

Powerful ambition

IN THIS EXCLUSIVE INTERVIEW, FLASH BATTERY CEO MARCO RIGHI DISCUSSES THE LATEST INNOVATIONS IN BATTERY TECHNOLOGY FOR OFF-HIGHWAY VEHICLES, HIS PREDICTIONS FOR THE FUTURE OF THE INDUSTRY AND HIS COMPANY – AND TELLS THE STORY OF HOW HIS BUSINESS BEGAN

The electrification of off-highway machinery has evolved over the last decade and more, from concepts and prototypes, to now being one of the primary areas of focus for vehicle designers – and Flash Battery, founded in Italy in 2012 by Marco Righi and Alan Pastorelli, has been serving the industry throughout this development.

The Flash Battery success story continued recently with the opening of its first strategic operational site in the United States, designed to meet the growing needs of global customers.

“We understood the requirements from our customers to be close to the final product, to support the technicians with our technicians, especially in the US, Canada, and Mexico area,” says Marco Righi, speaking from his company HQ in Sant’Ilario d’Enza, near Parma, Italy.

“We produce customized batteries for OEMs of industrial vehicles like cranes, cleaning machines, construction logistics, marine, railway, and agricultural machinery. We mainly provide batteries in the European market, but the OEMs export their vehicles everywhere.”

The US facility is primarily geared towards enhancing after-sales support. “We have a stock of components and a facility with a workshop,” says Righi. “They are also able to support customers in the field.”

How it all began

Flash Battery’s global reach, which sees it with customers in more than 54 countries, over 120 employees and a turnover of €34million in 2023, belies its humble beginnings, the inspiration for which came from Righi’s childhood.

Righi’s father set up a company in 1985 (the year Righi was born) that manufactured high-frequency battery chargers. It capitalised on a new, growing market, eventually becoming the European leader in its sector.

Righi began teaching himself about electronics adapting his PlayStation to strobe disco lights for parties and later got a job in his

MAIN: Flash Battery’s new US facility is located in Houston, Texas

RIGHT: Marco Righi co-founded the company in 2012

BELOW: Flash Battery creates customised lithium batteries for off-highway vehicles



father’s company’s repair and R&D departments. “I loved that company! Perhaps because I grew up inside it and had strong ties to its people, my dream was to help my father and, one day, to run the company together.”

But in an unexpected turn his father sold the company in 2006. “At that moment, I had the feeling that all the plans I’d made were coming apart, since everything revolved around the company,” says Righi. “I was practically born in that company, and all of a sudden, I didn’t feel it was mine anymore.”

But his passion for electronics never waned and in 2009, a chance encounter set Righi on a new path. During a visit to a friend who made industrial electric vehicles, he saw lithium batteries from China for the first time. Their poor quality sparked an idea:

“With the specifications they had, if I could solve the technical problems, I could launch a major innovation for all industrial applications,” he says.

This inspiration led to nights and weekends of experimentation. Marco teamed up with his friend Alan Pastorelli, an electronics engineer, and they began working tirelessly on a new lithium battery management system. Their dedication was unwavering. “This involved a great deal of sacrifice on our part,” says Righi. “When our friends were going out dancing, we were always holed up in my garage running experiments that sometimes succeeded... and sometimes didn’t.”

Eventually, however, their perseverance paid off: “We succeeded in keeping the cells balanced, even in very large battery packs

offering high performance. This made us miles ahead of the competition, who were still producing traditional control systems.”

In 2012, Flash Battery (then named Kaitek) was born. From humble beginnings, the company quickly gained traction. “After we began solving the problems with lithium batteries for a number of customers, word began to spread, and our orders increased exponentially,” says Righi.

Setting itself apart

Flash Battery’s head-start in the field of industrial-vehicle batteries still helps to set it apart from the competition in an increasingly crowded marketplace, enabling it to deliver bespoke solutions for different vehicle types.

A key element of the Flash Battery system is its proprietary electronics. “We started with our own unique system,” says Righi. “Our BMS [battery management system] provides a unique way to manage the batteries. It’s patented in Italy and patent applications are ongoing for Europe as well.

“We’re the only company in Italy to include such an advanced electronic control system for batteries. And we continue to innovate, with recent developments like our remote monitoring system, Flash Data Centre and Automatic Alert System, which are helping to push the boundaries of what’s possible in battery technology.”

Another aspect of great importance is the proper thermal management of batteries. In industrial applications cooling of cells is not a big priority for Flash Battery, as the nature of shift work, coupled with the high efficiency of its products mean that there is little risk of overheating, however, it’s a different story when it comes to warming.

“Heating is almost standard for us, because it’s really important for the charging phase to be over zero degrees,” says Righi. “We also use heating to provide better performance in low temperatures. And if you have the heating system and the

vehicle is plugged in during the night, the operator is able to use the vehicle with the maximum performance immediately, from first thing in the morning.”

Challenges for the future

Looking to the future Righi identifies energy density as a key challenge in the industrial vehicle battery sector. As with automotive,

OEM customers are increasingly asking for more energy in less volume and weight.

However, unlike automotive, in off-highway vehicles fast-charging isn’t a primary concern. “Most of the time the limitation is the power of the grid that we have,” says Righi. “On a construction site it’s not like the automotive world where you can have a column with 350 kilowatts available.”

In the medium term, Righi sees solid-state batteries as a potential game-changer. These work on the principle of having a solid, rather than liquid electrolyte. Such technology will be more stable and improve energy density. However, more research and testing is needed to bring them to market.

In the more immediate future Flash Battery continues to innovate in other areas. “We recently invested in a new production line, which is completely automated to assemble the modules with laser welding, which is something that is new for us,” says Righi.

Righi is also optimistic about the company’s growth trajectory. “We have our foot to the floor,” he says. “We expect to have a turnover of more than €50 million within three years. Beyond that, our current facility can take production to

€60-70 million, but we already have the land on the site for another building. This sector is rapidly expanding, and if we maintain our current working approach, passing €100 million in the future will not be difficult.”

That’s not to say there aren’t challenges, but with electrification a mega-trend across many sectors, Righi anticipates agile market response will help to ensure continued growth. “There are markets that are working well,” he says. “For example, ground support equipment is definitely growing and compensating for the current reduction in construction and agriculture. We are still working on new prototypes every year, and every year sees new possibilities opening up.” **IVT**

“OUR BMS PROVIDES A UNIQUE WAY TO MANAGE THE BATTERIES. IT’S PATENTED IN ITALY AND PATENT APPLICATIONS ARE ONGOING FOR EUROPE AS WELL”



FREE READER ENQUIRY SERVICE
To learn more about this advertiser,
visit www.magupdate.co.uk/pivt

