New partnership opens doors

One of the strategic objectives of the Faculty of Engineering, Built Environment and Information Technology is to establish new partnerships with national and international research, educational, funding and other organisations. In August 2014, the Department of Electrical, Electronic and Computer Engineering signed a Memorandum of Understanding (MoU) with Powertech, a wholly owned subsidiary of Altron (Allied Electronics Corporation Limited).

Celebrating the signing of the partnership agreement are Prof Sunil Maharaj, Dean of the Faculty (far left), Prof Gerhard Hancke, Head of the Department (third from left) and Prof Ramesh Bansal, Head: Power Systems Engineering Group in the Department (far right).

Powertech is focused on delivering advanced technologies for the creation, management, distribution, storage and use of electricity across industries. The company's core business includes the reliable delivery of high-quality technical equipment, support and engineering expertise to support demanding client requirements across a range of specialist applications. Dr Raj Naidoo, a senior lecturer in the Department and a registered professional engineer, will be overseeing students' progress.

The mission of this valuable four-year partnership is to participate in forefront research activities in power and energy research, and to deliver world-class research and educational outputs for the benefit of Powertech, the University, and the power and energy industry in general.

The partnership aims to accomplish the following:

- Promote study and research in the field of power and energy systems, products and services.
- Enhance interaction between academic institutions and the industry in general, and specifically between the University of Pretoria and Powertech.
- Contribute to education and teaching in the fields of power systems, energy systems and electrical design at an undergraduate and, possibly, postgraduate level.
- Aid human capital development and the development of skills in the power and energy area.

Powertech will initially fund undergraduate student bursaries in the fields of electrical and mechanical engineering. At Powertech's discretion, this may be extended into a Power Systems Chair with an administrative assistant, and the development of postgraduate modules and bursaries. Students' progress, as well as development and outputs, will be reviewed annually.

A smart perspective on electricity

The University of Pretoria is paving the way for new approaches to solving South Africa's energy crisis. Its Smart Grid Lab in the Department of Electrical, Electronic and Computer Engineering offers a fresh approach to smart grid research that will empower end users and deliver savings and benefits to utilities and municipalities. These benefits will be realised across the industrial, commercial and residential sectors.

The electricity grid refers to a network of transmission lines, substations and transformers that deliver electricity from the power plant to homes and businesses. Successful smart grid technology should be able to cope with all the demands of the digital era, as well as automate and manage the increasing complexity of and need for electricity in the 21st century. A smart grid is a modernised electricity grid that uses analogue or digital information and communication technology to gather and act on information. Customers will receive better service and lower electricity rates. This new type of grid will consist of controls, computers, automation and new equipment.

The Smart Grid Lab delivers high-quality research, products, services and capabilities that fill the widening gap between the end users and electricity suppliers across African markets. Some of the practical applications and opportunities for research include renewable energy integration, smart prepaid metering, advanced metering infrastructure security and active network management.

The University's Smart Grid Research Group collaborates with the Smart Grid Programme Manager at the South African National Energy Development Institute (SANEDI), Dr Minnesh Bipath. The research group is led by Dr Raj Naidoo, a senior lecturer in power and energy systems engineering, and Director of Enermatics Energy and Stellenbosch Wind Energy Technologies (SWET). The other two members of the research group are able to contribute their vast experience to this cutting-edge research.

Prof Ramesh Bansal, who heads the Power Systems Engineering Group at the University of Pretoria, has more than 22 years of teaching, research and industrial experience, while Prof Xiaohua Xia is Director of the Centre of New Energy Systems (CNES), as well as the National Hub for Postgraduate Programme in Energy Efficiency and Demand-side Management Hub at the University of Pretoria.