

# TRUPF

THE MAGAZINE FOR SHEET METAL EXPERTS

## 01 Kilrea

Smart, green solutions: how a family business aims to go carbon neutral with digitally connected manufacturing

## 02 Madrid

Glitz and glamor: how a Spanish contract manufacturer helped transform Real Madrid's stadium into a sparkling jewel

## 20# 2024 LEADERSHIP

## 03 Ballarat

The long view: how an investment in TRUMPF technology saved a semi-trailer company's manufacturing business

## 04 Ditzingen

Cross-border and digital: how new support services are making sheet-metal fabricators more competitive





Air-traffic controllers are the conductors of the skies. They orchestrate the flow of aircraft with **clarity and precision**, coordinate take-offs and landings and help prevent collisions on the runway. Rarely seen by passengers, they are nevertheless essential to **safe and smooth operations** in the air. A successful company is not dissimilar to this well-orchestrated flow of air traffic. Leaders must safely navigate their company through each and every challenge with clear instructions, careful coordination and an experienced eye for whatever turbulence may lay ahead. Much like air-traffic controllers, they ensure that everything runs **according to plan**, that no disruptions occur – and that everyone reaches their destination safely. ■





Is it always necessary to have someone in charge? Not if you're a fish. Navigating the water in a swarm, fish seek out food and protect each other from enemies – all without any direct leadership. All they need are some simple rules: take your bearings from your neighbor, avoid collisions and stick together. What if companies could achieve this level of efficiency? Without a **constant stream of instructions** from the top, but with a **clear goal** in mind. Swarm intelligence shows us that **trusting in the abilities of the individual** can work wonders. If every employee knows what they have to do and coordinates their work with their colleagues, things run like clockwork. As the fish example demonstrates, a **strong collective** can stay on course even when nobody is in charge. ■





Are pop stars the leaders of our age? **Taylor Swift** is the world's most successful female artist. She has long had a cult following, and the Eras tour saw her fame skyrocket. Her dedicated fan base of Swifties worship her like a goddess. But what makes Swift such a powerful leader? Her authenticity, her communication skills and her intuitive awareness of what her fans want all set a high benchmark. **Authenticity, honesty and openness** build trust. Swift thrives on her close relationship with her fans, just as successful companies benefit from being close to their customers and employees. She is a superstar who listens, responds and constantly strives to be better – and that's a winning formula for companies that wish to move with the times. ■

IMAGE: Alamy / Taylor Swift / Alamy stock photo



## Leadership and self-learning robots: how AI is transforming the world of work ■



Dear readers,

In a rapidly changing world, businesses such as ours are faced with an ever-shifting landscape of new and complex challenges. Technological transformation, global competition and the evolving expectations of our employees call for a leadership culture that is not only innovative, but also flexible and adaptable. No longer does a company's success depend solely on efficiency and productivity. Instead, the key lies in how we lead and inspire our teams – and how we prepare them for the future.

Leadership means putting people front and center. It is about building trust, sharing responsibility and fostering each individual's personal development. Leadership is also a continuous learning process that requires openness, commitment and a willingness to think outside the box. In this issue of TRUe, we explore the many facets of good leadership, which extend far beyond simply achieving goals and improving performance.

Leadership is also about enhancing a company's innovative capabilities. At TRUMPF, we have harnessed creativity, teamwork and cross-location collaboration to develop a pioneering solution to one of our industry's greatest challenges: the automated sorting of 2D laser-cut parts. First unveiled at EuroBLECH 2024, our automated SortMaster solutions are not only fast and simple to use, but will even offer the possibility of retrofitting in the future. At their heart is a six-axis robot that uses artificial intelligence (AI) to sort sheet-metal parts on a pallet with maximum precision and without the need for time-consuming teaching (see p. 23).

These AI-supported robots can help our customers make major efficiency gains, especially when dealing with smaller batch sizes. AI allows the robot to adapt itself to changing conditions, such as changes in the geometry or position of the parts. Such new

systems also offer significant potential for sheet-metal bending. This continues to be a time-consuming and knowledge-heavy task, but in the future it could be taken over by ever more intelligent robots.

