HALL 13
BOOTH D11
+ FG 11-02

CARAVAN SALON DÜSSELDORF

Strong like a lion!

LIONTRON's advertising slogan, "Strong like a lion!" not only describes the LiFeP04 battery's ethos, but also clearly defines the direction of the brand - to become worldwide market leaders in the field of replacing lead-acid batteries used in mobile applications. The Company's founders, a committed and competent father and sons team, are pursuing the company's goal to achieve annual sales of €100 million.

Words Peter Hirtschulz

LIONTRON is the youngest enterprise for this family business. The father, Wolfgang, started the business in 2003 after a 20 year career as a key account manager at two large corporations. Before becoming self-employed, he took a break between 1999 to 2003 to sail the world. Back on land, Wolfgang was looking for "solid ground" under his feet and a product or market he could master. One area that he knew perfectly from his sailing activities was the generation and use of energy: an issue that can require flexibility and unconventional solutions, especially on long-distance sailing boats. The first company he founded was based in a garage with his son Boris. The second son, Thorsten, completed the family team later when they founded a group of companies which deal, among other things, with the conception and sale of self-sufficient and grid-parallel energy systems for self-supply, from mini-insulated power plants to large-scale photovoltaic systems. The same principle still applies at LIONTRON: premium quality without compromise. To create the best replacement for the lead-acid battery market, the founders consciously relied upon proven and safe lithium iron phosphate (LiFePO4) technology, which is the best of the lithium technologies currently available. Wolfgang commented: *"At first glance, these batteries are a little more expensive, but they are clearly superior to conventional lead-acid batteries in almost all respects. This includes the performance, the service life (based on the charging and discharging cycles), and considerable weight savings for recreational vehicles, plus better safety and handling, to name just a few of the numerous advantages."*

More specifically, while a lithium iron phosphate battery uses around 95 percent of its energy, a lead-acid battery can only recycle around 85 percent. The lead-acid battery should be discharged to a maximum of approximately 50 percent for the best balance between the service life and its performance. In other words, to have the same output as a 100 Ah lithium iron phosphate battery, a lead-acid battery would need a capacity of 200 Ah. Based on the lifespan of the lead-acid battery, with a 50 percent discharge and 1,000 charging cycles, if the battery is fully charged directly after discharge. In reality, since this is not always possible, closed lead batteries (such as AGM or gel) usually have a lifespan of less than 1,000 cycles, while the lithium iron phosphate battery easily manages 3,000 full charge cycles. In practical terms, this means at least three 200 Ah lead batteries would have to be purchased (at a unit price of around €350-450 each) in order to only approximate achieve the same 3,000 charging cycles of a 100 Ah lithium battery. After that, the lead-acid battery has reached the end of its life, can no longer be used and needs to be replaced. By comparison. the LiFePO4 battery still has at least 80 percent of its original power available after 3,000 full cycles and can also deliver a reasonable performance for a further 7,000 cycles. Another important advantage

