

Life Is On

Schneider
Electric

The Balmoral

Balmoral Residential Apartments

A flexible and cost-effective battery storage solution for a high-end residential development in Australia



Schneider Electric and Ecoult collaborated to develop a flexible and cost-effective battery storage solution to provide grid support during peak demand periods to a high-end residential development in Australia.

Background

The Balmoral Residential Apartments (The Balmoral) is a \$23 million development located in the exclusive suburb of Mosman, Sydney, Australia, with sweeping views of the famous Sydney Harbour. The Balmoral is comprised of a luxury penthouse, sub-penthouse and four apartments as well as, an underground garage for 17 vehicles.

From the onset, the developer of the project was faced with several challenges that required innovative solutions. The developer wanted to maximize the number of apartment units and accommodate a 17-car garage in a narrow parcel of land. The only solution was to use an automatic car stacker, which created a challenge for the grid supply.

The area of Mosman is one of the oldest residential areas in Sydney and is serviced by an aging electrical network. The utility-owned transformer, located on the property boundary, is rated at 110A per phase.

The existing electrical infrastructure was insufficient to meet the power demand of the residences and car stacker. Initial attempt to install a new transformer and electrical plant proved to be an expensive exercise, the capital cost was estimated at \$600,000. The second and more attractive option was to install a battery storage solution behind the meter to support the existing grid and manage peak loads.

Partner Company Profile

Ecoult was formed in 2007 and has been an innovator in the energy storage space, pioneering grid-scale wind and solar smoothing, grid frequency regulation, multipurpose storage and microgrid diesel efficiency. Using the CSIRO-invented UltraBattery, the Australian company has developed energy storage control systems, hardware, software and applications in kilowatt and megawatt installations across Australia, India and the USA.

Solution

Energy storage company Ecoult and Schneider Electric determined that the best solution for this project would be to implement a battery storage solution using two Ecoult UltraFlex battery systems and six Schneider Electric XW+8548 inverter chargers.

Results

Using the UltraFlex storage solution integrated with the Schneider Electric Conext XW+ inverter, the system integrator could provide a technically-superior solution at a significantly lower cost than upgrading the existing electrical infrastructure.



Schneider Electric Solution

The developer opted for the battery storage solution as it provided greater flexibility at a lower cost, and engaged a battery storage system integrator to install the equipment.

A load analysis preceded the design to determine the battery capacity and power rating of the battery storage system. The analysis showed that a battery capacity of 28kWh was required, which was achieved by two Ecoult UltraFlex systems, each of 17kWh capacity, whilst the load demand was met by six Schneider Electric Conext XW+8548 inverter chargers that were capable to produce a continuous output of 40kW and a peak output of 72kW.

The battery storage system's architecture allowed the system working together with the grid to provide reliable energy supplement. The battery bank is charged from the grid during off-peak times and battery power is used to support the grid, to ensure that the current drawn from the grid is maintained at 110 amps or less, within the rating of the utility transformer.

“Ecoult was thrilled to provide its system and participate in this innovative project which exploits the capability of energy storage to offset infrastructure spending for zero-year payback. Ecoult's engineers in Sydney were excited to partner with one of the leading global innovators in power systems, Schneider Electric, and Sydney firm Autonomous Energy to come up with a pragmatic solution that enables our developer client to avoid prohibitive infrastructure upgrades while providing residents with source of power which complements that which was available to meet the extended needs of the site”

– John Wood, CEO, Ecoult



Impact

Using the storage solution powered by the Ecoult UltraFlex and Schneider Electric Conext XW+ inverters, the system integrator could provide a technically-superior solution at a lower cost than upgrading the existing electrical infrastructure.

The battery storage system serves two purposes: peak shaving and backup power. The battery storage provides an additional power source in synchronization with the grid to deliver enough power to meet the peak demand; it works as backup power in case of grid failure. The storage solution also provides several technical advantages including:

- The Conext XW+ inverters output true sine wave that is compatible with modern-day electronics
- The Conext XW+ inverters featured a 6.8kW rated power output and a peak output of 12kW for 60 seconds (per inverter) The advantage of a high surge rating is that the Conext XW+ can cope with large start up currents of motors used in the car stacker, and air-conditioners
- The Conext inverters may operate in single or three phase mode demonstrating the Conext XW+ versatility, it can be used for single dwelling residence through to multiple unit dwellings
- The Conext XW+ inverters are scalable
- The batteries, specifically the CSIRO-invented UltraBattery, can operate in a partial state of charge, with a warranty of 4MWh of throughput per battery for five years The batteries are fast charging
- The batteries operate over a wide temperature range. The non-combustible batteries could be placed inside a small utility room within the building



Residential Off-Grid Solution

Learn more about the **Conext XW+** and how its complete residential solution can help you gain energy independence.

Watch our Conext XW+ product video.





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