

LI-ION HEARTED

Lithium-ion power is becoming increasingly popular for forklift trucks, and offers significant advantages over traditional options

BY CHRIS BECK

For forklift fleet managers, deciding what energy source to power your trucks is a common dilemma. Indeed, as Kai von Berg, senior director of product management, counterbalance trucks and energy at STILL, highlighted at a recent press conference, “Energy is an indispensable and expensive resource for industry. For intralogistics experts, energy is a hinge factor – all the work we do is subject to energy availability and cost.”

Traditionally, the debate boiled down to a handful of choices: internal combustion engine, gas/LPG or lead acid-powered electric trucks. In recent years, however, lithium-ion technology has been muscling in on the party.

While commercial lithium-ion battery technology has been around since the 1990s, powering your mobile phone and laptop, the forklift truck market has been relatively slow to adopt. However, the advantages of lithium-ion make it a winning choice for many applications.

“Other technologies, especially lead-acid power, have reached their innovation ceiling,” said von Berg. “It’s now time for other technologies to come in and take over. Lithium-ion technology is still improving, but already provides significant benefits over other propulsion methods.”



Hyster's Phil Ireland says lithium-ion is well suited to sectors with high hygiene standards

No emissions

The first of these benefits comes in the shape of a significant reduction in emissions. The latest EU regulations target a further 15% reduction in CO₂ emissions by 2030; the UK is working to a similar target. Adapting technologies and processes to meet this won't come cheap, explained STILL's von Berg. “Energy has become a key topic for investors,” he said. “Whereas 20 years ago, smoking chimneys were a sign of a thriving business, today they are a setback. As a result, energy consumption must be managed smartly, across the factory.”

This is where lithium-ion power comes into its own. A lithium-ion powered FLT produces no emissions commonly associated with other power sources, and – most importantly for the bottom line – a lithium-ion battery can offer savings of up to 30% in energy

costs compared to a lead-acid battery. In addition, the lack of emissions makes the warehouse a cleaner, more pleasant place to work.

“Lithium-ion is becoming particularly popular in the food and pharmaceutical industry and other sectors with high hygiene standards,” says Phil Ireland, programme leader at Hyster Europe. “These operations are mostly indoors and there is a priority to reduce contamination. Lithium-ion has no acid, which could spill, and no fumes; hydrogen and other gases can be produced by lead acid, which are unwelcome in clean production and storage areas.”

Less maintenance

Lithium-ion trucks require next to no maintenance, freeing up staff time to undertake more important work.

“The technological



Cameron's Brewery cuts costs and improves energy efficiency with lithium-ion power

Cameron's Brewery has been a fixture in Hartlepool since 1865, and is one of the town's biggest

employers. Increased demand for its range of beers has seen increased activity across the site – putting more pressure on its materials handling capabilities.

Forklifts at the brewery are tasked with moving ever-increasing numbers of kegs around the site and into warehouses. The existing fleet of LPG-powered trucks was getting through anywhere between 20 and 30 cylinders of gas per week, something the company realised was neither energy nor cost efficient. It also left the business with extended downtime periods when employees would have to change over the LPG tanks for the forklifts and dispose of the used versions safely.

In July 2020, Cameron's began a trial of lithium-ion trucks as part of an existing five-year relationship with Jungheinrich. Following the pilot,

the company has now implemented four lithium-ion powered trucks, with anticipated cost savings of around £15,000 a year.

The benefits didn't stop there: the short charging time and long battery life has all but eliminated downtime, meaning the fleet can operate 24/7 and staff aren't spending time changing cylinders. The working conditions on-site have also improved – air pollution in indoor spaces has reduced, noise pollution is down and there is no need for the expensive exhaust systems to remove harmful gases or acids while charging.

“The switch to lithium-ion trucks was simple and seamless, we were able to see the benefits straight away and it works perfectly with the attachments and clamps we require to move our kegs,” says Richard Forster, logistics manager at Cameron's Brewery. “The cost savings were a no-brainer for us, and we're very pleased to be doing our part in reducing our carbon footprint.”



developments of lithium-ion batteries mean repair and maintenance efforts are considerably reduced, and in most cases not necessary at all," explains Nikos Tsiouvaras, Lithium R&D Director at industrial battery manufacturer, Sunlight. "This equates to an important reduction in annual total cost of ownership compared to other technologies. Unlike flooded lead acid batteries, lithium ion batteries are almost maintenance free, drastically saving on labour costs of any maintenance staff."

With increased reliability comes more accurate workload planning and a reduction in delivery time issues.

"Warehouses are reliant on operating with increased levels of predictability," continues Tsiouvaras. "Lithium-ion batteries help achieve and maintain this across various applications. Their use in electrical industrial vehicles, like forklifts, ensures reduced downtime of equipment, meaning getting more hours of operation and increased reliability."

Longer life

Lead acid batteries require regular changing or recharging, seeing operatives fiddling with a truck when they could be providing value to the business elsewhere. Lithium-ion reduces this need. A Sunlight battery, for instance, charges fully in 90 minutes – something Tsiouvaras says brings advantages in other ways: "A 90-minute charge enables three shift operations while

The most powerful version of STILL's latest RX60 forklift is powered by lithium-ion

avoiding the need to change the battery in the middle of the working day. Our technology uses lithium-iron-phosphate and can last for approximately 4,500 charging cycles, depending on the user profile."

Users obviously don't need to fully charge and discharge the battery each time, says Hyster's Ireland. "Lithium-ion allows for opportunity charging during planned breaks and lunch time. This 'top up' approach can simplify operations as you only need one battery, not two."

This flexibility of charging means no complicated charging areas are required, something that Ireland says will particularly appeal to companies in new sites who want to maximise every square foot of usable floor space. However, older sites may be put off. "Older sites may need wiring changes to accommodate the power needs and charging locations," warns Ireland. "Draw on the electric supply is another consideration. Lead acid batteries charge slowly over a

long period while lithium-ion options charge quickly and need more power. Infrastructure needs to accommodate these requirements."

Purchasing forklifts can be expensive and getting the most value from them is imperative to long-term cost considerations. Limiting the number of forklifts out of action during operating hours is an important part of this cost reduction and lithium-ion batteries help achieve this. The technology is maturing rapidly, and is already beginning to knock more traditional power solutions off their perch. 

