

Power for remote mining camps and resorts: A revolutionary technology

Eco Beach Wilderness Resort in Broome now runs a turn-key solar PV/diesel hybrid power system, delivered by Regen Power, which has been involved in several off-grid systems in Australia, South Asia and South East Asia.

The resort's power system combines a main central inverter system with a diesel generation plant, allowing optimal uses of renewable energy technology with the reliability of a conventional system.

According to Regen Power Managing Director and Curtin University Professor of Renewable Energy Engineering at Chem Nayar, the automated solar and diesel system can be monitored from thousands of miles away to optimise power input and output, helping to reduce costs.

"Having first-hand experience with battery maintenance and replacement, we needed an alternative approach," Chem said. "Batteries are the weakest link in remote area power systems."

The optimum solution was to come up with a system that could follow the variation in load and still operate at maximum fuel efficiency. Chem said this could be achieved if the engine was driven at variable speed while keeping voltage and frequency constant.

Regen Power's HybridGen™ hybrid power system combines variable speed diesel generators, wind generators and PV to provide uninterruptable power to communities without expensive battery storage. According to Chem, such a regime is well-suited to mining sites and remote agriculture and farming communities.

"Eco Resort heard about Regen Power's capability in designing and installing customised solutions for remote area power systems and approached us to give it a proposal," Chem said. "We carried out a feasibility study and applied for government funding. The project received \$500,000, the maximum available under the Remote Renewable Power Generation Program."

The renewable energy component is in the form of 24 distributed two kilowatt photovoltaic arrays, which are grid connected at each villa. An energy-monitoring device has also been included at each villa so a guest can easily see if they are consuming more or less energy than is generated during their stay.

A wireless network connects the villas back to the central monitoring computer located at Jack's Bar where the energy usage of each villa can be accessed. Any renewable energy generated is used preferentially to minimise the carbon footprint of the overall facility. The hybrid system controller ensures no energy is wasted and allows the excess renewable component to be stored.

