



Brewing a Greener Future: Large Global Coffee Company Takes Steps Toward Sustainability with NexSys[®] TPPL Thin Plate Pure Lead Batteries

Summary

To keep thousands of retail locations serving millions of customers, a major global coffee company has several bustling distribution centers running 24/7 across the United States. Its flagship distribution center wanted a forklift battery that required less maintenance while satisfying corporate sustainability goals to reduce water and energy consumption, carbon emissions and material waste. However, changes could not negatively impact the DC's efficiency and productivity. To find a more sustainable, lower-maintenance power option for a fleet of 110 forklift trucks, EnerSys conducted a power study using our proprietary EnSite™ modeling software to compare the performance of several forklift power options. The NexSys[®] TPPL (Thin Plate Pure Lead) battery was optimal for this application because it uses no water and less energy, requires no maintenance, and is highly recyclable. The coffee retailer will save more than 300,000 gallons of water, use 17.3% less energy on each battery charge and prevent several tons of CO2 emissions over the service life of the NexSys[®] TPPL batteries.

Situation

Coffee fuels 62% of Americans every day, which adds up to 146 billion cups per year. To meet this growing consumer demand, this coffee company has thousands of retail locations, all stocked by regional distribution centers. The largest DC, located in Pennsylvania, runs 24/7, moving products from stock to dock using a fleet of 110 forklift trucks comprised of walkie pallet jacks, reach trucks and counterbalance trucks (stand-up and sit down).

The Challenge

The forklift fleet was powered by traditional flooded lead acid batteries, which required regular watering and long equalizing periods, resulting in unproductive downtime. To ensure there were always enough forklifts in operation, the warehouse manager spent most of her time maintaining the 110 batteries: scheduling weekly equalizing, monitoring plug-in time, assisting with battery washes, and training employees to use the forklifts and batteries. The distribution center (DC) even rented a battery wash machine for 3 months, but when it caused floor damage, a technical assistant was assigned to wash batteries for an entire shift every week.

Additionally, the corporate office required DCs to improve the eco-friendliness of its operations to contribute to new company-wide 2030 environmental sustainability goals: 50% fewer greenhouse gas emissions, 50% less water usage, 50% less waste sent to landfill, all with 50% less energy consumption.

The Warehouse Manager's hands-on approach to maintaining these flooded batteries meant they were routinely working extra hours to ensure the equipment was able to support their facility's operational

requirements and throughput demands. The Warehouse Manager was interested in a new motive power solution that would reduce maintenance requirements and satisfy sustainability goals - without jeopardizing fleet performance and productivity.

Leveraging Data

Instead of recommending a “one-size-fits-all” power solution, EnerSys worked with the company to gain an in depth understanding of their current operation, which included analyzing their energy usage, equipment-related utility costs, and other expenses related to maintenance and labor - tailoring a power solution that would meet the company’s specific requirements.

To achieve this, EnerSys conducted a power study using its Wi-iQ® battery monitoring devices, coupled with their EnSite™ modeling software. EnerSys installed Wi-iQ® battery monitoring devices on several of the most heavily used forklifts to collect data over four days and provide details on run time, energy consumption, as well as battery charge and discharge practices.

This was then used to model their application in EnerSys’ EnSite™ modeling software which used that actual fleet energy data, coupled with their site’s operating goals – assessing a myriad of EnerSys battery technologies and charger options to find an optimal solution. This included environmental impacts of the options - considering both resource consumption and recyclability.



Solution

Based on projected benefits for performance, maintenance and sustainability, EnerSys recommended switching to NexSys® TPPL batteries because they are maintenance-free, use no water, less energy, and are more recyclable than lithium-ion at end of life.

Each NexSys® TPPL battery included a Wi-iQ® battery monitoring device to continually monitor battery data that when combined with the EnerSys® Xinx® battery operations management program, can be used to monitor battery performance and operator charging habits to help ensure that batteries are properly charged and discharged for peak fleet performance - reducing unplanned downtime and ownership costs.

Results

To date, EnerSys has installed 70 NexSys® TPPL batteries equipped with Wi-iQ® battery monitoring devices and Xinx® battery operations management software at the coffee DC, with a further 32 additional NexSys® TPPL batteries scheduled to be installed over the next 2 years. The company also plans to convert the 40 forklifts to NexSys® TPPL batteries at their roasting facility as well. With fewer maintenance tasks, the warehouse manager has freed up most of their time to take on more value-added projects.

Power Study Data Overview for Pennsylvania Locations



The NexSys® TPPL batteries will help pave the way for multiple sustainability improvements:

By eliminating washing and reducing watering, it is estimated that the facility will consume 334,620 fewer gallons of water by 2030.

The more efficient-charging NexSys® TPPL batteries will cut the electricity consumption per charge by approximately 17.3%.

The energy savings translates to several tons of CO2 over the lifetime of the battery.

NexSys® TPPL batteries are 99% recyclable at the end of service life, reducing waste.



Thin Plate Pure Lead (TPPL) Design

Robust connections

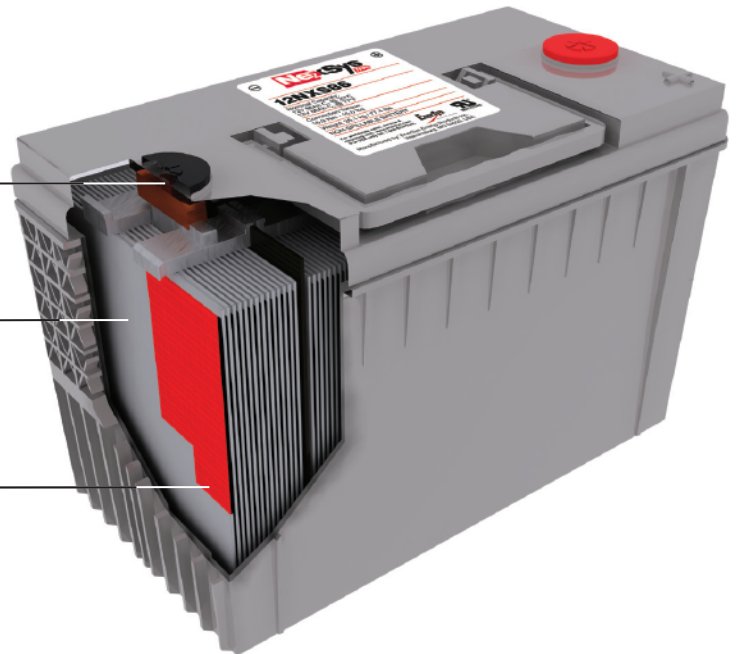
Cell connectors are casted and bonded to the plates to resist vibration.

Pure lead plates

Pure lead plates are extremely thin so more of them fit into the battery. More plates mean more power.

Compressed AGM separators

Absorbed Glass Mat (AGM) design prevents spills and delivers extreme vibration resistance.



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