



Electronics Manufacturer Protects Crucial Defense Contracts – Cutting Operating Costs and Carbon Emissions with NexSys® TPPL Batteries

Summary

A leading electronics systems manufacturer needed to improve the sustainability of operations to avoid jeopardizing critical contracts with the U.S. Department of Defense. As a low-barrier method to start meeting the sustainability requirements of their contracts, company management sought to convert their combustion-powered forklift equipment to equivalent electric-powered versions.

However, the company's operations were very demanding – requiring forklift equipment to maintain optimum performance through extended hours of repetitive heavy lifting, with minimal downtime for any charging or maintenance. These application requirements meant a high-performance energy solution that would be consistent and reliable under the most stringent conditions.

To measure the energy needs of the application, EnerSys worked with the company's preferred forklift dealer to conduct a power study - evaluating the facility's operating profile, fuel consumption of their current combustion equipment and energy needs of its future electric equivalent. Using this energy data, the EnerSys team then deployed EnSite™ simulation software to model the operation's energy needs - comparing different battery and charger options to identify the optimal solution for their application.

Based on this data-driven approach, maintenance-free NexSys® TPPL batteries, paired with NexSys®+ chargers, were identified as the best combination for their operations – providing both required equipment performance and reliability. This combination also enabled the forklift batteries to get “opportunity charged” during work breaks and improved productivity by eliminating the downtime associated with LP tank changing.

By converting to electric equipment, the company is helping protect its critical government contracts by complying with sustainability requirements – cutting roughly 2,000 tons of CO₂ emissions versus its combustion-powered equipment. Additionally, EnerSys data-driven approach to optimizing their equipment's power will also help them save more than \$400,000 in fuel and operational costs across the equipment's service life – adding to the operation's profitability.

Situation

A leading electronics systems manufacturer supporting critical U.S. defense programs operates dozens of secure production facilities that build mission-essential systems for military aircraft, spacecraft, maritime vessels, and ground vehicles applications. To meet sustainability requirements of the U.S. Department of Defense and protect major military contracts, the company needed to demonstrate tangible progress in reducing its carbon footprint and operational costs.

At one of its key production sites, a fleet of 27 propane-powered stand-up and sit-down counterbalanced lift trucks kept raw materials and finished systems moving between production and shipping. Yet those same units had become a serious liability: high fuel consumption,

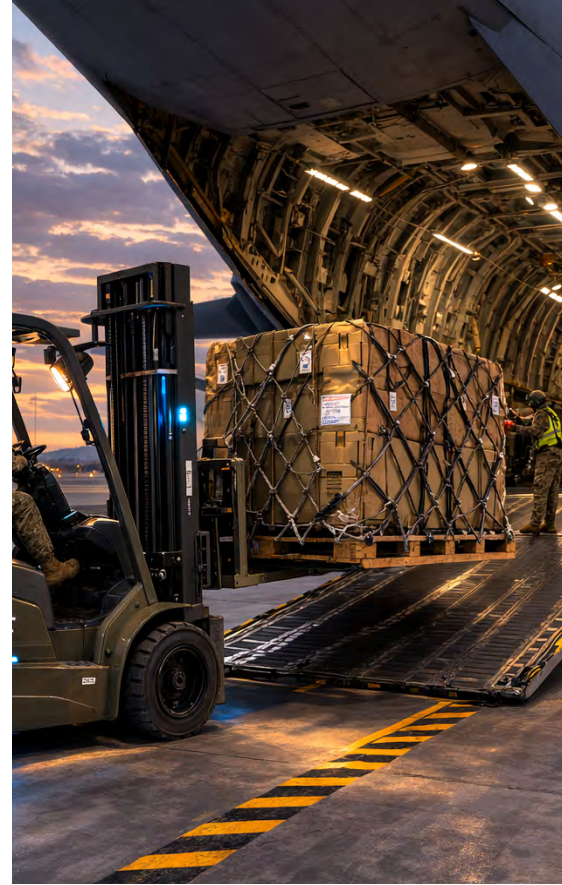
maintenance downtime, and escalating CO₂ emissions posed a direct risk to contract compliance. If the facility couldn't reduce emissions fast enough, it faced not only reputational damage but the potential loss of future defense business worth millions of dollars. It was a situation company leadership could not afford to ignore.

