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## BEUTING METALLTECHNIK: HARD TRIAL

Vreden, 2022.11.22

The metal processor and manufacturer of cutting tables dared the "stress test" with three new products from Messer Cutting Systems.

Experience shows that pilot customers must be prepared for tests of patience. This was also the case for Beuting Metalltechnik as a pilot for three new products from Messer Cutting Systems GmbH. Both companies have a long-standing partnership. Whether they lasted the introduction of the new ELEMENT 400 L laser cutting machine, the Global Connect control system and the new Laser Nozzle Control (LNC) and what tough tests there were for man and material, you can find out in this user report.

### Challenging environment

The entire industry of steel service centres, contract cutters and metal processors is under pressure. Beuting Metalltechnik GmbH & Co. KG from Vreden must meet the increased demands of its customers on the quality of their parts in order to remain competitive. This is compounded by the shortage of skilled workers:

"In the future, all parts supplied by us are to be processed on robot welding systems at our customer's premises. We must prepare for this by automating and digitalising our manufacturing processes," explains Mechthild Beuting, Managing Director of the company. "We have made the experience that plasma cutting systems are more difficult to automate and machine operators are harder to recruit for plasma cutting systems than for laser cutting systems. In addition, the willingness of employees to work in shifts is decreasing more and more."

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## Increased requirements

The plasma cutting system from Messer Cutting Systems from 2006 could no longer meet these increased requirements and Beuting had to find a sustainable replacement solution. The requirement criteria were very high.

The new cutting machine should not only be state-of-the-art. It had to be able to cut sheet formats of up to 3 x 8 m with a sheet thickness of up to 20 mm as well as burr-free cuts. Chamfers should be possible up to 15 mm, with 90 % chamfered parts with a maximum angle of +/-50° and a tolerance of less than 0.5 mm with V, Y, X and K seams. It was also important for the new machine to be able to process sheets with varying surface quality such as blasted, lightly rusted, primed, oiled, etc.

"The main focus for us centred on the intuitive operation of the machine. After a short training period, our operators should be able to handle the machine safely and on their own and be able to operate it semi-unmanned in a second shift. In addition, it had to be possible to integrate our own shuttle table system into the machine," Stefan Tenhumberg, project manager at Beuting, explains the technical requirements. "We also need a lot of flexibility to be able to convert the machine to higher laser powers as customer requirements increase and more powerful laser sources become available."

Ulrike Beuting, project manager for digitalisation and prospective managing director, is thinking one step further: "We naturally want to push ahead with the automation of our production. The first step is to transfer orders from the ERP system to the machine and to have the machines report back evaluable real-time data on times and quantities. For this, we needed a practical and functioning overall concept."

## Everything new

After extensive market analysis, the company opted for the ELEMENT 400 L laser cutting machine from Messer Cutting Systems with a new Bevel-U bevel head and 8 kW IPG laser source as well as the automatic Laser Nozzle Control (LNC) and the Global Connect machine control system. The further digitization of the production takes place with the latest version of the CAD/CAM nesting software OmniWin and the digitization suite OmniFab with the modules ERP-Connect, Job Management, PDC and Machine Insight.



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"When we decided on this solution, we were very aware that not only were we breaking new ground with the ELEMENT L, the LNC and the Global Connect, but so was Messer Cutting Systems," Mechthild Beuting remembers the decision in 2021.

Ingo Staudinger, Product Manager for Material Handling and Lasers at Messer Cutting Systems, adds: "It was also clear to us that the introduction of three new products at a customer would mean a maximum challenge for both sides. But the partnership that has existed since 2006 was so good that we were able to take the step together.

First, the old plasma cutting machine had to be dismantled and the foundation for the new machine created. This was followed by the assembly of the special track by Messer Cutting Systems and the construction of the shuttle table system by Beuting. Regular productive operation of the ELEMENT 400 L with one shift has been running since December 2021.

## Productivity redefined

The **ELEMENT L** is a flexible solution for laser cutting applications that require maximum precision. It scores with high dynamics and the latest laser technology. Even XXL sheets can be processed economically and with little manpower. The combination of different features and powerful software ensures maximum productivity and performance. With the unique construction of the Bevel-U, precise and repeatable bevel parts can be produced. A great advantage in edge preparation and especially for automated welding.

With the Element 400 L, working widths between 1,600 mm and 5,100 mm and a working length of up to 25,000 mm are possible. It cuts sheet steel up to a thickness of 40 mm. With positioning speeds of up to 140 m/min and high acceleration (combination of X and Y axes), it is very fast and, thanks to the linear guides in the X and Y axes, has a high level of positioning accuracy. The calculated construction of the portal also contributes to this.

