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Supermarket chain boosts productivity while cutting battery maintenance and costs with Thin Plate Pure Lead (TPPL) technology

Case Summary

Losing time, money and productivity to flooded lead acid battery maintenance, a regional supermarket chain needed a more efficient, cost-effective way to power the narrow aisle reach trucks in its retail locations. Based on the results of an onsite demonstration and a power study from EnerSys®, the company is upgrading its entire in-store Class II fleet to NexSys® TPPL batteries. The ongoing conversion to Thin Plate Pure Lead (TPPL) technology is helping the chain streamline operations and will eventually save each store more than approximately \$11,000 over five years.

Customer background and situation

This regional supermarket chain operates 150 retail locations and 5 Distribution Centers (DCs) across the Western U.S. A retail fleet of 300 narrow-aisle reach trucks – two at each store – keep the pallets and products moving 24/7.

Before discovering TPPL technology, the chain was powering the reach trucks with flooded lead acid batteries and dual-port, high-frequency chargers. Watering maintenance and equalization charging requirements were labor-intensive and time-consuming. In addition to dealing with spills and clean-ups, many locations were dedicating twelve-hour windows twice a week to maintain required equalization schedules.

To help the company find a power solution that would mitigate these issues, the lift truck dealer and EnerSys® worked together to make the case for NexSys® TPPL batteries, which never require watering or long equalization charges.

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EnerSys® and the dealership first determined the average daily Amp Hour (Ah) throughput for all of the retail locations. Next, EnerSys® used that data to prepare a power study comparing the costs and benefits of the NexSys® TPPL batteries versus flooded lead acid batteries at one hypothetical store (see **Exhibit 1**). In conjunction with the power study, EnerSys® also conducted an onsite demonstration of the TPPL batteries in one store location.

Exhibit 1 Power Study Details

Application Information

- Shift details – Three 8-hour shifts
- Days per week – 7
- Days per year – 363

Lift Truck Information

- Narrow-aisle reach trucks
- Annual truck hours – 2,000
- Amp Hours (Ah) consumption per day – 500

EnSite™ Modeling Software Feasibility and Project Financial Report

EnerSys® processed the data with its proprietary EnSite™ modeling software. The EnSite™ software applies an end-user’s specific operating parameters and power requirements to generate reports that compare battery chemistries and identify the battery solution with the lowest Total Cost of Ownership (TCO).

This EnSite™ software report assessed the average annual power demands of two narrow-aisle reach trucks operating at one store, then compared the costs of meeting those demands with NexSys® TPPL batteries and NexSys®+ chargers versus flooded lead acid batteries and dual-port high-frequency chargers.

The review also quantified battery maintenance issues that were driving operating costs. The combined costs of battery watering and equalization charging were determined to be \$730.00 higher per year with the flooded batteries and dual-port high-frequency chargers than they would be with NexSys® TPPL batteries and NexSys®+ chargers (see “Maintenance Expense ANNUAL/Base Case” in **Exhibit 2**).

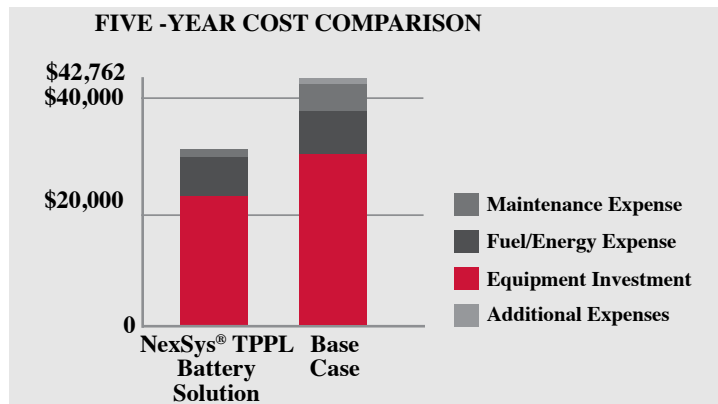
After weighing all of the variables, the EnSite™ software produced a feasibility report that outlined the financial benefits of switching to NexSys® TPPL batteries. EnSite™ software also generated a project financial report outlining Return on Investment (ROI), plus annual and potential five-year savings (see **Exhibit 2**).

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Exhibit 2 Projected Return on Investment

	NexSys® TPPL Battery Solution	Base Case	
Equipment Investment Summary ANNUAL	\$4,519.92	\$6,070.56	- \$1,550.64
Fuel/Energy Expense ANNUAL	\$1,479.78	\$1,479.78	\$0.00
Maintenace Expense ANNUAL	\$200.00	\$930.00	- \$730.00
Additional Expenses* ANNUAL	\$0.00	\$72.00	- \$72.00
Total Annual Benefit			\$2,352.64
Timeline for ROI**			Immediate
Annual TCO Savings			10.27%
Projected Savings Over Five Years			\$11,762.00

*Additional expenses represent current operational expenses as identified and outlined by the customer represented in this case study and are not the responsibility of EnerSys®.
 **Savings apply solely to the customer represented in this case study. Immediate results are not guaranteed and subject to change. ROI results are based on specific customer provided data.



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TPPL Battery Implementation

EnerSys® and the dealer presented the EnSite™ software report to the company's senior management. Together with the results of the in-store demo, the TCO savings outlined in the report convinced the chain to start switching to TPPL technology in all of its retail locations. At the time of this writing, the company has converted more than thirty stores to NexSys® TPPL batteries and IMPAQ™ chargers and is on pace to outfit 10 existing stores and 5 new stores every year.

As the move to TPPL technology is occurring chainwide, EnerSys® and the dealer worked together closely to ensure optimal battery installation and training. All new NexSys® TPPL battery installs follow a detailed training checklist that each store signs off on after completion. To help ensure the frequent plug-ins that the opportunity-charging batteries require, new trucks are being ordered with the Battery Discharge Indicator (BDI) settings at the highest level (40%) and existing trucks are modified as necessary.

Case Conclusion

Thanks to its TPPL technology upgrade, the company is increasing equipment uptime and productivity while reducing battery maintenance and TCO across its retail network. To paraphrase the customer feedback, NexSys® TPPL batteries are enabling the company to enjoy a lithium experience without the lithium price tag. Each store's conversion to TPPL technology saves the chain more than \$11,000 over five years; multiplied across the 150+ retail locations, the projected savings are well over approximately \$1 million. The in-store performance of the batteries has proven so successful that the company is also beginning to implement TPPL technology in select DCs.