

Power Networks Demonstration Centre

PNDC

The Power Networks Demonstration Centre will operate as a world-class research centre capable of supporting the development and validation of future electrical power technologies.

Operational by the winter of 2012, the £12.5m purpose-built facility – the first of its kind in Europe – has been designed to meet the demanding technical needs of electricity utilities, system integrators, equipment manufacturers, academia and others.

Background

The Power Networks Demonstration Centre (PNDC) was conceived by the Institute for Energy and Environment, within the Electronic and Electrical Engineering Department at the University of Strathclyde in Glasgow. With 200 staff and researchers, the Institute is one of the largest electrical power engineering and energy technology university research groups in Europe, with a £35m portfolio of activities. The PNDC has the support of two of the UK's leading energy companies - ScottishPower and SSE - as founding partners, as well as the support of Scottish Enterprise and the Scottish Funding Council.

Overview of PNDC

The PNDC's vision is to undertake a range of innovative projects that will accelerate the adoption of new, 'smart' technologies, from advanced power grids incorporating renewable generation to electric cars and household appliances. Working with a mix of Scottish, UK and international partners, the PNDC will be committed to testing and deploying new low carbon technologies by providing an environment to trial them more quickly and effectively under a range of challenging system scenarios. Ultimately, the Centre aims to set new standards, with a focus on a range of technology streams, including: network management, technology and devices; integration of distributed generation; protection and monitoring; and smart grid-enabling technology.



Research, Development, Demonstration and Deployment (RDD&D)

The 13,000 sq ft PNDC facility will host an 11 kV and LV network environment representative of UK networks and secure test bays to allow the pre-commercial testing of primary (HV and LV) equipment and secondary (control, protection and measurement) equipment prior to being implemented in public networks. The PNDC's capability will be built around:

- A network comprising primary and secondary equipment providing a representation of urban, semi-urban and rural networks
- Standard cable and overhead line circuit configuration with protection schemes
- Grid connected or islanded configurations that allow voltage/frequency disturbances and fault investigations
- Capabilities to test and evaluate new forms of generation, network components, demand-side management and storage systems at HV and LV
- A professional control room environment and network simulator for developing innovative decision-support tools
- Real Time Digital Simulator (RTDS) software and hardware to support larger system testing

Industry-focused Innovation

By enabling industry to better understand the role of both small and larger-scale distributed generation in the future energy system, effective devices, integration solutions and operational policies will be identified at the PNDC for rapid development and deployment. The Centre will also allow for the trialling of new technologies that will enable the integration of smart household appliances with the grid.

Membership / Partnership Opportunities

Membership of the PNDC involves two categories of membership that permit engagement with large organisations (Tier 1) and small-to-medium enterprises (Tier 2). For membership information and details of initial research programmes, visit www.strath.ac.uk/pndc

