceptable to the student and their supervisor. In some cases, a host might have a self-contained project for which they needed someone with the skills that the PhD student has. If a host does not have such a project, they should not try to create one. Our students would also find it valuable to spend time working within a team, on the day-to-day tasks that the team encounters – as long as their role in the team is appropriate, given their skills and level of experience. We ask that each host provided a mentor to support the student in a way that allows both host and student to gain from the visit.

Each student will have an allowance for travel, accommodation and subsistence during their visit, as well as their normal maintenance grant.

If you believe that your organisation might be interested in hosting a visit from one or more students, please contact Professor Richard Green, University of Birmingham, who is leading the Consortium's training activities. Email: r.j.green@bham.ac.uk; telephone 0121 415 8216.

Supergen Flexnet consists of researchers from eleven UK universities (Bath, Birmingham, Cambridge, Cardiff, Durham, Edinburgh, Exeter, Imperial College, Manchester, Strathclyde and Surrey) with support from the Engineering and Physical Sciences Research Council and our industrial partners (EDF Energy, The National Grid Company plc, Scottish Power, Scottish and Southern Energy plc, CE Electric, Central Networks). FlexNet's intention is to put in place a substantial body of work that will build on our past achievements and lay out the major steps, technical, economic, market design, public acceptance and others, that will lead to flexible networks. We will start to showcase these so that they can be taken up by the commercial sector, Government and Regulators for practical implementation.

Some of our students have written about what they achieved in, and learned from, their visits:

Ibrahim Abdulhadi (Strathclyde, in the Smart Flexible Controls workstream) undertook an 8 week placement at National Grid plc. He worked with the team that developed future policy for transmission network investment as its 'technical secretary', supporting the project manager who is overseeing the development of new company policy to replace certain system assets. This mainly involved attending technical meetings, preparing notes and creating an interactive project chart/database. This was an invaluable experience as it not only exposed him to the large scale activities of the transmission system operator, but it also helped him focus his (related) research activity.

Robert MacDonald (University of Strathclyde, in the Shape and Size of the Network workstream) spent 5 weeks at Smarter Grid Solutions Ltd, on a project for FlexNet partner Scottish and Southern Energy. He worked closely with the SSE Operations Director (Bob Currie), developing an excel-based "Generator Constraint Analysis Tool", used to estimate generator curtailment in Active Network Management schemes. He used Visual Basic for Applications (VBA) to add new functionality and flexibility for future developments. The project has provided him with insight into the operational characteristics of emerging smart grid technologies, as well as gaining the technical experience associated with the development of a tool which will be utilized in many future projects for the company. He was additionally given time for one-to-one discussions with the Managing Director (Alan Gooding) to discuss key regulatory and economic factors surrounding the deployment of network-driven smart grid technologies, something which has great relevance to his PhD study.

Simon Le Blond (Bath, in the Smart Flexible Controls workstream) spent a month at National Grid, under the supervision of Ray Zhang of Asset Policy, who is currently manager of the AS3 project, concerned with standardising and modernising substation protection and control systems. Primarily working as technical secretary to Dr Zhang, he was able to attend AS3 working group meetings between National Grid, vendors and universities and report on meeting outcomes. The placement provided insight into industry culture and National Grid's company structure, knowledge in substation protection and control and established expert points of contact.

Stephanie Hay (Strathclyde, in the Smart Flexible Controls workstream) spent six weeks on secondment at Smarter Grid Solutions Ltd. During this time, she worked on the integration of the Orkney Registered Power Zone active network management scheme into the Scottish and Southern Energy distribution control room. She worked directly with the Operations Director (Robert Currie) in establishing the data exchange between the scheme and the control room, and consulting with the SSE control room concerning their user requirements. She was involved in producing a training document for operators and will follow up by delivering the accompanying training seminar. She was given invaluable insight into how Active Network Management schemes are integrated onto distribution networks, how such schemes interact with the control room, and the importance of the ‘human element’.

Cornelis Plet (Imperial College, in the Power System Electronics workstream) spent four months on a research visit to the University of Toronto. As part of the Centre for Applied Power Electronics (CAPE) and under the supervision of Prof R. Iravani he worked on developing analytical methods of calculating fault currents and voltages in inverter dominated distribution networks for use in protection studies. Back in Imperial College he is now working on experimentally validating the results obtained during the visit, using the new Maurice Hancock Energy Integration Lab. Working closely with members of CAPE, he gained many insights into the current limiting, synchronisation and ride through requirements of large numbers of inverter interfaced generation sources connected to a faulty grid.