



LEAD BATTERIES: ENERGY STORAGE CASE STUDY



Ecoult Energy Storage Solutions **Living and Working Off The Grid**

Cedarvale Health Retreat, New South Wales, Australia

Off-grid communities around the world want continuous renewable power whilst minimizing use of diesel generators. Cedarvale Health Retreat, a thriving business which prides itself on its renewable power system, features two energy sources: a solar array and micro-hydro generator.

Despite having 10 kW of PV and continuous 3 kW of micro-hydro on site, the system found it very difficult to manage loads to cope with peak energy demand periods, which took place before or after the bulk of the day's solar power was available.

“Not only do we see vastly reduced diesel use, but the installation has freed up staff time, since Ecoult’s solutions are monitored down to individual battery level through the web.”

John Wood, CEO, Ecoult

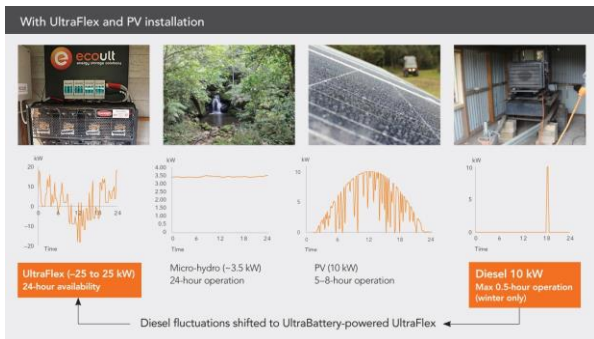
Technical Specification

To help the off-grid eco resort manage their complex and dynamic loads with minimal or no diesel, a fast-charging UltraFlex® battery solution was provided by Ecoult, designed for continuous use at partial state-of-charge, ideal for periods when solar power is limited.

The customized solution involved installing a nominally 48 V, 20 kW peak power UltraFlex energy storage system, with power flows managed by an inverter.

To greatly decrease diesel use even on overcast days, the 4 kW micro-hydro supply was exploited to provide significant battery charging overnight.

Ecoult's UltraFlex solution has allowed the resort to manage power by sending excess renewable energy to the battery. The battery then manages all fluctuations in the load.



Diesel use has dropped to essentially zero for all but the winter months, when the low solar availability requires a boost from the generator. This is only required for a maximum of 30 minutes per day.

The remote monitoring system has also solved the issue of staff having to drive a distance across terrain in a 4-wheel drive vehicle to refuel the generator or check the operation.

The UltraBattery® is a hybrid energy storage device which combines the fast charging and long life of an ultracapacitor with the energy storage capability of a lead battery in one unit with a common electrolyte.

Technical Summary

Battery specification	4 strings, UltraBattery
Capacity	608 Ah
Overall voltage	48 V
System	10 kW PV 4 kW micro-hydro
Overall Power Output	20 kW
Available Stored Energy	20 kWh

About the Company

Ecoult is the global energy storage arm of the world's largest single-site lead battery manufacturing facility, East Penn Manufacturing (EPM), known worldwide for its quality and environmental excellence.

Ecoult provides software, hardware, systems integration and engineering to monitor and control the energy storage systems and maximize their capabilities. EPM manufactures the Deka UltraBattery cells inside every system.

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