

Solar power: an endless solution

A new project being conducted by Endless Solar Corporation Limited will research and evaluate using solar technology to provide an integrated system for low energy air conditioning, water heating and space heating in residential buildings. Jonathan Jackson reports.

No matter whether the intention to reduce greenhouse gas emissions resulting from the generation of electricity is based on social responsibility, government incentive or legislation, the benefits of doing so are many and varied.

Late in 2009, Endless Solar received an offer of funding from the Australian Federal Government, AusIndustry under the Climate Ready Program to assist in the development of a solar-driven air conditioning device.

The Climate Ready Program is a competitive grants program providing grants from \$50,000 up to \$5 million on a matching funding basis to support research and development, proof of concept and early stage commercialisation activities to develop solutions to climate change challenges.

According to AusIndustry the grant was awarded because “The end product is expected to address the effects of climate change by reducing the electrical power input required for household heating and cooling.”

The end product is expected to:

1. Reduce peak loading on electricity grids, with the potential for improved utilisation of investment in grid capacity;
2. Provide Australia with an opportunity to take a leadership role in solar air conditioning with possible licensing, knowledge transfer and export;
3. Roll out new skills into existing trades;
4. Provide a way for individuals to reduce

their community’s carbon footprint by using a reliable, long life, low energy source of thermal comfort.

To achieve these aims, Endless Solar is working in conjunction with the Australian National University (ANU) to develop an effective low cost, working prototype.

Stephen Standish is the managing director of Endless Solar. He says this is a low risk project, as they are not trying to invent a new kind of air conditioner.

“Our optimism comes from the fact that we’re not trying to find some radical breakthrough, we are working with high quality Evacuated Tube Collectors and existing technologies. The ultimate result is to reduce energy used by the air conditioning system. The product would be an additional component to a standard split system air conditioner.”

Endless Solar has a history of innovation on the solar front and has been rewarded for its efforts with recognition from the Green Plumbers being awarded the Energy Efficient product of 2007 and being asked by Planet Ark to provide the solar water heating for their solar powered headquarters in the Blue Mountains, NSW.

The company designs high performance systems using Evacuated Tube Technology, a flexible solar hot water solution that can be installed on any roof orientation. The technology is designed specifically for Australian conditions to provide easy installation, cost savings, maximum heat collection and minimal loss of heat.

Using the same quality criteria as with its Evacuated Tube products, Endless Solar has turned its attention to this new project. At the moment the research is looking into a working prototype that uses heat collected on the roof to eliminate the energy used by the compressor during the day.

“The next stage involves using the same system to heat during winter,” Stephen says. “This particular design we’ve chosen for solar cooling has a direct



Evacuated Tube Technology is a flexible solar hot water solution that can be installed on any roof orientation and is designed for Australian conditions.



Stephen Standish and Karl Morrison are leading the way in solar technology and solutions.

relationship to the heat outside. Normally, the hotter it is outside, the harder an air conditioner has to work to produce cooling inside. Our new system will reduce energy use, by providing more cooling inside as the temperature rises outside. This will provide an interesting opportunity for us to work with power companies to help with electricity grid load management.

Stephen says a major issue in Australia is the energy needed to run the country's six million air conditioners during hot summer days and the cost associated with providing the generation and infrastructure to meet the load during peak times. He reiterates the point that this new technology will help manage peak loads.

The interesting thing about the research is that neither Endless Solar nor ANU is trying to reinvent the wheel.

"None of the technologies we are looking at are radically different but we are combining them in new ways," Stephen says.

This is great news for the plumbing and HVAC industries whose members, if trained correctly, will be able to use existing skills with only a modicum of upskilling necessary.

"Tradies won't have to learn completely new technologies," Stephen says. "We are looking at incremental upskilling."

There are overseas technologies available, including complex, heavy absorption chillers which operate well in large commercial sites, however as Stephen points out they require a great deal of maintenance. The same can be said of solar cooling solutions currently available in the residential sector.

