



Battery production of the future: With lasers into new dimensions

- **Proven laser expertise from Manz for turnkey production solutions**
- **Laser Competence Center as the nucleus for innovations**
- **New laser tab welding technology significantly increases the efficiency of the production of lithium-ion battery cells and modules**

Reutlingen, 03. June 2021. Only the most modern technology enables the realization of visionary ideas. The ever faster innovation cycles are driving the development of massive energy storage systems. As a global high-tech machine builder with a comprehensive technology portfolio, Manz is a leading supplier of production equipment for the manufacturing of powerful and efficient lithium-ion battery cells and modules, offers turnkey and fully integrated production solutions and thus sets international standards.

Proven laser expertise for battery production

Since entering the lithium-ion battery market in 2009, Manz AG has made a significant contribution to the research and development of various processes in battery production as a pioneer and visionary in the Energy Storage segment. The basis for this is extensive technological expertise - with decades of experience especially in the field of innovative laser processing. Especially in the production of batteries, laser technologies and processes from Manz are used in numerous process steps, such as overlap welding, laser cutting, partial removal of materials and coatings, or zero-gap and bimetallic welding, in which different materials can be welded to a high quality that would otherwise be impossible to join - to name just a few.

Central element of Manz's extensive laser expertise is the modular Battery Laser System BLS 500, which has proven in numerous customer projects and was developed for the various laser processes involved in the production of lithium-ion batteries. Starting from a standardized machine base, a customer-specific, high-performance machine configuration can be defined and adapted to the desired application in just a few steps. The laser system offers the highest



level of flexibility, performance and precision. The innovative clamping system of the BLS 500, which replaces the previous fixed device and enables tool-free clamping, is also flexible. The system is suitable for all applications with different product variants (“one fits all”) without having to change format parts.

The tried and tested, extensive range of services in laser processing provides customers with optimal support in the development and optimization of processes and ensures clear competitive advantages in terms of the effectiveness, performance and safety of their battery cells and modules.

Laser processes of the future - the new way of welding

For years, numerous specialists in the Manz Laser Competence Center have been working continuously on developing new laser technologies for battery production and promoting existing ones in order to significantly increase the efficiency of production processes. It was only in April 2021 that Manz presented the latest achievement in the production of battery cells: the new Laser Tab Welding, which optimizes the welding process for cell arresters, the so-called tabs. Compared to conventional ultrasonic welding, the innovative technology reduces the scope of the necessary processes by at least one process step and thus significantly reduces the overall costs per battery cell (Total Cost of Ownership, TCO).

Manz even provides a test environment for the development of completely new battery concepts: In the laser laboratory, Manz engineers and developers research the latest laser processes and develop solutions for customer-specific requirements. Every customer will find a creative environment here for new ideas and support through extensive laser know-how to make innovations marketable. The early involvement of the experts in laser process development in customer product development begins with checking the feasibility of an idea and producing samples. It continues through the concrete production planning with preliminary tests on product behavior up to pilot production or small series. The customer not only receives the production equipment itself, but also the complete process development as a consulting service from Manz - **everything from a single source**.



Andreas Schaal, Sales Manager Energy Storage at the high-tech mechanical engineering company Manz, is looking forward to the challenges and opportunities that the highly dynamic market has in store for the development of energy storage systems: “Manz will not stand still in 2021 either: We are continuously expanding and offering our own portfolio So, together with our partners, a range of services that is extraordinary in depth and breadth - for this year alone, numerous innovations in the Energy Storage segment have been announced or have already been launched on the market. As a trustworthy development partner for future markets, we would like to convince other customers of our performance and, together with them, design innovative products and bring them to market.

You can find more information about new technologies and turnkey solutions for energy storage here: <https://www.manz.com/en/industries/battery-production/lasercompetence/>

Pic 1:



Caption: Visual Laser competence



Pic 2:



Caption: Battery Laser System BLS 500

Pic 3:



Caption: Laser Tab Welding process with BLS 500



Company profile:

Manz AG - passion for efficiency

Founded in 1987, Manz AG is a globally active high-tech engineering company. Its business activities comprise the Solar, Electronics, Energy Storage, Contract Manufacturing and Service segments.

With many years of expertise in automation, laser processing, image processing and metrology, wet chemistry and roll-to-roll processes, the company offers innovative production solutions in the fields of photovoltaics, electronics and lithium-ion battery technology. The product portfolio includes both customer-specific developments and standardized individual machines and modules that can be interlinked to form complete, individual systems. Above all, by involving Manz AG in customer projects at an early stage, the company makes a significant contribution to its customers' success with high-quality, demand-oriented solutions.

The group of companies, which has been listed in Germany since 2006, develops and produces in Germany, Slovakia, Hungary, Italy, China and Taiwan. There are also sales and service subsidiaries in the USA and India. Manz AG currently employs around 1,400 people worldwide, around half of whom work in Asia, the key region for the company's target industries. The Manz Group's revenues amounted to around 237 million euros in the 2020 fiscal year.

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