A glimpse into the electric future

ACCORDING TO FLASH BATTERY, THE CONVERSION TO LITHIUM TECHNOLOGY IS NOW UNSTOPPABLE - WITH CONSTRUCTION THE NEXT STOP ON THE ELECTRIFICATION JOURNEY

Electric conversion on building sites has been underway for a number of years, whilst the power and size of electric vehicles are also increasing. The goal is to help European sites drastically cut their greenhouse gas emissions by 55% by 2030, as established under the Paris Agreement. In order to achieve this, more and more players in the sector are expanding their electric range.

Heavier vehicles

While applications under 50kWh have already led the way in converting from combustion to electric, nowadays electrification is also moving into heavier vehicles, such as large excavators, drawn by constantly evolving lithium technology, with a higher energy density, capable of storing an increasing amount of energy in a small space to meet the typical work cycles of construction machinery.

"The trends speak for themselves but due to the specifications of the current technology in terms of energy, volume, costs and charging infrastructure, full-electric conversion for large machinery is still in the proof-of-concept phase," says the CEO of Flash Battery, Marco Righi. "For these highly energy-intensive vehicles that are subject to gruelling work cycles, it is best to opt for a hybrid system, where the battery is used for a few hours and is supported by a motor generator, which currently runs on diesel but in the future we hope it will be with hydrogen fuel cells, to continue to guarantee a power supply, considering the operations to be carried out and the working conditions".

State-of-the-art for compact machines

The road to decarbonisation has therefore also begun for large machinery, but it still has various challenges, starting with the lack of charging infrastructure and the difficulty of supporting the power requirements of the demanding work cycles.

On the other hand, there are many concrete advantages on compact machines, such as small excavators and telescopic handlers that operate on construction sites in city centres on a stop-start basis and which are already being produced in electric versions.

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Success story

One example of this is Flash Battery's 30.7kWh battery developed for the prototyping and subsequent serial production of a mini full-electric crawler excavator. The battery was developed with an extremely customised mechanical design to offer the highest energy density possible in a small size, without sacrificing the strength required to withstand the stress and mechanical loads that the vehicle must endure at the construction site.

Furthermore, the addition of a heating system ensures that the vehicle can also be used in colder climates, while the inclusion of its automatic remote control system, the Flash Data Centre, means it can carry out self-diagnostics and predictive maintenance.

Compact machines such as wheel loaders, handlers and small excavators, not only appreciate the advantages of lithium as it is more efficient and reduces polluting emissions, which means they can work in confined environments for long periods of time without stopping to dispel the toxic gases produced by combustion engines, but they also benefit in terms of noise reduction. By getting rid of noise emissions, it creates more flexibility of use in urban areas, as they can operate undisturbed without time restrictions.

Electric roll-out

Electric building sites could therefore be the next step in the construction industry, which will be able to rely on technological developments and a supply of electricity which can increasingly be generated from renewable sources and is already starting to be rolled out swiftly in northern Europe. The goal is to help construction sites go electric, while focusing on sustainability, flexibility of use and Return of Investment.

"The revolution is real and confirmed by the numbers," says Righi. "We ended 2023 with turnover growth of 48% and, alongside the energy density of our battery packs, the MWh supplied in an increasing number of industrial applications also grew by 53%. In just a few years, lithium technology has made a huge leap forward in terms of quality – and conversion is now unstoppable". **iVT**

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