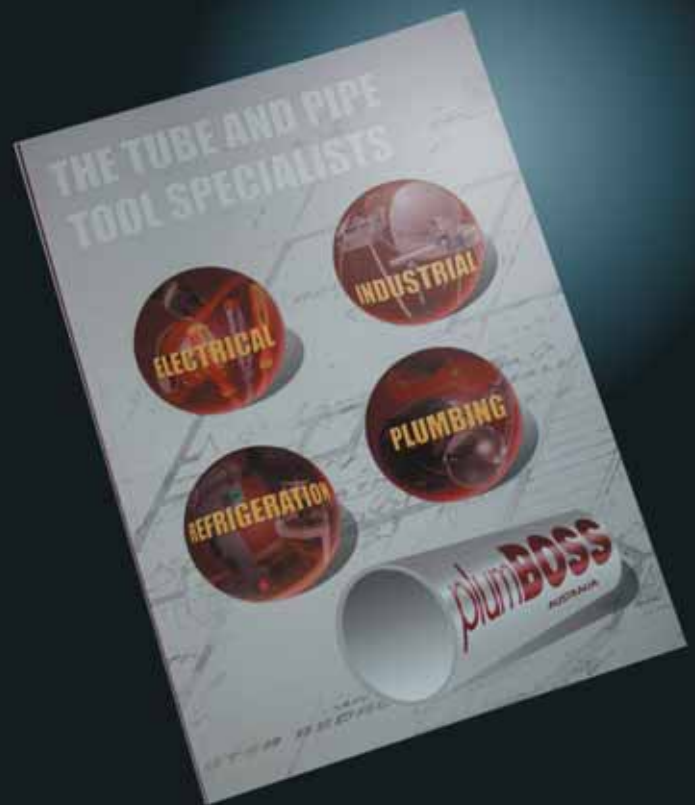
"There are a few alternatives currently available, but they are expensive, large and tend to require a lot of maintenance. What we are proposing is nowhere near as expensive, nor large or bulky and can be easily integrated into the home."

Endless Solar is involved at every stage of the commercialisation process, including the research and development. Stephen says that the product under consideration has the potential to be installed in several stages: solar cooling and solar heating being the two main sectors.

Government and consumer interest means the project is being well supported and Stephen believes there is



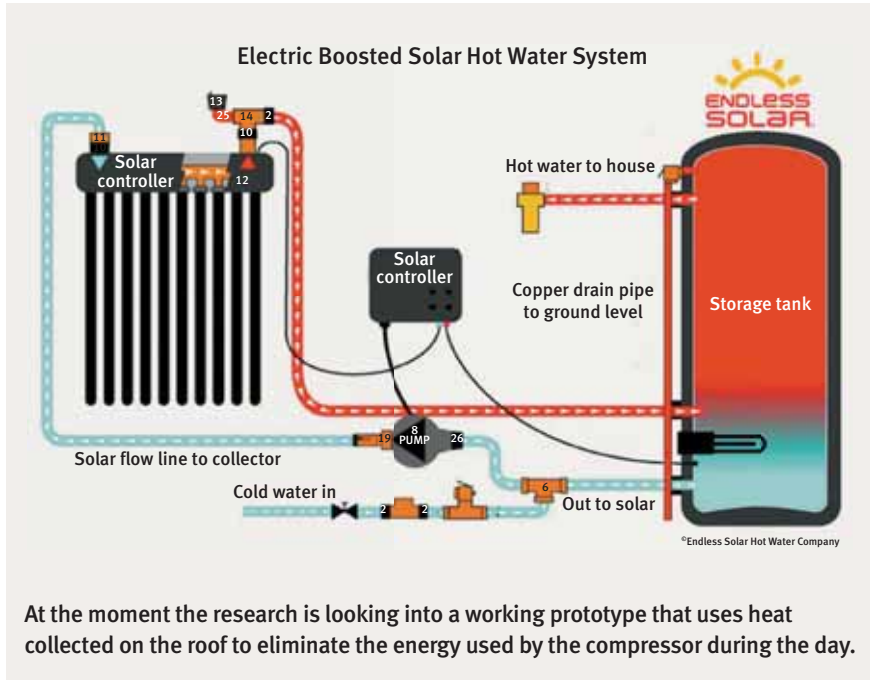
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potential for government to offer generous rebates to consumers to have the new technology installed.

“The industry is moving in the direction where there is a consistent desire for professionals to provide more environmental solutions and to add value to the industry. Therefore, all research and development is being conducted with the best possible outcomes in mind and it will not be long before the solar industry has a new product set to work with.”

Stephen expects that once the technology has been proven, it will promote further spinoff technology and applications. In the meantime, consumers will be able to enjoy cost savings, power companies will be able to better manage electricity loads and Australia will gain renown as a leader in solar innovation. ■

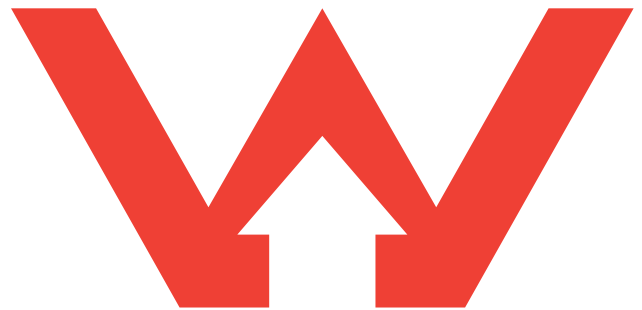
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