

# Patented lithium technology

THE EFFICIENCY, CHARGING SPEED AND ZERO MAINTENANCE OF FLASH BATTERY'S BATTERY MANAGEMENT SYSTEM IS RECOGNISED WITH AN INDUSTRIAL INVENTION PATENT

▶ To succeed in the field of technology, you have to think differently and put out ground-breaking innovations that anticipate market demands. And what could be more pressing in the field of industrial electrification today than the need for efficiency, autonomy and a long service life?

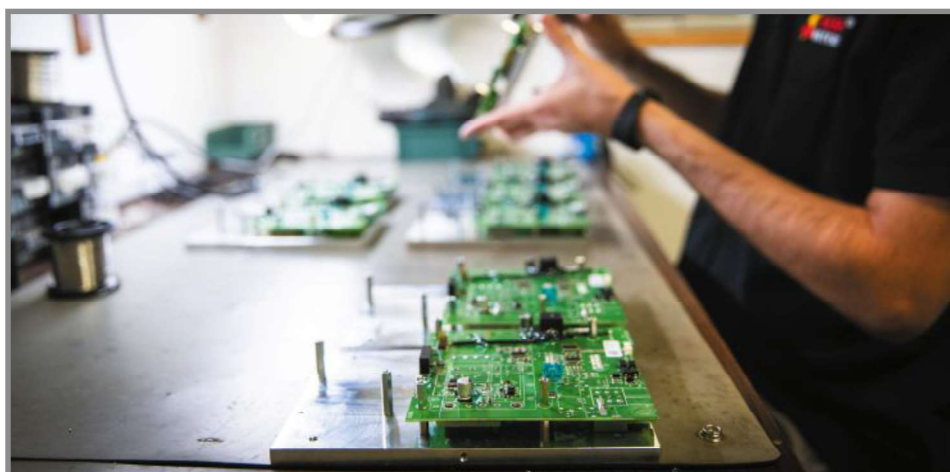
Back in 2012, when the electrical switchover in industry was still in its infancy, an idea was conceived that enabled Flash Battery to carve out a prominent position within the emerging field of the production of lithium batteries for industrial machines and vehicles. It was named the 'Flash Balancing System', and is the proprietary Battery Management System (BMS) that was recently granted an industrial invention patent in Italy.

## Battery management

When talking about batteries, the term BMS is often used, but very few people know exactly what it means: a good BMS is the real brain of a lithium battery and enables smart performance management. The proper balancing of the battery pack and charge management are among its most important functions, and essential to providing efficiency and high capacity throughout the battery's entire life cycle.

The key aspect that enabled Flash Battery to respond early to the challenges of lithium electrification was the focus on electronics: studying, testing and finally implementing a unique cell management system.

The special feature of the Flash Balancing System is the ability to perform high-power cell balancing, both in active mode during discharge and in active and passive mode during charge, with a balancing current (20A) that far exceeds traditional BMS systems, maintaining the balance and efficiency of the cells. The lithium battery charging times therefore become faster and



ABOVE: Flash Battery's proprietary control electronics

BELOW: The company's portfolio of customised battery solutions

predictable, with an ultra-fast balancing time of less than 30 minutes (a traditional BMS requires up to 8 hours just for the balancing phase).

## Zero maintenance

This system enables full temperature control with two sensors per cell, provides active, continuous support for the weakest cells during discharge and eliminates the need for maintenance.

"Our Flash Balancing System patent is the culmination of our 10-year-long effort to make industrial electrification efficient, safe and available for numerous applications," says Flash Battery founder and CEO, Marco Righi, "When we decided to invest in lithium batteries, we realised their potential, but they weren't reliable and had poor electronics. The Flash Balancing System has made them not only reliable, but also smart, safe,

high-performance and long-life, often outlasting the vehicles they power."

"The patent is also a crowning achievement for us; the great satisfaction of having invented something unique that has brought real benefits to our sector and given us a significant competitive advantage in a Europe that is increasingly ready to embark on a real energy transition."

## Self-diagnostic

The company's patented Battery Management System not only performs cell balancing, but also provides accurate and continuous all-round checks on every battery pack to ensure performance stability over time, long life cycles, fast charging times, self-diagnostics and predictive maintenance.

Indeed, thanks to the implementation of an automatic, real-time monitoring system for all battery parameters, operating data is collected 24/7 and sent via cloud to a proprietary portal, the Flash Data Centre, which uses AI and machine learning algorithms to obtain information on the SOH of each battery, prevent faults and implement real improvements to the machinery.

A win-win technology which, with its continuous evolution, enables manufacturers to boost the productivity of their equipment and the Italian company to produce increasingly smarter lithium batteries. **iVT**



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