Challenge

Evolving sustainability requirements from the U.S. Department of Defense raised the standards for the electronics systems manufacturer to demonstrate measurable progress in reducing operational emissions - a key factor in maintaining critical defense contracts. The company's leadership identified forklift fleet electrification as one of the most immediate and impactful ways to achieve those goals while advancing operational efficiency.

Even so, the transition presented a complex challenge. Their facility's 27 propane-powered lift trucks supported production lines that operated with military-level precision, moving heavy materials and finished systems across two 10-hour shifts, 4 days a week, with almost no downtime or redundant equipment.

Any performance shortfall or charging limitation in an electric replacement could escalate quickly: stalling production, compromising missed delivery schedules, and mounting pressure on crews already running at capacity. In a defense manufacturing environment where reliability directly supports national security programs, even a brief disruption could threaten contract performance and millions in long-term business.



Leveraging Data

To determine the best path forward, the EnerSys team led a data-driven evaluation of the electronics systems manufacturer's electrification potential, collaborating with its preferred forklift dealer to collect real-world operating information and equipment specifications.

Using this data, EnerSys conducted a comprehensive power study to establish the facility's energy requirements and operating profile. The results were then modeled through its proprietary EnSite™ simulation software, which evaluated multiple battery and charger combinations and identified the optimal EnerSys solution for the application.

This analysis gave the manufacturer's operations and finance teams a clear, unified view of the opportunity: full fleet electrification was not only feasible, but also offered measurable ROI, TCO, and CO₂ reduction over the service life of the equipment.

Solution

Based on the results of the detailed simulations and performance modeling, the EnerSys team identified the NexSys® TPPL batteries paired with NexSys®+ chargers as the optimal solution. The combination met every operational requirement, delivering consistent power output for long shifts under heavy load while reducing total cost of ownership.

With a projected service life of 5 to 7 years, NexSys® TPPL batteries are 99% recyclable and maintenance-free, eliminating the maintenance challenges associated with traditional flooded lead-acid options. Their ability to be opportunity-charged during short breaks or shift changes also removed the downtime and safety concerns tied to LP tank changes, keeping operations running at full efficiency while reducing both fuel consumption and operational emissions. These advantages further supported the manufacturer's broader sustainability commitments and set the stage for the significant environmental and cost benefits achieved after the transition.

By aligning with the evolving sustainability requirements from the U.S. Department of Defense, the electrification initiative not only strengthened operational reliability, but also advanced the manufacturer's compliance with critical defense contract standards.

Results

The transition to electric equipment powered by NexSys® TPPL batteries has delivered measurable improvements in performance, cost efficiency, and sustainability.

The manufacturer now operates with greater energy control and a lower environmental footprint, achieving more than 2,000 tons of CO₂ reduction and over \$465,000 in operational and propane savings across the fleet's service life.

Using the insights gained from the EnerSys data analysis, the manufacturer can now better anticipate energy needs and plan charging more efficiently, visibility that wasn't possible with propane-powered equipment. In addition, the NexSys® TPPL batteries provide an estimated \$23,000 per year in equivalent carbon-offset savings and immediate ROI, as reduced fuel and maintenance expenses offset the lease payment increase from electrification.

This change demonstrates measurable progress toward meeting the U.S. Department of Defense's sustainability expectations, directly supporting the manufacturer's ability to protect and retain critical defense contracts. This success is now serving as a model for additional sites evaluating similar fleet conversions, extending the operational, financial, and sustainability gains across the organization.

Power Study Data Overview

Power Study	80v		36v	
	Operating Days		1575	780
	Service Life		6.73 Years	3.34 Years

LP Equivalent	80v		36v	
	Operating Days		1175.37	581.86
	Service Life		5.02 Years	2.49 Years

Average Annual Usage Model	80v		36v	
	Operating Days		1293.63	635.20
	Service Life		5.53 Years	2.71 Years

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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