for motorhomes and caravans, is the weight saving these batteries provide. A 100 Ah lithium battery weighs between 13 and 15 kgs. A 200 Ah lead battery easily weighs 55 to 60 kgs. This weight saving will deliver benefits to fuel consumption in the long run and also improve the vehicle's available payload. Regular function checks and maintenance can be problematic with "normal" liquid lead-acid batteries, such as the refilling of distilled water. With closed AGM or GEL batteries, this maintenance is not necessary, but the batteries, like the liquid battery, must be fully recharged as soon as possible after each discharge. On the other hand, a lithium iron phosphate battery does not need to be serviced after installation. The battery management system (BMS) built into every battery ensures that no handling errors are possible and the battery is protected from damage by the user. Battery installations, e.g. in motorhomes, should always be combined with additional battery monitor systems that cost around €200. LIONTRON batteries are equipped with Bluetooth battery monitoring systems at the factory, which can be read with any standard iOS or Android cell phone using an APP. External battery monitors are therefore not required. With the free APP, the user can check the charge status in percent and also the current output, the number of cycles already used and the feed-in, for example, of the solar system, battery charger or alternator. On the subject of security: Liontron deliberately chose LiFePO4, i.e. lithium iron phosphate cells, because, in contrast to the most commonly used lithium technologies, no cobalt is used in cell production. In battery cells that use cobalt compounds, oxygen can be dissolved and that can result in a thermal runaway.. The situation is different with the LiFePO4. They cannot burn, leak gas or explode. Even in extreme tests with bullets, etc., an uncontrolled burn-off could not be caused, nor could an explosion be provoked with LiFePO4 cells. In comparison, you may know that lead batteries, even those that are closed, have safety issues. For example, if being charged with too high voltage, a 'detonating gas' can be created. This is highly explosive and collects near the ground because it is heavier than the ambient air. For this reason, these batteries must only be installed in well-ventilated places to avoid any possible ignition, which could lead to an explosion. Another issue is the sustainability of lead batteries. Although they can be recycled, about 4-9 percent of the amount of lead processed is emitted into the environment. This is why regulations for lead batteries will gradually tighten across the EU in the future. i.e. that the sale of lead batteries, not only because of the technical disadvantages, will become increasingly unattractive. For Wolfgang, these advantages are the basis for the premium quality he demands. But he was looking for a USP (unique selling point) that differentiates LIONTRON from the competition and ensure successful sales. Wolfgang and Boris were often annoyed by the fact that customers returned allegedly defective lithium batteries to them which they had to replace during the guarantee period without being able to be sure if something was missing from the battery as conventional lithium batteries are closed and cannot be repaired; everything is soldered, welded inside and the housing is glued. In the course of time, unusable, environmentally harmful batteries piled up as electronic waste. This was a thorn in the side of a man for whom the term sustainability had a very special meaning from his sailing activities on rough seas.

Under the premise of sustainability, it was clear that a LIONTRON battery had to be modular. Wolfgang designed the 'five-minute principle': LIONTRON batteries would not be closed and be repairable in the event of a defect. They should be able to be opened within five minutes and individual parts or components be reached within a further five minutes, then be exchangeable within another five minutes. This means that in the unlikely event of a defect, all parts, starting with the individual components of the battery block as well as the battery management system (BMS) and the Bluetooth module can be replaced at any time by a specialist or an experienced owner. The LIONTRON BMS switches off the battery if there is an error and uses the APP (for iOS and Android) to display all current battery details directly to the customer.

LIONTRON currently gives a five year manufacturer's guarantee on its batteries and promises that spare parts will be available up to 10 years after the end of the series. The product portfolio currently includes more than 14 models: ranging from a base model with 12.8 volts and 10 Ah, up to 200 Ah, 25.6 volt versions and a high-current version. According to Wolfgang, his customers are enthusiastic and, despite the recent doubling of production, he is still facing delivery bottlenecks as demand has exploded compared to traditional batteries. LIONTRON is currently producing 120 lithium batteries every day. The German LIONTRON organization has quickly grown to have 80 employees who process more than 200 customer orders each day. The goal is to have worldwide sales and a monthly production of 60,000 batteries. Wolfgang and his team are only just starting to approach OEMs to fit these batteries as original equipment; however, there are sometimes conflicting interests between manufacturers, retailers and customers which cannot always be easily reconciled. For example, the exchange of lead batteries ensures constant sales (and profit) for dealers, but can also become an obstacle in the accessories business due to the technical and safety issues of these batteries. LIONTRON LiFePO4 lithium batteries are particularly popular with customers due to their easy handling, high efficiency and sustainability. LIONTRON batteries are extremely powerful. For example, a 12V 100AH LIONTRON battery has a 150A BMS, i.e. 1920 watts of continuous power, which opens up a wide range of applications. These batteries are characterized by having a constant current and voltage across the entire power range. Compared to using a lead-acid battery, a LIONTRON battery has no limits for the consumer if they want to use compressor refrigerators, prosumer portafilter machines with 1400W power consumption and air conditioning or induction hobs. This means there is huge potential here for manufacturers and retailers to generate extra sales of other products or accessories in addition to the battery. LIONTRON is currently looking for distribution partners all over the world who focus on future-oriented, sustainable technology concepts. *"Cooperation on an equal footing is our recipe for success,"* says Boris, to describe the trusting relationship LIONTRON has with its sales partners. With reliable technology, a superior user experience for the customer, and being more environmentally friendly and sustainable, LIONTRON's corporate goal is to achieve an annual turnover of €100 million and become the market leader in the market for the replacement of on-board lead batteries, in-line with its motto "strong like a lion".