



WHITE PAPER

Six signs you need to re-evaluate your lift truck power

Don't overlook lift truck power as a source of labor, space and cost savings

Today's warehousing and distribution operations face unprecedented competitive pressures, with a challenging labor market, rising commercial real estate costs and continued e-commerce growth all mandating greater efficiency. In the quest to make the most of available resources, companies are investing in automation, adjusting workflows, collecting data and more.

But what about lift truck power?

The right lift truck power choice can go a long way toward improving operational efficiency. For example, different power sources place varying burdens on labor to replace, charge or refuel; they require disparate amounts of space to house refueling, charging and changing infrastructure; and they come with different upfront and long-term costs. Here are six signs your operation may need to reevaluate its lift truck power.

01

Substandard productivity

Managers build and balance lift truck fleets to meet critical operational goals. But what if the actual output does not meet demand?

The answer may lie with a labor-intensive power source, or one that has declining levels of productivity. For example, some batteries no longer supply full power once they reach 50% depletion. This can restrict operations to full capacity for only half the shift. In other cases, operators might spend too much time engaged in complex charging and time-consuming changing procedures. This hits operations two ways, with management not only facing declining productivity, but incurring costs for non-productive activities.

Advanced lithium-ion battery technology can help address both of these challenges. The high energy density of lithium-ion supports longer runtimes than lead-acid or thin plate pure lead (TPPL) batteries, and they deliver full power output until they are near full discharge. Lithium-ion batteries also support fast, simple charging without removing the battery from the truck, and allow opportunity charging to top off the charge whenever the truck is idle, greatly reducing downtime for both the truck and the operator.

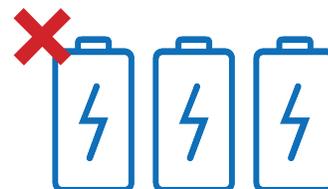
Lithium-ion batteries and chargers built by a lift truck's original equipment manufacturer (OEM) often offer additional productivity advantages. Because they are purpose-built for the manufacturer's trucks, they have system-level integration that lets them communicate directly with each other and the truck, enabling early warnings and safety features. They are also often compatible with the manufacturer's telemetry systems, providing real-time battery and truck data for fleet and service managers. And OEM batteries are typically available in a variety of box sizes and capacities, allowing tailored solutions that can help make fleet upgrades easier when additional productivity is required.

02

Excessive power source inventory

One of the worst scenarios for a lift truck fleet is insufficient equipment to serve demand. Or worse yet, lift trucks left idle due to a lack of available power sources, leaving operations unable to handle mission-critical tasks. But accumulating excess power sources on redundant equipment comes with downsides, taking up more space in already tight footprints and pressuring already strict budgets.

How do operations know the right balance? If the ratio reaches two or more power sources per lift truck — whether because of reliability or short usage periods — it may be time to evaluate alternatives. At that point, the cost and space disadvantages of carrying that many extra power sources are too great.



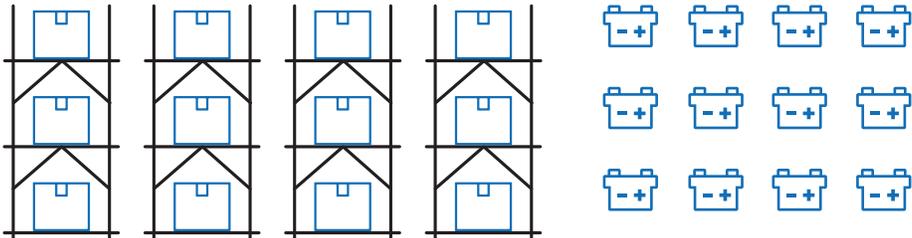
Not enough space

Operations must find additional storage room even as commercial and warehouse real estate costs continue to rise. In the search for greater capacity, managers are under pressure to reexamine how existing space is used.