Up to six tools can be integrated into the ELEMENT 400 L – including automatic tool selection and positioning. The user can also combine the latest laser technology (maximum of two stations) with advanced plasma cutting technology.



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Automated processes are today the basis for economical and precise production. A feature for the automation of the ELEMENT 400 L is the **Laser Nozzle Control (LNC)**. It automates the set-up work quickly and reliably, thus ensuring maximum processing quality and productivity - for every material, every thickness, and every process - without manual intervention. Before each job, the LNC option first checks whether all the necessary nozzles are available in the station. In addition, the nozzle quality is regularly checked, and the nozzle cleaned to ensure high process reliability. In the event of a defect or a different sheet thickness, the nozzle is automatically replaced. In addition, the concentricity of the laser beam to the nozzle is checked and the scanning is automatically calibrated. This ensures reliably high cutting quality and reduced set-up times. Machine downtimes are prevented, and the sheet metal worker receives planning reliability and optimization.

The ELEMENT 400 L is rounded off by the powerful software solutions from Messer Cutting Systems. They ensure maximum transparency of operational processes, production planning and control. In order to pave the way further for constant networking, the **Global Connect** can process production orders directly and achieve maximum productivity, especially in combination with the products of the **OmniFab** family. The fact that the user interface remains clear and simply structured helps the user to call up and operate all features without any problems.

With maximum protection against operating errors, it gives beginners a lot of security after a very short time. With the help of numerous new features, more experienced operators can exploit the full functionality of the machine without triggering malfunctions. The Global Connect provides fast access to a wide range of production data, minimizing unplanned downtime and operator errors, reducing paper and material handling inefficiencies and labour.

## The stress test

"The ELEMENT L for Beuting was our prototype for new laser cutting machines that went beyond the 6-kW limit that had existed for years. The highest priority was to secure the combination of new machine, new Global Connect control and LNC as a prerequisite for automation. The alliance with our partner Beuting helped us to bring the project to market maturity together under production conditions," says Ingo Staudinger.



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Alfred Beuting, Managing Director of the company, sums it up: "Everyone involved, including the management of Messer Cutting Systems, has repeatedly contributed to solving the pending, sometimes very difficult tasks. The open communication and the fact that we have known and valued each other for many years helped us a lot here. The project was a stress test for our long-standing business relationship. While we're still not quite there, both sides are optimistic that it will be shortly."

## Strong base

The business relationship between the two companies began in 2006. At that time, Messer Cutting Systems qualified Beuting as a supplier for environmental technology. The cooperation resulted in an extensive range of products, some of which were jointly developed, such as vibratory conveyor tables, belt conveyor tables, filter systems, water conveyor tables, shuttle table systems, etc. Over the years, however, the business relationship developed into a partnership on an equal footing.

## Development partnership

Overall, the project was a joint development project. Beuting only acquired the prototype because there was a close, long-term relationship and Beuting was able to contribute a great deal of its own know-how about the cutting process. The introduction of the new products also brought the cooperation to a new level as a development partnership in which both were willing to take risks to open up new opportunities.

"Our partnership has emerged stronger from the project. It has brought both sides much further and improved our market positions," summarizes Alfred Beuting.

Ingo Staudinger agrees: "By combining the Messer machines with the environmental technology from Beuting, we have developed a competitive advantage together. Both sides benefit from the close cooperation. We pay attention to the interests of each other in dialogue with our customers. We were always able to find a solution, even for difficult tasks."

Open communication, mutual trust, a common focus on the benefit of the end customer and the will to innovate are the guarantors of success, so everyone agrees.



### Exceeded expectations

Even if not all issues have been resolved, experience to date is clear. Stefan Tenhumberg: "The precision with which the machine cuts the components has clearly exceeded our expectations. One of our customers can now weld all the parts automatically and only wants components from this machine. We now automatically cut a wide variety of structural steels and fine-grain structural steels, even with different surface qualities, without manual intervention. The cutting times compared to the plasma cutting process have been significantly reduced with the same assemblies. Our operators are happy about better working conditions in terms of dirt and noise and have a lot of fun working with the new machine and its new control system."

Mechthild Beuting also sees the whole thing very positively from the management's point of view. The competitive edge that the new machine has brought is already clear. The product quality has been greatly improved; the attractiveness of the operator's workplace has been significantly increased. "We are already using the system very successfully, even in semi-unmanned shifts!"

