



— GABRIEL PANKOW

Laser precision and passion – how a family business is transforming visions into voltage

Aerospace, semiconductor technology, future mobility – if you want to know what the future holds for laser processing, keep a watchful eye on Bavarian contract manufacturer BBW Lasertechnik.

In Prutting near Rosenheim, beautifully set amidst the lush landscapes of southern Bavaria between lakes and the Alps, BBW Lasertechnik employs advanced lasers with beam shaping to propel future technologies forward. Andreas Bürger, Co-Managing Director of BBW, sums up his company philosophy with apparent simplicity: "We just ensure that we always have the latest laser technology in-house, and everything else will fall into place." By everything else, he means his orders, research projects, machine developments and intricate product designs. In other words, everything that sets BBW apart from other laser contract manufacturers. To understand future market trends, just keep an eye on what the company's 200 employees are currently developing.

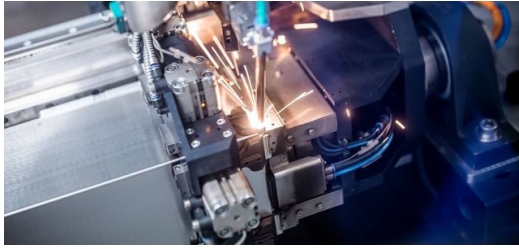


<p>BBW Lasertechnik mainly uses TRUMPF lasers in its laser park, including several [TruLaser Cell 3000 laser welding systems](t3://page?uid=37#444).</p>



<p>According to Andreas Bürger, Co-Managing Director of BBW, the laser contract manufacturer always stays ahead of the game with the latest laser technology in-house – this ensures that everything else will fall into place.</p>





<p>BBW's recipe for success involves welding, cutting, drilling, and innovation with the latest tools and a team of curious experts.</p>

—— BATTERIES FOR E-MOBILITY

As the boom in the battery sector began, Andreas Bürger took a mental inventory of his machinery. "We looked at all the technology and expertise we have in-house and realised that it all aligns perfectly with battery module production and storage technology." Where others have to buy new machines and acquire fresh expertise, BBW already has everything in place. The company motto is paying off: "We have always said that we want to offer our customers something new even before they ask us for it."

The basis for this innovation is BBW's experience in the production of highly complex assemblies and their knowledge of various processing strategies, even for difficult materials – because their research and development work focuses on areas where progress is required. "We wanted to carve out our niche during this boom period, and we found it in electric vehicle batteries. Cell contacting presents a narrow parameter window for welding due to the cells' sensitivity, requiring various beam sources and processes for different cell types." As a result, nearly 40% of BBW's production is now devoted to battery module production. And this isn't the only challenging niche they serve.

—— EXPERTISE IN AERONAUTICS AND AEROSPACE

At the company site in Prutting, some 50 lasers for welding, drilling, ablation, structuring, precision cutting and laser cleaning are utilised across several production halls. However, Andreas Bürger notes that there are customers who cannot be won over solely by a large laser setup. "We operate in very complex industries, from battery and medical technology to electronics in the semiconductor sector and aerospace/aeronautics. So we have to find different ways to win over our customers," explains Bürger. For this reason – and driven by the founding Bürger family's seemingly insatiable curiosity – the company also boasts a development department and a metallography department. For example, they carry out a detailed feasibility study at the start of each project and analyse initial tests in their in-house laboratory.

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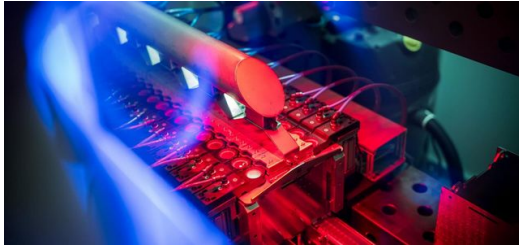
Andreas Bürger, Co-Managing Director since 2015 and son of company founder Hans Bürger

BBW frequently handles multiple process steps in laser processing and post-processing, extending all the way to the production of complete assemblies. "We prefer to handle things ourselves to ensure that everything works together seamlessly in the end." This approach is crucial in the highly complex niches that BBW specialises in. Securing certification for the aerospace industry is particularly challenging. "In some cases, every weld seam is x-rayed. To facilitate this, we have to train our specialists accordingly and document their training in full. "But it works when the quality is right." To meet these high standards, there is a dedicated mechanical engineering department – while the beam sources are purchased, many of the laser systems are designed and manufactured in-house in Prutting. "And when current technology limits our goals, we initiate research to overcome those barriers."



CONTRACT MANUFACTURER & LASER RESEARCH

Since no one can develop everything in isolation, BBW participates in international research projects. For the LaserComposite research project, funded by the Central Innovation Programme for SMEs, they used both a green and an infrared laser to work on welding aluminum-copper joints. The result was that the joining process effectively minimised the mixing of metals in the seam, preventing the formation of undesirable intermetallic phases or alloys. As part of their in-house development project Weldshape, they looked into hot cracking of the aluminium alloy AW-6060, which is very susceptible to it. The solution they came up with was a process featuring dynamic beam shaping within a custom-built laser system equipped with a 16-kilowatt singlemode laser and a high-performance scanner.



<p>BBW's battery module production is so successful that they have had to expand their premises twice in a short space of time.</p>



<p>The company's relentless improvement and research has won over its customers and also landed it a Bavaria's Best 50 Award in 2023.</p>



<p>BBW retains solutions that have proven effective while continuously investing in ultra-modern laser systems and expanding its portfolio.</p>

Wait – beam shaping? Yes, you read it correctly. This is because BBW operates at the very edge of what is technically possible, making beam shaping an essential factor for them. That's why the company's 50 systems include several that are under development by the BBW team, explains Andreas Bürger. "Beam shaping technologies are crucial as they enable the execution of demanding tasks, such as stabilising the weld pool during laser welding, which would otherwise be unstable. Variable beam shaping is crucial for BBW, as fixed optics are not cost-effective for our niche markets with smaller batch sizes", explains Andreas Bürger. For BBW, it's only worthwhile when the optics can be customised to fit each specific series. "And that's why we're now looking at how we can utilise it. I don't think any other laser welders have a beam shaper lying around."

As crucial as this is, it cannot ultimately make up for a lack of cleanliness. "That's why we also need to create the right framework conditions and invest in the development of technology, for example in clean-room technology and material analyses. But that naturally goes hand in hand with our approach."



GABRIEL PANKOW
SPOKESPERSON FOR LASER TECHNOLOGY