We have long been aware that robots can boost the efficiency of automation and connectivity in our factories. But their role in enhancing sustainability typically receives less attention. Big companies are putting increasing pressure on suppliers to reduce their carbon emissions. Hutchinson, a TRUMPF customer based in Northern Ireland, offers a striking example of how this can be achieved. By investing in TRUMPF solutions, the family-run company has gained a competitive edge as a sustainable business (see p. 12).

But transforming your entire operation into a smart factory is not the only way to save energy. Even smaller investments can quickly pay off and boost competitiveness, such as switching from lasers to punching, or replacing an old CO<sub>2</sub> laser with a fiber laser.

One of our key plans for the future is to continue expanding our after-sales service and support. We already solve three-quarters of the problems faced by our customers using rapid, remote troubleshooting. And our 2,800 service technicians take care of the rest directly on site. On page 30, we explain why we are now also using artificial intelligence in our service offerings, and we look at what else our service team plans to do to stay ahead of the game.

I hope you find this issue of TRUe an enjoyable and inspiring read!

**DR.-ING. STEPHAN MAYER**  
CEO Machine Tools and Member of the Management Board



TRUPF

Contents

#20/2024

# LEADERSHIP ...



## 01 ... in Kilrea

**Page 12**  
When Mark and Richard Hutchinson's father founded his company, he was convinced that innovation and sustainability could go hand-in-hand. Now, the two brothers are continuing their father's legacy by transforming their plant into a carbon-neutral manufacturing facility with solutions from TRUMPF.



## 02 ... in Madrid

**Page 16**  
Real Madrid doesn't only shine on the soccer pitch. Thanks to TRUMPF technology, the club's revamped Bernabéu Stadium sparkles like a jewel. How the stadium acquired one of the world's most spectacular facades is partly down to the Jiménez family and their company Lasercor.



## 04 ... in Ditzingen

**Page 30**  
TRUMPF offers exceptional after-sales service. In this interview, Marcella Montelatici and Florian Zock explain how the company plans to expand its offerings in the future – and how AI will help.



## 03 ... in Ballarat

**Page 24**  
MaxiTRANS, Australia's leading semi-trailer manufacturer, was close to collapse. But instead of shutting down production, Greg L'Estrange and his team opted to put more investment into the long-established company. It now boasts a modern smart factory – and its manufacturing business is healthier than ever.

Editorial .....	08
<b>01 Hutchinson's heroes .....</b>	<b>12</b>
<b>02 Precision work for an iconic club .....</b>	<b>16</b>
<b>03 Blazing a new trail in Ballarat .....</b>	<b>24</b>
<b>04 Next-level service .....</b>	<b>30</b>
BIZ+ shortcuts .....	34
Bending at its best .....	36
Infographic: the role of AI in sheet-metal fabrication .....	38
<b>05 Nanotechnology for manufacturing .....</b>	<b>40</b>
TEC+ shortcuts .....	44
Comic: machine safety at TRUMPF .....	46
Smart savings: TRUMPF part design .....	48
pARTgallery .....	49
Column .....	50



01

NORTHERN IRELAND

*Leadership in Kilrea*

# HUTCHINSON'S HEROES

Red double-decker buses are a common sight in many cities across the UK, and Belfast is no exception.

As well as being a popular form of public transport, they have become a tourist attraction in their own right. Kilrea-based **family firm Hutchinson** plays a key role in manufacturing these buses – and thanks to technology from TRUMPF, their coach building activities will soon be carbon-neutral.

IMAGES: Hutchinson



**Direct entry:** Straight after leaving school, Mark Hutchinson joined the family business. Today he is the CEO.

There's an understandable note of pride in Mark Hutchinson's voice as he explains the automated processes on his shop floor. A variety of fully autonomous machines carry out cutting, punching and bending operations. And thanks to the large-scale Stopa storage system, they always have plenty of material to work with.

"It was just before the coronavirus pandemic hit that we visited TRUMPF's smart factory in Chicago," says Mark Hutchinson, CEO of Hutchinson. "We came back bursting with ideas on how to automate our machines and material flow, and we were confident we could reduce our carbon footprint." Mark Hutchinson runs the company together with his younger brother Richard, the commercial director.

