



LEAD BATTERIES: ENERGY STORAGE CASE STUDY



Ecoult Energy Storage Solutions

Solar Smoothing and Shifting

Public Services Company, New Mexico, USA

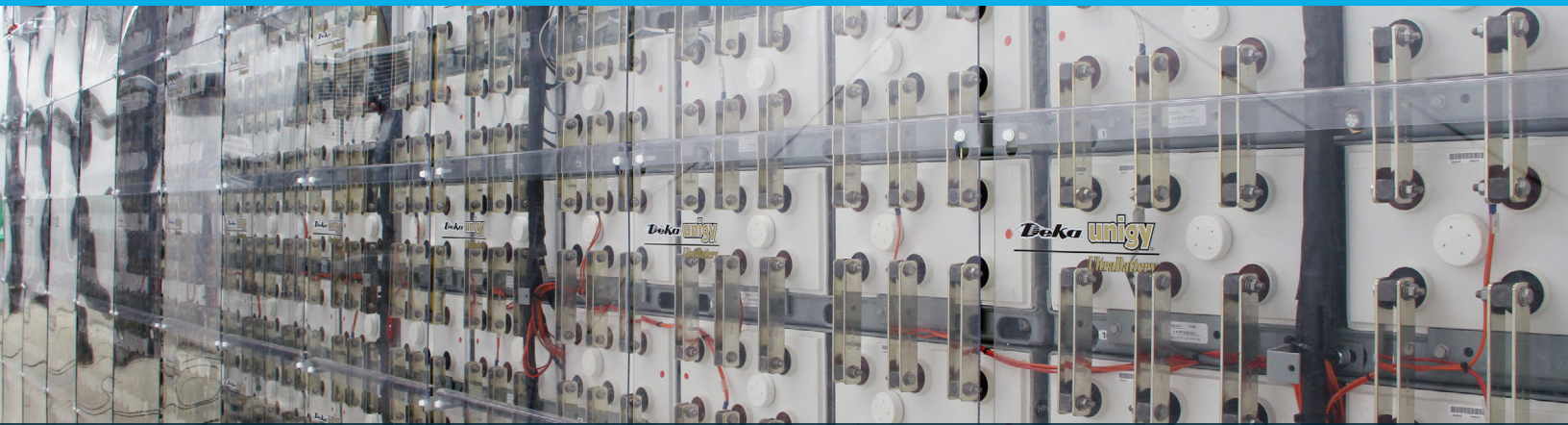
The leading electric utility company in New Mexico serving over 500,000 residents and businesses is capitalizing on the many benefits of lead battery technology. The company has integrated lead batteries with a solar energy-generating farm to demonstrate smoothing and shifting of volatile solar power and the ability to use the combination as a dispatchable renewable resource.

Technical Specification

The Public Services Company (PNM) Energy Storage Project is a large solar power installation with full battery support that is integrated into the local utility in New Mexico. PNM has installed a 500-kW solar farm on a 5-acre site near Mesa Del Sol, which has an Ecoult UltraBattery® that can deliver 500 kW of power and a 250 kW/1 MWh Deka Synergy battery supplied by East Penn. The batteries

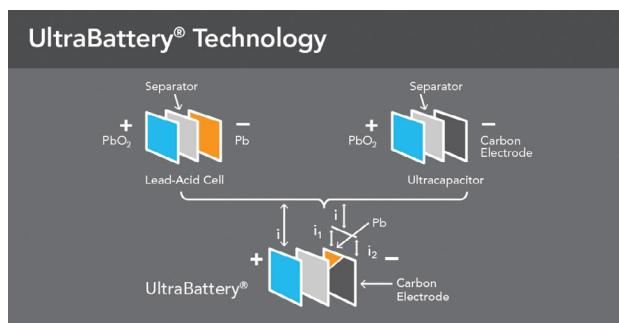
allow solar input to be fully smoothed and time shifted, so that power output is stabilized and ready when needed by the utility. The batteries are rack-mounted in eight containers located adjacent to the solar panels, with the associated power conversion and management equipment nearby. Ecoult worked with the University of New Mexico and Sandia National Laboratories on the project and has successfully demonstrated peak shaving, smoothing of photovoltaic ramp rates and minimizing of voltage fluctuations to the satisfaction of PNM.

The UltraBattery® is a hybrid device combining a lead battery and a carbon ultracapacitor to achieve high-cycle lives in a partial state-of-charge operation supplied by Ecoult. The Deka Synergy batteries are adapted to solar applications with carbon-enhanced negative plates and are supplied by East Penn. Ecoult is an East Penn company.



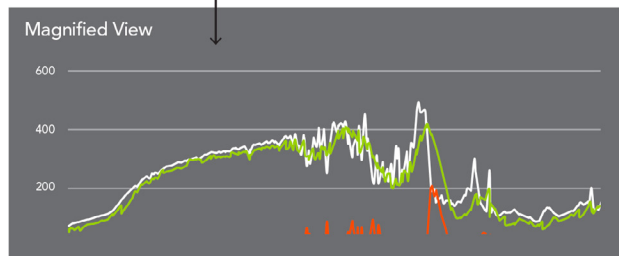
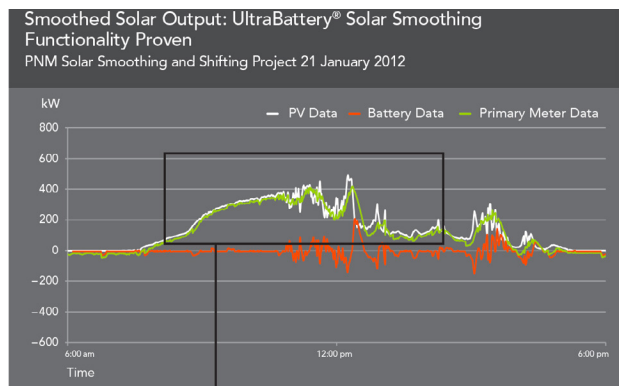
About UltraBattery®

- UltraBattery® takes lead battery technology into a realm where it competes with and outperforms chemistries such as Li-ion and NiMH.
- Each cell has an ultracapacitor built in to achieve extraordinary power handling, cycling longevity and efficiency.



About the Company

East Penn is located at Lyon Station in Pennsylvania and is the largest single-site battery manufacturing operation in North America. The 520-acre campus uses the most technically advanced methods to manufacture batteries for automotive, motive power, reserve power and energy storage.



“Solar is the fastest growing form of renewable energy. We need to understand how to effectively integrate it and many other systems into the grid, like smart buildings, so they work together.”

Andrea Mammoli, University of New Mexico

CONTACT

Dr. Alistair Davidson
Director

alistair.davidson@batteryinnovation.org
BatteryInnovation.org