

Regional power savings with hybrid products



It is predicted there will be a 21 per cent increase in capacity for the remote microgrid market by 2017, according to Regen Power. This will increase from 349 megawatts to 1.1 gigawatts with a projected total revenue over \$10 billion.

'Micro-grid' denotes the remote areas that will require electricity but are not connected to an existing grid.

Regen Power Managing Director and Curtin University Emeritus Professor Chem Nayar was recently awarded a Sustainable Energy Industry Excellence and Innovation Award for his long-standing contribution and commitment to sustainable research, training and commercialisation.

Australian organisation Regen Power was awarded for its variable speed diesel/bio-diesel generator (HybridGen), which can be utilised on the micro-grid, saving diesel fuel and substantial cost for connectivity.

Because these regional sites are not connected to the grid, they require a stand-alone option – the best being a diesel generator.

However, diesel is expensive in regional areas of Western Australia (up to \$2 a litre, according to Chem) and is wasted at off-peak power times.

If power is required for 24 hours, the generator must operate 24 hours. However, demand for electricity is not constant over this time. "Around 7-8am, demand goes up, then decreases during the day when people aren't home," Chem said. "In the evening demand is back up – peak load.

"If peak load – the maximum electricity required – is 10 kilowatts, you need a 15kW diesel generator to ensure your maximum is achieved and cover increases. The problem is, most of the time it will only be working at 30 per cent capacity."

Average load may be 5kW over 24 hours – in some cases, lower – so there will be times one litre of diesel will produce three units

of electricity, while that same diesel could produce 20 to 30 per cent more. This means overall fuel consumption is high and costly.

Regen Power's hybrid generator system runs on variable speed; as load increases or decreases, so does the speed to minimise fuel consumption and cut down on battery storage. This means there is a saving on the amount of fuel used as well as on capital.

On a project in Sri Lanka for telecom power for mobile phones, changing to this technology meant diesel consumption dropped from 30 litres per day to 10L per day. Integrating solar into the set-up could reduce it further, down to 2L consumption per day – there would be a capital cost for solar panelling, but the overall saving is substantial.

This is 'HybridGen' technology – hybrid energy systems that integrate renewable energy technologies such as solar photovoltaic and wind with diesel generators, inverters and batteries to provide grid quality power in remote areas not connected to an existing utility power grid.

Examples of options for the technology to be used include accommodating staff on exploration sites; construction sites where electrical demand fluctuates; remote villages, islands, houses and cabins; and off-grid telecommunications towers.

Regen Power has installed and maintained over 5000 rooftop solar photovoltaic (PV) systems since 2002 and is building two solar PV/hybrid generator systems for the Nullagine Iron Ore Project located in the Pilbara, approximately 150km north of Newman and 40km south of Nullagine.

The company has won the contract for design, engineering and supply of generators for a multi-million micro-grid test-bed project at Pulau Ubin Island, Singapore.

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