



NexSys® TPPL battery and charger system helps luxury automaker boost burden carrier efficiency

Switching to Thin Plate Pure Lead (TPPL) technology

- Increases productivity by 139%
- Cuts charge time by 80%
- More than doubles battery life

As part of an efficiency improvement program for its regional distribution center, a premium automotive manufacturer worked with EnerSys® to convert the facility's burden carrier fleet from conventional flooded lead acid batteries to a more efficient motive power solution that would cut downtime for charging.

The fleet included 40 electric burden carriers fulfilling orders for automotive parts on a 20-hour shift schedule. Capable of carrying loads as high as 1,000 lbs. and towing up to 5,000 lbs., the vehicles needed a robust fast-charge battery solution. EnerSys proposed the NexSys® TPPL battery and charger system.

NexSys® TPPL battery advantages

Featuring proprietary Thin Plate Pure Lead (TPPL) technology, NexSys TPPL batteries are virtually maintenance-free. They do not require periodic watering, which leads to reduced labor and safety equipment costs. Their advanced lead acid plates are low impedance, highly corrosion-resistant thin plate grids manufactured from pure lead.

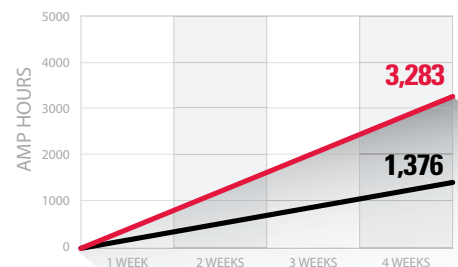
EnerSys estimated that switching the burden carrier fleet from flooded lead acid batteries to the NexSys TPPL battery and charger system would allow the facility to more than double fleet productivity and battery life. The automaker asked EnerSys to put the prediction to the test and a single burden carrier was outfitted with a NexSys TPPL battery to see how it would perform.

The early results were quite promising, as operators could fast-charge the NexSys TPPL battery during lunches and other breaks. Instead of the 12-hour charge required by the flooded lead acid batteries, the NexSys TPPL battery could be charged in shorter, more frequent increments. Yet it was still able to maintain a 70 percent State of Charge (SOC), easily topping a 40 percent SOC.

Backed by performance operating data

After several weeks of warehouse operation, it was clear that NexSys TPPL batteries would be able to deliver the estimated performance improvements. As a result, EnerSys outfitted 20 burden carriers with NexSys TPPL batteries. Due to lease obligations, the remaining 20 burden carriers in the fleet continued using flooded lead acid batteries.

Performance Data – One Month



NexSys® TPPL batteries

Flooded batteries

Average Charge Cycle Time



NexSys® TPPL batteries

Flooded batteries

Savings that conventional batteries can't match

Conventional Batteries

Two carriers with flooded batteries:	\$16,000
*Watering time:	\$528
*Charger operating costs:	\$1,208
*Vehicle parking space (48 ft. ²):	\$2,400
*Annualized replacement:	\$1,200
	\$21,336

NexSys® TPPL Battery and Charger System

One carrier with NexSys battery and charger:	\$13,550
*Watering time:	\$0
*Charger operating costs:	\$1,007
*Vehicle parking space (24 ft. ²):	\$1,200
*Annualized replacement:	\$750
	\$16,507

That's almost \$5,000 in savings in the first 12 months of ownership. How much could your fleet save?

*Watering time is based on watering 2 hours per month @ \$22/hour. Charger efficiency is based on \$0.14 cost per kWh. Handling space is based on \$50 ft.² per year. Annualized replacement is based on flooded battery life expectancy of 18 months and NexSys life expectancy of 24 months. Results may vary.

The situation presented an ideal way to compare battery performance on a one-to-one basis. EnerSys® engineers began tracking data from all 40 burden carriers, comparing the NexSys® TPPL batteries with the flooded lead acid batteries in key performance categories.

For a closer look, EnerSys engineers isolated one month of performance data. During that one-month period, NexSys TPPL batteries were charged for 5,598 minutes over 138 separate plug-ins. The average NexSys charge cycle took just 40 minutes. The flooded lead acid batteries were charged for 7,528 minutes over 38 plug-ins, or about 1.2 times a day. Their average charging time lasted 3.3 hours. The difference in amp hours is equally stark – NexSys TPPL batteries delivered 3,283 amp hours over the month, while the flooded lead acid batteries logged just 1,376, and provided 139% more amp hours than the conventional batteries, or a 139% increase in productivity – all while charging in 20% of the time.

Plus even longer service life

The first NexSys TPPL battery installed has recently passed the four-year service mark and is still going strong; the remaining units are approaching three years of service. Ultimately the NexSys TPPL batteries are on track to more than double the 18-24-month average lifecycle of the conventional lead acid batteries – all while doing twice the amount of work!

Thin Plate Pure Lead (TPPL) Design

Robust connections

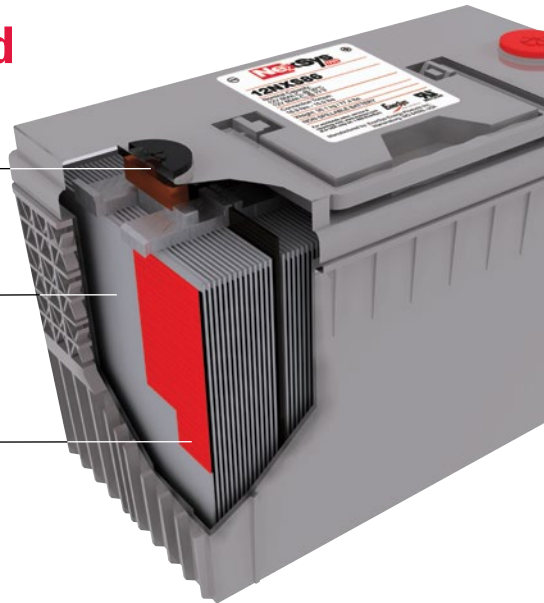
Cell connectors are casted and bonded to the plates to resist vibration.

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

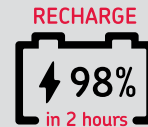
Absorbed Glass Mat (AGM) design prevents spills and delivers extreme vibration resistance.



Features and Benefits



No watering, battery cleaning or long equalize charges



Fast charge in less than 2 hours; plug-in during breaks*



Cell connectors are cast and bonded to the plates



Optimized cycling performance and high energy throughput



Very low internal resistance means more power when you need it most

* with appropriately sized charger

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