Harvesting electrification in the agricultural sector

LITHIUM BATTERY SPECIALIST EXPLAINS WHY SOME TYPES OF AGRICULTURAL MACHINERY ARE AMONG THE MOST ACTIVE IN THE ADOPTION OF ELECTRIFIED SOLUTIONS.

According to Flash Battery, a specialist in lithium batteries for industrial vehicles, the agricultural sector is one of the markets that is seeing major trends for electrification in Europe. This sector is undergoing major technological changes and concerns over environmental problems appear to be a main driver to turn to electric power too, along with public policies and very strict regulations on the emission of pollutants.

Flash Battery said that the electrification of European agriculture has begun in multiple applications and it is a process that offers opportunities, such as environment protection, reduced maintenance operations and management costs.

"Today, the agricultural machinery industry is investing huge amounts of resources into electrification," said Marco Righi, chief executive officer and founder of Flash Battery. "Just think of the evolution in terms of the skills that research and development teams need to deal with: first they were used to internal combustion engines and hydraulic equipment, now they need to work with batteries, inverters, electric motors and CAN-bus systems, among others."

The trend upwards for electrification all over Europe has been clearly registered in data from the company's French partner Efa France, that emphasises how industrial electrification in agriculture is especially lively with self-driving vehicles and machinery for medium-intensity use.

In the first two quarters of 2020 Flash Battery itself noticed a significant increase in demand from numerous European players in France and the Netherlands and anticipated several fields of application in which the need for electrification of agricultural vehicles is becoming more pressing. One of them is straddle tractors used in vineyards for soil tilling, cutting, clipping, phytosanitary treatments, and so on.

GREATER PRECISION

Viticulture is an important agricultural sector that has been enjoying strong growth with an ongoing strive for improved quality, simplified work processes, and greater precision, thus determining a trend towards electrified machines.

Thanks to electric power, straddle tractors are thought to achieve the same levels of performance as internal-combustion-powered tractors, but at the same time >

According to Flash Battery the agricultural sector is one of the markets that is seeing major trends for electrification in Europe. The photo shows an electric telehandler in action.

CEO Marco Righi

gain all the advantages of electric drives: elimination of maintenance with related costs, reduced carbon dioxide, harmful gas and fine particulate emissions; and reduced noise.

Another niche that sees electrification as a necessary step forward is the maintenance of urban green spaces, with obvious advantages in using these machines at any time of day, reducing noise pollution and the resulting disturbance of people's daily lives. The use of lithium-ion batteries also makes these machines lightweight, practical, compact and easy to use.

According to Flash Battery, one other factor influencing the demand for electrification in the agricultural market is the need to reduce energy consumption in a sector that is, by nature, very energy hungry. Giulia Gibertini, head of Marketing at Flash Battery, defined lithium batteries as the Game Changer because of their capacity to overcome the limit to store energy of previous lead-acid-based solutions.

SAFE AND STABLE CHEMISTRY

The fact that lithium batteries nowadays can be very flexibly realised in terms of shape, size and technical specifications, has been a major step forward as well. Flash Battery, for example, analyses each individual project starting from the requirements in terms of power, autonomy and the space available for the lithium battery, and manages in complete co-operation with the client, from the design phase to delivery.

Righi explained that initially lithium-battery technology raised doubts creating a somehow negative image and some hesitance in adopting the new solutions. It is thus important to trust an experienced lithium battery manufacturer: "Flash Battery has always managed to guarantee the highest safety level by working on three key aspects: choosing the right lithium chemistry, a proprietary control electronics, and the correct assembly of the battery pack," he said.

For industrial applications, Flash Battery chose to rely on lithium ferrophosphate (LFP) chemistry because it is the safest and most stable chemistry on the market. It is also available in high-capacity formats that do not require to connect many cells in parallel, further increasing stability and safety.

To improve the power capacity and life of its batteries for industrial uses, Flash Battery researched and adopted solutions that increase energy density inside the LFP packs. The company's Research and Development team – which is more than one third of the workforce – was able to increase volumetric power density from 134 to 207 Wh/L in just three years.

"Greater energy density in a smaller space is one of our key strengths, along with the high safety levels we guarantee in all the 10000 Flash Battery's products already in use around the world," said Gibertini.