New revolution in electricity generation

Efficient large-scale power generation from geothermal and other low-grade heat sources is a step closer with the release of a revolutionary new technology platform. Called **GRANEX**, the technology delivers higher thermal efficiencies than conventional power plants and increases the amount of electricity that can be generated from low-grade heat sources such as geothermal and industrial waste heat.

A 100 kilowatt pilot plant will be opened at the **University of Newcastle's Callaghan campus** by the NSW Minister for Mineral Resources, Peter Primrose MLC, and the NSW Minister for the Hunter, Jodi McKay MP. The pilot plant will allow for a comprehensive power generation program over a wide range of operating conditions.

Over the past four years a team of researchers led by **Professor Behdad Moghtaderi** from the University's **Priority Research Centre for Energy** have worked in partnership with Granite Power Pty Ltd (GPL) on the GRANEX technology platform, developing and studying a one kilowatt proof-of-concept power plant.

"The one kilowatt model was a great success and demonstrated a 40 per cent improvement in terms of thermal energy efficiency and power generation," Professor Behdad Moghtaderi said.

"It demonstrated for the first time an effective and economically viable technology platform for power generation from low-grade heat sources and has allowed us to scale up the project to the 100 kilowatt pilot plant.

"Our work from here will allow us to establish the parameters to design and build a power plant of any size based on the GRANEX concept and put to use valuable heat sources that would otherwise be wasted."

Professor Moghtaderi said, if harnessed, geothermal and waste heat energy could be used to meet the demand of the Australian electricity market for years to come.

"Geothermal energy has clear environmental advantages over other renewable energy sources as it has no CO2 emissions and can provide baseload electricity," Professor Moghtaderi said.

GPL Managing Director Stephen de Belle said the performance of GRANEX would transform the power generation sector, and was a huge credit to Professor Moghtaderi, his team and the University of Newcastle.

"The existing recovered industrial waste heat market and the growing demand for low-cost, green, basedload geothermal power means there is a large and increasing market in Australia and internationally for GRANEX," Mr de Belle said.

"It will have significant and very positive implications for employment and exports."

Several major power companies and industrial companies have already expressed a keen interest in the GRANEX technology for waste heat recovery programs. When testing is complete, the 100 kilowatt pilot plant will likely be relocated to Vales Point Power Station for further investigations.

The pilot plant will be officially opened on Friday 20 November 2009

Visit the website of the Priority Research Centre for Energy: http://www.newcastle.edu.au/researchcentre/energy/

More information on the research activities at the University of Newcastle, Australia can be found at http://www.newcastle.edu.au/research.html . Enquiries for students wishing to apply for a PhD can be directed to international@newcastle.edu.au