



## **Solenza - Solar Energy Solutions**

### **Solar energy roofing solutions that are extremely efficient and architecturally appealing**

The sun is shining on a revolutionary new roofing technology that harnesses the power of the sun to generate electricity and heat water by integrating long run roofing iron with a solar energy transfer system.

Solenza, set up by WaikatoLink, the commercial arm of the University of Waikato, is commercialising the solar energy system that uses the entire surface area of a roof to convert solar energy from the solar cells directly into electricity, while also providing a direct source of thermal water heating. The patented technology, a shift away from traditional bolt on solar energy panels, is extremely efficient and virtually undetectable when installed.

Solenza works in partnership with Waikato University's Solar Engineering Research Group led by Dr Mike Duke. The group developed the novel process of integrating both photovoltaic electricity generation and thermal water heating into a single steel roofing product. Cold water flows through rectangular channels in the roofing iron, acting as a cooling system for the photovoltaic cells, allowing more solar energy to be harnessed to generate electricity.

In the process the water circulating around the roof channels heats up to 70-80°C, and more under some circumstances, and is connected to the hot-water cylinder through a heat exchange system. This is a significant benefit as heating water accounts for up to 40 per cent of a household's electricity bill.

With help from the Energy Efficiency and Conservation Authority, Solenza has built a 120 square metre prototype roof which produces enough hot water to heat the university's 400m<sup>3</sup> dive pool by 1 to 2 degrees. A test rig has also been developed and based on current data the average New Zealand home would need Solenza's system in just 10-15 square metres of roof to generate enough hot water to satisfy the average New Zealand households demand.

Trials have shown Solenza's system to be extremely efficient; up to 70% of the solar energy is converted into useful energy. Solenza expects to achieve further efficiency gains and increased energy yield through continued development of the integrated photovoltaic devices.

Solenza's technology, which is designed to be used in commercial, industrial and household settings, has already attracted interest from around the world. Solenza plans to use New Zealand as a test market before commercialising the technology in other countries.

Solenza is a great example of how research commercialisation from universities can be developed into technologies that have real market demand. WaikatoLink has a track record of success with hi-tech spin-outs, such as rapidly growing biotechnology company ZyGEM, which is selling DNA extraction products internationally.