ECOS SCIENCE FOR SUSTAINABILITY

www.ecosmagazine.com

Published: 16 April 2012

Plugging into Earth for city's future power

Geothermal researchers from the University of Melbourne are working with Victoria's Department of Primary Industries and industrial partner, Geotechnical Engineering and Direct Energy, to demonstrate the efficiency of direct geothermal energy under buildings.

Credit: Mark Fergus/ scienceimage

'This is a significant shift in the way we think about heating and cooling our buildings,' says the university's research team leader, Professor Ian Johnston.

'Our trial will collect important data about the use of direct geothermal energy systems in Victorian conditions, in order to help develop greater efficiency in installation practices and design.

'Although direct geothermal energy is still a relatively new concept in Australia, this technology is used extensively overseas with an estimated three million installations worldwide.

'The capital costs of installing a direct geothermal system are still a little high. But with industry becoming better

geared to needs, and with better systems of design and installation, prices should fall significantly over the next year or two.

‘This, combined with the likely major increase in the cost of conventionally derived energy, will mean that capital costs can be recovered in a few short years.’

Through the project, the partners will install geothermal heating and cooling systems into a range of buildings around Victoria and then monitor their performance.

Geothermal energy has the potential to reduce greenhouse emissions and cost of heating and cooling by up to 75 per cent.

Direct geothermal energy uses the ground to within several tens of metres below the surface to extract heat in winter for heating and to reject heat in summer for cooling.

These systems work by circulating fluid, water or refrigerant through pipes that are installed underground in building foundations or into purpose-drilled boreholes or trenches.

In winter, heat contained in the circulating fluid is extracted by a ground source heat pump, and used to heat the building. In summer, the system is reversed, with heat extracted out of the building by the heat pump, transferred to the circulating fluid, and then transferred underground.

Source: University of Melbourne

From **ECOS** online http://www.ecosmagazine.com/?paper=EC12258