Their father Creighton Hutchinson founded the business in 1971 as a one-man operation producing components for agricultural machinery. In 1996, Mark opted to join the company straight from school instead of going on to university. "I learned everything from my father," he says. The management team also includes three members from outside the family, who enjoy the same status as Mark and his brother. Hutchinson employs 150 people and makes high-quality products for industries ranging from automotive to aerospace.

**Bus construction:** Hutchinson manufactures key chassis components.



"I knew that the system would massively **increase** our **efficiency**."

Mark Hutchinson, CEO Hutchinson

## Ambitious goals

After visiting TRUMPF's smart factory in Chicago, Mark and Richard were determined to identify bottlenecks in the Hutchinson production chain. Their ambitious goals included loading machines with raw materials faster and more efficiently, finding a smarter way to remove cut parts, and reducing their carbon footprint. With the company's products in high demand, bottlenecks were a common occurrence, so they soon spotted room for improvement. The main problem was that standalone machines were slowing down many of the processes. Workers had to painstakingly transport material using forklifts or by manually lugging parts from one machine to the next. Efficiency was suffering as a result, and material transportation was also increasing their carbon emissions.

Full of energy and ideas, the two brothers and the rest of the management team vowed to lead the company into a new era. "But it was clear the transformation would only succeed if we got the workforce on board, and we knew right away that wouldn't be easy. We were debating where to begin when we realized that the company was about to celebrate its 50th anniversary. That seemed like the perfect moment for a new start," says Mark Hutchinson.

But shortly before the celebrations began, company founder Creighton Hutchinson passed away. "That was really upsetting not just for us, but for everyone who works here," says Mark. It was a pivotal moment for both the brothers and the company. "But we knew that dad would have wanted us to stick to our plans and to make the company fit for the future."





**Forward-thinking:** Hutchinson uses state-of-the-art technology to design and manufacture parts and assemblies for customers in a variety of industries.

## Equal partners

And it was no sooner said than done. Hutchinson replaced three of its standalone CO<sub>2</sub> laser cutting machines with two TruLaser 5040 fibers, each with 12 kilowatts of power, and they started looking for a better way to load and unload the machines. They immediately felt TRUMPF was a partner they could work with on equal terms thanks to its industry experience and customized solutions, and it quickly became clear that a Stopa large-scale storage system was the solution they were looking for. "It took around six months to get to that stage, so it was a huge project," says Mark. "But I knew that the system would massively increase our efficiency." Today, the two TruLaser 5040 fibers, the LiftMaster Compact loading and unloading unit, and the LiftMaster Store Linear solution with its multiple-machine connections are all connected to the Stopa storage system. Together, they ensure a smooth, automated manufacturing process.



**More than material storage:** The STOPA large-scale storage system functions as a logistics center.



**Leadership:** Brothers Mark (right) and Richard Hutchinson run the company together.

## Major step toward carbon neutrality

"The Stopa system has capacity for 2,500 metric tons of material. That's a huge quantity, and it means we can store far more material in a smaller space and make better use of our premises," says Mark. "We also succeeded in reducing our energy consumption by 45 percent. That was a major step on our journey toward carbon neutrality, which we hope to achieve in the first quarter of 2025."

Hutchinson relies on green energy and is continuously striving to cut its energy consumption. It is planning to install photovoltaic modules on the factory roof, and it already uses carbon dashboards to monitor all its carbon emissions. The remainder of its energy use is offset by carbon credits. "We're steadily reducing our direct emissions. But we want to do more, which is why we're also focusing on indirect emissions from upstream and downstream activities such as raw material procurement and transport routes," says Mark. With efforts being made on so many fronts, carbon neutrality is now very much within reach.

## Personal leadership

Mark has a down-to-earth attitude about the future of his family business: "It would be amazing to hand over the company to the third generation when the time comes. But the most important thing to me and my brother is that our kids find their passion and do a job they love. Whether that's at Hutchinson or wherever else they choose." Hutchinson is clearly ready to face the future – all thanks to two dedicated brothers who have succeeded in completing the project their father began. "Our vision for 2040 is even more ambitious: the goal is to transition to a zero-emission era – our very own journey to Net Zero."

