

Lithium-ion batteries: a blessing or a curse?

Experts Andreas Schmidt and Adrian Griese of **OMNITRON Griese** discuss the pros and cons of lithium-ion batteries, and how to deal with the associated risks.

Med-tech market demand is increasingly moving in the direction of mobile devices. The power supply for mobile applications is largely covered by rechargeable batteries. Lithium-ion (Li-ion) batteries are suitable for many applications as they have a high energy density, are more compact and lightweight than lead acid batteries, and have superior performance compared with nickel metal hydride batteries of the same size.

"The benefits of different Li-ion technologies are undisputed," says Andreas Schmidt, sales manager of German battery specialist OMNITRON Griese. "However, the characteristics of the various technologies have to be adjusted precisely for future applications. Decision-making should not solely focus on criteria such as limited space in the application, highest possible performance, lowest possible weight or even the cheapest price. Identifying and mastering potential risks, in many cases, is of life-saving importance."

Schmidt knows what he is talking about. Based on market surveys and contact with customers, insurance companies, certification bodies and other organisations, he and his colleagues are well aware of a multitude of incidents. He continues, "Such occurrences are, in many cases, unfortunately, not made public. For example, we have information about fires in cars, mobile phones, hoverboards, notebooks and even golf caddies, all caused by batteries."

Managing the risks

Still, medical device manufacturers and patients do not have to renounce the benefits of Li-ion technology. According to Schmidt, "Once you have identified the risks, you are also able to overcome them."

Over the past 40 years, the company and its customers haven't had a single fire. "The OMNITRON safety concept reduces risks to the lowest possible level," managing director Adrian Griese explains. "We are sharing our experience and expertise with our customers."

For the company, overcoming the risks starts with the selection of suitable partners and suppliers. The technical team assesses the properties of Li-ion battery cells by means of tests conducted in the internal laboratory before they are used for a customer project. "It is only once we have completed our assessments and analyses that we are able to provide reputable consulting for our customers," says Griese. "This includes, of course, topics such as the legal situation, insurance issues, required approvals such as UN, or IEC and UL, as well as transport regulations and shipment options.

Our customers frequently also have questions concerning the storage of Li-ion batteries."

The design of the ideal safety unit is of vital importance. "Key protection functions include overcharge, deep discharge, over-current and short-circuit. Optional features of an intelligent battery management system may, for example, include temperature monitoring, balancing and charge-level indication," Griese explains.

Guaranteed traceability

Permanent quality and process inspections in series production are just as important. Starting with incoming goods, functional and material tests, in-process check-ups to final inspections: the company defines, documents and records every single step. "Our key word here is traceability. According to ISO 13485 specifications, we guarantee the traceability of all installed components and of the production steps. It is up to the customer to determine the required level of traceability," says Schmidt.

The data required to ensure such traceability is recorded by the company using software-controlled database systems that, like all other test systems, are validated periodically. Records and database content are retained for a minimum period of ten years. In case of any incident occurring during this period, it will thus be possible to determine potential origins and to identify affected products that have been delivered to customers.

Complete life cycle

OMNITRON Griese provides packaging, labelling, storage, product shipment and disposal according to applicable legal requirements. Griese adds: "Our colleagues responsible for these tasks are trained and certified on a regular basis. We also invite customers to join our training sessions in case there is a need for information or a refresher course."

"We have noticed that there is still a major lack of information," Schmidt concludes. "In the meantime, Li-ion batteries are used for almost all fields of application, and, at the end of the day, it is the end user's safety that counts. We can help to make sure that customers and users are able to leverage the benefits of Li-ion batteries under well-controlled conditions." ■

Further information

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