



## NexSys<sup>®</sup> TPPL batteries provide perfect fit for AGVs in Tier 1 truck body

After winning an extremely aggressive sales order in the summer of 2015, a Tier 1 truck body manufacturer needed to build the best production plant in North America and get it moving ASAP. The order was for a run of walk-in vans that had to be built and delivered in less than a year. As the Original Equipment Manufacturer (OEM) began outfitting a new plant in the Southeast U.S., EnerSys<sup>®</sup> consulted with the Ontario-based systems provider that would supply the plant with a custom fleet of 20 Automated Guided Vehicle (AGV) units.

Each AGV would move the several-ton walk-in van chassis (very slowly) along an assembly line over a two-shift, 16-hour production schedule, with the flexibility to adjust production. For that, the AGVs would read a series of QR codes on “smart-tape” on the floor that could be easily repositioned as requirements changed. Safety was also a key concern, so the AGVs would also require warning and emergency stopping capabilities.

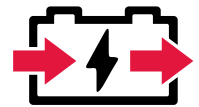
Each unit was going to need batteries to power all of that functionality and keep the vehicle moving through two shifts. As the AGV manufacturer weighed its stored power options, the NexSys<sup>®</sup> TPPL battery emerged as the obvious choice.

### A perfect fit for size, power density and charging

First, the NexSys TPPL battery was the only unit under consideration that could fit inside the battery compartment and deliver the required power, which would save the team precious redesign time. Thanks to the high energy density properties of Thin Plate Pure Lead (TPPL) design, a NexSys TPPL battery typically provides more power in a 30 percent less space compared to a conventional lead acid battery.

Equally important, NexSys TPPL batteries were the only ones that could deliver the required power as part of an opportunity charging routine. Given the two-shift, 16-hour production schedule, the truck body OEM knew that opportunity charging would likely be the most efficient way to go. The NexSys TPPL batteries again offered an obvious solution, as they can return to a full state of charge in less than two hours.

Finally, although long battery life wasn't necessarily a requirement, the estimated three-year lifecycle of the NexSys TPPL battery made the AGV engineers take notice. It would prove to be a welcomed additional benefit.



### Greater power throughput

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



### Rapid recharging

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



### Excellent cycle life

Optimized cycling performance and high energy throughput

\*with appropriately sized charger

## EnerSys® helps accelerate R&D

All of these NexSys® TPPL battery performance capabilities sounded promising on paper, but the AGV engineers still needed to see the battery in action. For that, EnerSys® installed two 48-volt configurations in an AGV prototype, which allowed engineers to put the vehicle through the paces it would need to execute on the assembly line. The NexSys TPPL batteries performed well on the floor and off, delivering the fast and easy-to-manage opportunity charging that the application required.

For the next several months, EnerSys worked closely with the AGV engineers through an accelerated R&D process. Just a year after the initial call for bids, the collaboration produced an exceptionally safe, production-flexible and energy-efficient AGV fleet of 20 vehicles.

Capable of moving 12,000 pounds, the AGVs feature a front motion sensor that halts movement should anything cross the vehicle's path. Operators can also kick an emergency stop strip running along each side. To facilitate opportunity charging, both batteries and chargers are onboard the AGV; to recharge, workers just plug in a standard three-prong cord.

Since going live in 2016, the units have been keeping the assembly line moving efficiently. Battery life is actually on track to exceed expectations, and work is already underway on a next-generation version of AGV that will feature automatic capture of battery maintenance data.



## Thin Plate Pure Lead (TPPL) design

NexSys TPPL batteries are constructed with pure lead plates. Pure lead plates are extremely thin, so more of them fit into the battery. More plates mean more power – up to 20% more power than the same sized conventional battery.



No watering, battery cleaning or long equalize charges



Minimum gassing and sealed



Cell connectors are cast and bonded to the plates



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