IMAGES: Hutchinson

01

*A closer look:*

# Versatile machine for cutting, beveling and countersinking

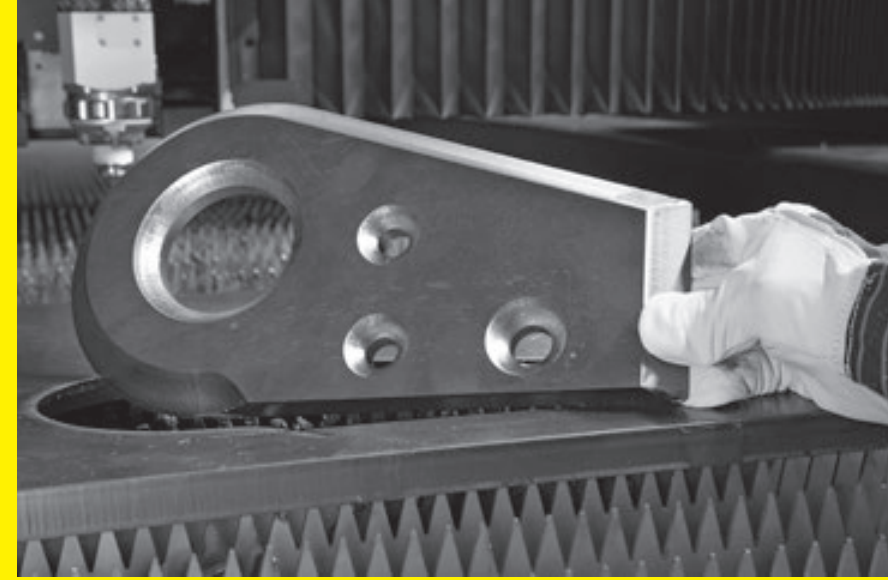
**Hutchinson** is already making productive use of TRUMPF cutting and bending machines. Next-level options include the **TruLaser 3000 Bevel Cut Edition**, a machine series that reduces the number of processing steps by automatically preparing parts for welding at the same station used for cutting.





*In brief*

# The right angle: setting the benchmark in cutting and beveling



The Bevel Cut Edition of the TruLaser 3000 machine series can cut sheet metal, create bevels and produce countersinks at a 50-degree angle, all in a single step. This makes jobs much easier to handle and **reduces processing time by up to 80 percent**. TRUe takes a closer look at the benefits for sheet-metal fabricators.

## Say goodbye to manual work

In the past, workers would often manually bevel the edges of a workpiece to prepare it for welding and create countersinks to ensure screw heads would sit flush with the surface. In both cases, the workpiece first has to be cut, and then transported to a separate station where a skilled worker can carry out the necessary steps. The new Bevel Cut function combines several of these tasks into a single step. As well as cutting the part, the same machine also creates any bevels or countersinks that may be required with pinpoint accuracy. With these tasks completed, the sheet-metal fabricator can get straight down to welding, reducing the cost and effort involved.

## Simple to program

TRUMPF has developed a simple and intuitive program for bevel cutting, which includes a useful pre-selection of all the main processing strategies. In most cases, programmers will be able to use one of these strategies, but they can also be adapted as necessary.

## 50-degree angle? No problem!

TruLaser 3000 machines equipped with Bevel Cut can create bevels in sheets up to 25 millimeters thick. Depending on the thickness of the material, these bevels can reach angles of up to 50 degrees, which is essential for meeting the design specifications of many welds. Conventional solutions are limited to angles of up to 45 degrees. The cutting unit of the TruLaser Series 3000 Bevel Cut Edition comes with two additional rotary axes, compact drive motors and a nozzle specially designed for beveling. This allows the cutting head to pivot up to 50 degrees in all directions. Despite these extreme angles, the cutting unit still remains at a safe distance from the metal, minimizing the risk of collisions.

The TruLaser Series 3000 Bevel Cut Edition also comes with TRUMPF collision protection.

