

SOLAR SYSTEMS WINS NATIONAL ENGINEERING EXCELLENCE AWARD

Solar Systems is a winner in the 2005 Engineering Excellence Awards.

The Excellence Award was received for the Indigenous Solar Power Station project constructed in the Northern Territory. The \$7M project consists of 30 solar concentrator photovoltaic dishes installed in the communities of Hermannsburg, Yuendumu and Lajamanu. Electricity from the dishes is purchased by Power and Water Corporation, and is used to provide electricity to the community.

The project will save 420,000 litres of diesel and 1550 tonnes of Greenhouse emissions each year.

The win follows from the Engineers Australia Northern Division Excellence Awards held in Darwin in August 2005. As well as winning the overall award, Solar Systems also won the John Wellard Sustainability award and the People's Choice award.

Accepting the award, Solar Systems' Managing Director Dave Holland thanked the traditional landowners for the use of their land. He also applauded the Australian Greenhouse Office and Northern Territory Government for their programs to encourage renewable power generation. As well as saving diesel costs and Greenhouse emissions, the programs have enabled Solar Systems to undertake further development of the technology, increasing the cost-effectiveness of solar power.



Mr Holland also thanked Power and Water Corporation for their far-sightedness in looking for renewable power sources to complement their existing diesel power supply equipment.

This project has demonstrated that Solar Systems' world-leading technology can effectively deliver renewable electricity in Australia and around the world, creating employment, investment and export income for Australia.

The national Excellence Awards is the premier annual event for Engineers Australia, showcasing the best in Australian engineering achievement. The Awards ceremony was held at the Great Hall of Parliament House, Canberra with Dr Brendan Nelson, Australian Government Minister for Education, Science and Training delivering the keynote address.

Over 350 entrants to the 2005 awards were shortlisted to a diverse group of 45 projects. Solar Systems was one of six Excellence Award winners.

ABOUT SOLAR SYSTEMS

Solar Systems is the developer of an innovative solar concentrator photovoltaic (PV) electricity generation system. This system has been under development since 1990, with commercial products now being installed.

The heart of the concept is the use of mirrors in the shape of a dish to reflect the sun into a central collection point, concentrating the sun 500 times. An array of high-efficiency PV cells converts the sunlight into electricity. The electricity is converted to grid-quality supply and exported to the local grid.



Solar Systems constructed the Umuwa solar power station in 2003, consisting of 10 dishes and rated at 220kW.

The Hermannsburg solar power station (8 dishes, 192kW) was completed in August 2005. At the time of writing, a further two power stations at Yuendumu (10 dishes, 240kW) and Lajamanu (12 dishes, 288kW) are under construction and are expected to generate electricity in December 2005 and April 2006 respectively. The project will save 420,000 litres of diesel and 1550 tonnes of Greenhouse emissions per year.

All four power stations complement the existing diesel generating sets, displacing diesel consumption to reduce operating costs, greenhouse emissions and pollution in the remote communities.

Each of the projects has received grant funding assistance from the Renewable Remote Power Generation Program (RRPGP), administered by the Australian Greenhouse Office and the NT Government Department of Primary Industry, Fisheries and Mining.

RECENT ADVANCES

PV CELL EFFICIENCY

Solar Systems has successfully integrated new high efficiency triple junction "III-V" photovoltaic cells onto our standard module. The new cells give an average efficiency of 35% when measured over the whole module. The new cells will be used in all future power stations and can be used to upgrade the existing power stations.

The cells are manufactured by Spectrolab (a subsidiary of Boeing) and until now have been used exclusively for their space program, providing high-reliability power to satellites. It is an increase in output of nearly 50% from our previous PV cells, which were rated at 24% efficiency.

This process demonstrates how very large performance increases can be achieved as cell manufacturers attain ever-higher cell efficiencies. It also demonstrates Solar Systems' ability to incorporate the new technology into existing sites without expensive changes to the balance of system.

DEPLOYMENT

Ongoing design and deployment reviews continue to yield a number of important improvement options. For example,



- the control system has been completely rewritten in a new language to improve speed and provide robust performance
- the PV receiver was redesigned to reduce the number of parts from 39 to 11, reducing the cost as well as improving quality
- the time to source and fit out a control & electrical room has decreased from 14 weeks to 2 weeks
- the number of dishes lifted per day has increased from one (Umuwa) to two (Hermannsburg) to six (Lajamanu)

The net effect is that the costs have fallen significantly over the course of the 40 dishes constructed to date. Together with improvements in cell efficiency, the cost per delivered unit of energy has fallen by over 60% in the last 5 years.

EMPLOYMENT GROWTH

Since the first project was started in 2001, Solar Systems has grown at a rapid rate.

At that time, Solar Systems consisted of 14 full-time people. In October 2005, Solar Systems had 36 full-time employees (with another 6 positions under recruitment) and up to 13 casual or contract staff.



We have created new jobs in Alice Springs for the maintenance of the solar power stations. This will become the main supply base for Solar Systems for all our maintenance services required in central Australia.