Forklift Fast Charging: The Positives and Negatives

This technology can save space in existing battery rooms, the labor associated with battery changes and the additional capital costs of acquiring spare batteries. But factor the costs into your decision too.

By Scott McLeod

When it comes to electric lift truck power sources, lead acid batteries are king in today's market. If well maintained, they provide several years of service, however, certain drawbacks are driving the search for alternative technologies.

First, while there are negligible emissions associated with battery power, there is an environmental cost to manufacture and dispose of a lead acid battery and if maintenance isn't top-notch, a battery's service life is greatly reduced. In addition, proper battery changing techniques can be time consuming, even unsafe if done improperly, particularly in a multi-shift operation. Allowances need to be made for proper ventilation during charging and there needs to be an eye wash station close by.

Fast Charging Pluses

Today, many operations are well-served by electric lift trucks. The successful users are those who lay out an effective strategy to maximize their return on investment. If an operation has multiple shifts, that strategy may include fast charging.

In these operations, it may be possible to eliminate spare batteries, resulting in significant savings in batteries, battery changing, watering, cleaning and space. Fewer bateries also means less environmental impact.

Eliminating the need to change batteries will reduce lift truck downtime, increase productivity, and reduce hazards associated with the process. In addition, you can expect roughly a 75% reduction in battery charging time when compared to a standard lead acid battery charging system. And consider that the time required to charge a battery can be broken up into smaller segments throughout the work day, i.e., during coffee and lunch breaks, instead of one continuous eight to ten hour period.

Businesses which have operated propane or diesel forklifts in the past, and have wanted to convert to electric but couldn't, now stand a better chance with this technology, i.e., users who needed to run more than one shift but didn't accumulate enough hours per year to justify the additional capital cost of the spare batteries and related infrastructure. As a result, fast charging may open the door for these companies to convert to electric.

Fast Charging Minuses

The initial capital cost of the fast charge battery and associated charger can be significantly higher when compared to a standard lead acid battery and charger arrangement so it's important to complete an "all in" cost comparison to estimate the true savings.

Generally, the more operating hours per year and the more shifts per day, the greater the chance there will be significant

Fast charging can result in 75% less charging time compared to a standard lead acid battery charging system.

savings when you do the math. That's why a careful assessment of your energy usage over a suitable sample period of time is critical. Matching the right battery size with the right charger is also very important. Remember, with only one battery, you should expect to burn through its active material more quickly than you did when you operated with two, so it's wise to pack as much battery into the compartment as you can when the truck is new. If you don't, you may find yourself replacing batteries sooner than you think. Think of the battery as fuel and only fuel.

Next, upper management must fully embrace this technology and be aware of the discipline required to properly water and charge batteries on a timely basis. They should also know that fast charging generally draws more current than regular chargers. If your company has a large fleet of trucks, you may need to upgrade the electrical service, which can be an expensive proposition.

The maintenance crew must also know what to expect. The average lift truck and battery technician likely won't be up to speed on all the elements necessary to service and maintain this system for optimum performance and the lowest cost.

Is fast charge technology the only option to overcome a conventional lead acid battery and charger's shortcomings? Not necessarily.

Fuel cell and lithium ion battery manufacturers have made great strides in developing these technologies over the last few years and we will likely see more of them in the future as their economies of scale and performance improve and as the world economy moves to embrace all that is green. As with laptops and DVD players, the initial prices for these items were above what most of us were willing to pay. Over time, prices came down, lowering the barriers to entry for all of us.

Only time will tell which technology will take the lead. One thing is certain: it will be the one that generates the lowest tangible and intangible operating and fuel costs per hour, has the fewest reliability, safety and technical issues, is fully embraced by the lift truck manufacturers themselves and has developed a reputation for proven performance. MH&L

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PosiCharge fast chargers from Aerovironment feature a broad range of power capabilities (5kW to 36kW) at current outputs up to 600ADC. These systems also feature intelligent charge controls that recognize a battery's charge profile, temperature, and state of health to deliver a custom charge. www.avinc.com.

Aker Wade's **UniMAX** and **TwinMAX** fast chargers are wireless, enabling users to read data via PDA or PC from 320 feet away. This also enables data networking. These chargers are compatible with batteries from 12 to 80 volts and can be customized for specific applications. www.akerwade.com. This company has partnered with **EnerSys** to provide fast charge batteries for lift trucks and other motive power applications. www.enersysmp.com.

The **Minit-Charger FC** is a high-frequency, single-connector fast-charger designed to provide up to 320 Amps DC of output while charging a 48 volt or lower battery. It is sized to be pole- or wall-mounted to save floor space. Its Battery Data Control (BDC) system automatically adjusts charging rates. www.minit-charger.com.