## Quick start

The TruLaser Series 3000 Bevel Cut Edition makes it quick and easy to start cutting parts. TRUMPF has included pre-set cutting tables containing the parameters for the most common material types and thicknesses. This is particularly helpful for cutting parameters that are relevant to bevel cutting, such as gas pressure, penetration parameters and focus position.

## Bringing things together

The 3000 Series Bevel Cut Edition offers benefits for companies struggling with the shortage of skilled workers. By eliminating the need to transport parts from one machine to another and work on them by hand, it helps keep costs down. Weld edges no longer have to be prepared with angle grinders or grinding machines, and parts no longer need to be moved to dedicated manual stations for countersinks. In total, this can reduce processing time by as much as 80 percent.

## Straight edges and complex geometries

Bevel Cut is still able to tackle a full range of contours, so users can process parts with complex geometries as well as those with straight edges. It allows fabricators to create bevels on hard-to-reach edges that conventional processes cannot reach.

## Customer details

### SJC Hutchinson (Engineering) Ltd.

58A Drumagarner Road  
BT51 5TE Kilrea, Northern Ireland  
[www.hutchinson-engineering.co.uk](http://www.hutchinson-engineering.co.uk)  
Phone: +44 28 2954 0302  
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## Machinery

- TruLaser 5040 fiber with LiftMaster Compact
- TruLaser 5040 fiber with LiftMaster Store Linear
- TruLaser Tube 7000
- 2x TruBend 7036
- 3x TruBend 5130
- TruBend 5230
- TruBend 5320
- TruMatic 6000 with SheetMaster

## Who Bevel Cut is aimed at

Bevel Cut is perfect for sheet-metal fabricators who use joining steps in their assemblies and need to connect one part to another. Manually preparing parts for welding is laborious and time-consuming, especially when it comes to larger or thicker parts. Bevel Cut saves time and money.





02

SPAIN

*Leadership in Madrid*

# PRECISION WORK FOR AN ICONIC CLUB

IMAGES: Klaus Schwaiger



**A sparkling jewel:** Working with millimeter precision, Lasercor made approximately half of the almost 9,000 louvers for the spectacular shell of Madrid's Bernabéu Stadium.

Real Madrid is one of the world's greatest soccer teams – and a visit to **Santiago Bernabéu Stadium** is a dream come true for many fans. The spectacular facade of the revamped Bernabéu contains thousands of stainless-steel louvers, over half of which were fabricated by the company Lasercor **with millimeter precision using a TruLaser 5030 fiber.** What made the task even more challenging is that every louver is different. The light displays on the new stadium shell are extraordinary – and so too is the story of how Lasercor got to where it is today.

Thirty years ago, Lasercor didn't even exist – not even as an idea. The family of company founder Julián Jiménez Candano earned their living in a completely unrelated sector: the food trade. "I started working when I was 15 or 16, selling chicken in our store," says Julián Jiménez Barroso, the current CEO and son of the founder. Lasercor's roots lay in a combination of hard work, a willingness to embrace risk and new ideas, and a certain amount of happenstance.

Some other members of the Jiménez family who worked in hospitality got chatting to a manufacturer of slot machines. At the

time, this was a relatively new field of business in the Madrid region, so it was tricky getting hold of suitable spare parts for the machines. Julián Jiménez Candano had an affinity for technology, and his other family business ventures had familiarized him with how such machines were built, and what errors and malfunctions they were prone to. One day, the manufacturer asked him to take apart one of the gaming machines to pinpoint its electromechanical defects. This gave him some extra work on the side – at least until a supplier suddenly announced that they could no longer provide suitable sheet-metal parts for the machines.





### A job for the whole family

The father and his two sons decided that the only way to solve this supply problem was by acquiring a laser-cutting machine and producing their own sheet-metal parts. Right from the start, they knew that quality was key – so they decided to make a major investment in a 2D laser-cutting machine from TRUMPF. This was shortly before the euro was introduced, and Jiménez Barroso quotes a high eight-figure sum in the old Spanish currency which, at the time, would have been enough to buy a car. Despite their enthusiasm to innovate and take risks, the family felt uncomfortable about investing such a large amount of money, especially since they knew relatively little about the machine and the wider industry. It was here that the sister and the wife of the current CEO stepped in to help.

