Powering One of Australia's Remotest Locations



An off-grid, sustainable power supply developed by a Curtin University PhD student is being used to power one of the hottest and most remote locations in Australia.

Shaji Mathews from the University's Department of Electrical and Computer Engineering is developing uninterrupted power supplies for remote locations and, in conjunction with Regen Power, has designed and installed an innovative solar photovoltaic diesel hybrid system for the Veterans Retreat at Meentheena Station, 75km east of Marble Bar.

The retreat is for veterans of military, medical, police and other services to help them cope with experiences of past conflicts and events. While the remoteness of the site makes it an ideal location to unwind, visitors battle with the extreme temperatures, so the Veterans Retreats of Western Australia approached Regen Power to develop a cost-effective, uninterrupted power supply system.

With the nearest petrol station located some 200km away, Mr. Matthews developed a diesel generator which can run on variable speed to reduce the retreat's fuel needs, yet still meet power requirements in case of solar power shortages.

"This is the first variable speed generator of this type and I'm pretty sure success of this combination system will give a big boost to remote applications," Mr. Matthews said.



Curtin University PhD student Shaji Matthews and supervisor Professor Chem Nayar inspect the innovative solar photovoltaic diesel hybrid system used to power one of the remotest locations in Australia

"Current hybrid systems require a large battery storage bank or a big diesel generator to meet peak load, and running a new or upgraded grid is expensive. We can supply year-round power without a huge capital investment, making it affordable for those with limited funds."



Curtin University PhD student Shaji Matthews and supervisor Professor Chem Nayar with solar panels and hybrid generator used to power one of the remotest locations in Australia

The system includes 32 panels, a 38 kilowatt hours energy storage battery system and the variable speed diesel generator, providing 24-hour power to the retreat, which incorporates facilities for caravans and camping, a donga with four self-contained rooms, a house and a shed. Solar panels have been mounted to the rooftop of the house and donga while the battery bank is located in an air-conditioned and insulated sea container.

“The new power system allows residents to have air conditioners, lighting and refrigerators in each room and to use appliances at any time. Previously, only their absolute basic electrical needs, such as refrigeration, were powered using a small petrol generator,” Mr. Matthews said.

Mr. Matthews said the solar panels will generate an average of about 30kWh of electricity per day. The solar hybrid system can meet almost 10kW peak power on a sunny day and around 5kW power at night.



"Our experiments have proven that the variable speed generator can achieve a fuel saving of up to 40 per cent compared to a conventional diesel generator in remote applications," he said.

According to Professor Nayar, "Regen Power is proud to be associated with Curtin University. Regen has sponsored a $60,000 PhD scholarship to support Shaji Mathews . Regen has also recently appointed a Curtin undergraduate electrical power engineering student – Kadin Hall – under the Australian Solar Institute Work Experience Programme". Regen has strong linkages with academic institutions in Australia, UAE, China, India, Thailand and Papua New Guinea ", he said.

Contact:

Shaji Mathews, PhD student, Curtin University;

Nikhil Jayaraj, Regen Power
Tel: 0488 959529
Mob: 0458 584 499,
Email: Shaji@regenpower.com

Megan Meates, Public Relations, Curtin University