Ulrike Beuting complements her mother regarding the advantages of digitization: "Many work steps in order processing, manual material bookings as well as rework costs are eliminated and reduce time and costs. The higher cost transparency means that we can further optimize processes."

"Through the joint development work, we were able to significantly reduce non-productive times and increase the productivity of the machine. We were able to influence many details. Another advantage is the intuitive Global Connect, which only takes a short time to get used to," explains Lisa-Marie Beuting, the second daughter of the family and the successor to the management team.

### Next Steps

The Beuting family is already planning the next steps. Automation and digitization are central themes. The ELEMENT L is to be further optimized and the material logistics automated. The plan is to connect the machines to the ERP system so that manual recording of times and quantities becomes superfluous. Production planning and order processing is further digitized with OmniFab. The evaluation of the machine data should bring more transparency and further improved cutting processes.



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Laser power is to be increased since lasers are becoming increasingly superior to plasma. The management wants to counteract the growing shortage of skilled workers with attractive jobs. Rising technical requirements from customers, who are also automating and digitizing their processes, will be met with the help of innovative technologies.

"Despite the stress test, we would choose this solution again at any time," concludes Mechthild Beuting. "For future projects, we can say with a clear conscience that, in our opinion, this is the technically best laser cutting machine with the most modern control system for cutting bevel parts that is currently available on the market. That is why we have just ordered the second ELEMENT L and this time with 15 kW laser power."



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Image 1: The ELEMENT 400 L laser machine scores with remarkably high dynamics, the latest laser technology and the ability to process XXL sheets economically. © Messer Cutting Systems



Image 2: A feature for the automation of the ELEMENT 400 L is the Laser Nozzle Control (LNC). It automates the set-up work quickly and reliably, thus ensuring maximum quality and productivity. © Messer Cutting Systems





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Image 3: Intuitive operation, save paper and always have a digital overview of all production data with the new Global Connect CNC control with 18.5-inch touchscreen. © Messer Cutting Systems

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Image 4: Mechthild Beuting, Management Beuting Metalltechnik GmbH & Co. KG,  
© Messer Cutting Systems



Image 5: Stefan Tenhumberg, Project Manager Beuting Metalltechnik,  
© Messer Cutting Systems



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Image 6: Ingo Staudinger, Product Manager Laser & Material Handling, Messer Cutting Systems, © Messer Cutting Systems



Image 7: Together in one direction: Open communication, mutual trust, a common focus on the benefit of the end customer and the will to innovate were the guarantors of success (from left: Stefan Tenhumberg, Ingo Staudinger, Mechthild Beuting), © Messer Cutting Systems

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Image 8: "Today we can produce finer contours with better quality, regardless of the surface quality," says Stefan Tenhumberg, Technical Manager Beuting Metalltechnik  
© Messer Cutting Systems



Image 9: The new, highly dynamic laser bevel unit Bevel-U enables the production of precise and repeatable bevel parts - a major advantage when preparing edges for automated robotic welding. © Messer Cutting Systems





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## WHAT WE STAND FOR CREATING SOLUTIONS BEYOND MACHINES

Messer Cutting Systems is a global supplier of cutting-edge technology for the metalworking industry.

With over 900 employees worldwide in over 50 countries, we maintain a constant dialogue with our customers to achieve sustainable user-oriented innovation.

Our portfolio embraces the themes PRODUCT, DIGITAL, SERVICES, AUTOMATION and KNOW-HOW. We will live up to our claim "Creating Solutions Beyond Machines" not just with the most modern cutting systems and solutions for oxyfuel technology.

Appropriate services and training, our own software applications as well as the integration of solutions from our technology partners, e.g. in the field of automation, complete the machine to give forward looking total solutions.

Our Know-how combined with our customer-oriented attitude and actions make us the world-wide partner of choice for innovative total solutions on all aspects of cutting systems since more than 120 years.

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## BEUTING METALLTECHNIK GMBH & CO. KG:

Beuting is an owner-managed family company with over 24 years of experience in sheet metal processing and mechanical engineering. The wide delivery spectrum ranges from simple flame-cut parts to complex systems. As a partner of Messer Cutting Systems, Beuting manufactures extraction tables, water cutting tables, shuttle table systems and filter systems.

Beuting Metalltechnik is also a competent and reliable partner for laser and plasma cuts, folded profiles, rolled parts and assemblies. As a specialist in plasma and laser bevel technology, cutting and preparing the weld seam is one operation. V-cuts, Y-cuts, D-V cuts and D-HV cuts are realized with tight tolerances.