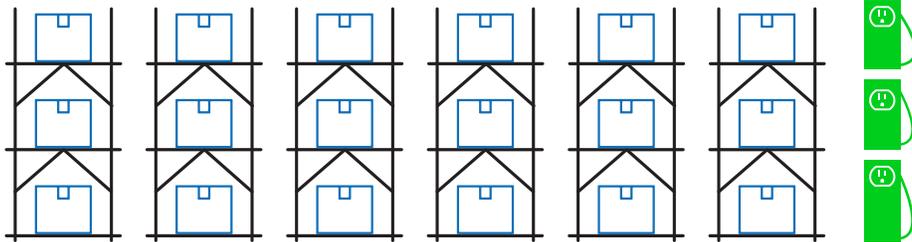
For some power sources, fueling infrastructure can be located outside, leaving indoor space available for revenue-generating operations. However, other power options, such as lead-acid batteries, require significant indoor space for storage, charging and changing. For example, lift trucks in a three-shift, 24/7 application using lead-acid batteries require up to three batteries per day, with a constant cycle of one in use, one charging and one cooling.

While some operations may accept this as a cost of doing business, reevaluating lift truck power can allow them to reclaim a significant amount of space for core operations.

Before



After



04

Declining labor efficiency

Good help is hard to find and even harder to retain. A persistent shortage of workers in the warehouse industry combined with increasing demand for labor means operations must maximize the productivity of the workforce they have. Yet complex battery maintenance, charging and replacement processes to simply power lift trucks take a big bite out of labor productivity.

How big? Removing a spent lead-acid battery and replacing it with a fresh one often takes 15-20 minutes — even longer if operators have to drive a distance or wait in line. On top of that, many operations maintain complicated charging schedules to avoid utility cost penalties during peak hours.

It does not have to be this way. Some power sources, such as lithium-ion batteries, can be fully recharged in less than an hour, depending on battery capacity and charging method. And with opportunity charging, operators can recharge whenever they have a free moment and either an offboard charger available or access to a standard outlet for onboard charging.



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05

Premature failures or equipment rentals

The true price of a power source extends far beyond the initial acquisition cost. Various power sources require extensive fueling and charging infrastructure, and utility costs can rapidly accumulate. Premature failure can also leave operations on the hook for replacement costs as poor battery charging habits and engine maintenance can lead to unfulfilled warranty claims.

To get the full value from the warrantied cycles out of a lead-acid battery, operators must use the full available charge and then recharge to 100% capacity. Actions such as topping off a partial charge count as a full battery cycle and can reduce battery longevity and capacity. As lead-acid battery output degrades near the end of a shift, the truck overcompensates for the lack of power by discharging extra heat, unnecessarily straining the motors, chassis and hydraulics.

Lithium-ion batteries require far less care and maintenance in order to maximize efficiency and longevity. They are equipped with a battery management system (BMS) that monitors cell voltage, temperature and overall battery condition during charging and discharging to help the cells remain within their specified safe operation zone. OEM lithium-ion lift truck batteries that communicate directly with the truck and the charger to deliver data such as voltage, current, temperature and state of charge further benefit from a tight digital handshake that optimizes charging speed and helps prevent overcharging and overheating. OEM batteries also typically feature warranties directly from the truck's manufacturer, and a single point of contact for service, potentially reducing service cost and complexity.

To make up for fleet limitations, some operations take on additional unplanned costs by renting forklifts to cover peak periods. This equipment redundancy accumulates added expense, takes up additional space and can be rendered unnecessary by simply optimizing the existing fleet with power sources that can operate at peak efficiency for the entire shift.

New regulations for emissions and hygiene

Lift truck emissions and sanitation regulations vary by state and industry. For example, certain industries, like food, beverage and pharmaceutical are subject to their own strict hygiene standards, including airborne contaminants. Additionally, corporate requirements for sustainability often come top-down, leaving managers to find ways to actually implement on the ground. The challenge is to maintain performance while avoiding fines and other sanctions.

What are the sources of these potentially compliance-busting contaminants? Internal combustion engines — diesel, gas, LPG — are the usual suspects, but perhaps surprisingly, all electric options are not squeaky clean. As part of regular maintenance, lead-acid batteries require off-gassing, which can contaminate sensitive products and could violate emissions standards.

Where to go from here?

The lift truck power source market is more robust and diverse than ever, with newer technologies such as lithium-ion and thin-plate pure lead batteries that are proven in the field. The market now offers unprecedented choice alongside traditional lead-acid batteries and internal combustion engines.

Making the right decision on a lift truck power source requires analyzing the unique requirements and competitive pressures facing each operation. The right partner has a broad range of power options and the expertise in lift truck applications to match operations with the best-fit power solution based on their specific situation.

Is there a more efficient power solution for your fleet?
Explore your lift truck power options at [Yale.com](https://www.yale.com)