The two women carried out a market study to answer some key questions: Which companies in the Madrid region were able to cut sheet metal? Which companies needed precision-cut parts? What kind of order volume could they expect? What were the typical delivery times? What sectors were cut metal parts being used in? What niches could be exploited? After collecting, organizing and analyzing all the data, they could see that there was a market and enough demand for additional competitors.

### From food retail to sheet metal

In 2000, Julián Jiménez Candano founded Lasercor together with his two sons. They had a TRUMPF machine, the slot-machine manufacturer as their first customer, and – initially, at least – lots of time where the machine was standing idle. It was clear they needed to bring in more orders. “I sometimes think our background in a totally different industry actually gave us an advantage,” says the Lasercor CEO. “In the food trade, your focus is always on the

“ I think our background in a totally different industry gave us an advantage. In the food trade, the **focus is always on the customer.** ”

Julián Jiménez Barroso, CEO of Lasercor

customer, and that wasn’t the way the Madrid sheet-metal sector worked at the time.” The family launched a marketing campaign, emphasizing their customer focus and transparency, and they even ran some radio and TV commercials. The plan worked: “Orders flooded in, and suddenly our TRUMPF machine was running around the clock month after month,” says Jiménez Barroso.

Lasercor has been on a growth path ever since. It replaced its 400-square-meter workshop with a 16,000-square-meter production site, and the company now has a total of 23 TRUMPF machines, from the TruBend 5130 and TruLaser 5030 fiber to the TruLaser Weld 5000 and TruMark Station 7000. Today, the company employs 170 people and has an annual turnover of 30 million euros. Using TRUMPF

**Hand in hand:** Teamwork is everything at Lasercor. It’s the only guarantee of top-notch precision and quality.

machines, Lasercor has cut, bent, engraved and welded parts of all shapes and sizes for some 8,000 customers. Their work ranges from one-off jobs for small businesses to standing orders for major corporations, and their customers make everything from road signs and household appliances to machines, entire plants and large wind turbines. And now that list includes the world-famous Santiago Bernabéu Stadium.

### Gently curved metal louvers

The Bernabéu’s new wraparound shell has cemented its status as one of Madrid’s most important landmarks. “As a sculptural envelope of subtly curved diagonal metal louvers, the perforated layer varies in its degrees of translucence [*the degree to which it*

*lets through light – Ed.]*, offering a multitude of different views,” says the website of German architects Gerkan, Marg and Partners, who, together with Spanish project partners, won the competition for the stadium revamp. But behind this description is a project that posed a huge challenge to Lasercor as a supplier. “It was very, very difficult,” says Jiménez Barroso.

The new roof alone required 8,880 metal louvers, with a whole lot more needed for the facade. The initial specifications stated that all – or at least many – of the louvers would be identical. But during the cutting process, it emerged that each louver was slightly different, often by a matter of just a few millimeters. And each one had to slot into position perfectly. There were also six different surfaces that were designed to reflect light in different ways.

### Almost perfect

Lasercor used a TruLaser 5030 fiber with a 12-kilowatt laser to precision-cut 4,400 of the louvers, as well as parts for the north and east facades. The company responsible for constructing the facade provided Lasercor with the metal sheets and dimensions; Lasercor then input everything into the TruLaser machines and cut the parts with millimeter precision. The company spent 18 months working on the project, and only had to replace 60 of the 4,400 parts it produced, mostly due to damage during transport. “Casi perfecto,” says Jiménez Barroso: “Almost perfect”. Lasercor worked so fast that it was even able to lend its support to some of the other fabricators involved in the project.

**One big family:** Everyone at Lasercor plays their part – and they trust each other to come up with pragmatic solutions.



IMAGES: Klaus Schwaiger





**Julián Jiménez Barroso:** As a boy, he started out selling chicken – now he runs Lasercor.

**Smart factory:** TRUMPF is advising and supporting the Spanish company on its journey toward digitally connected manufacturing.

“It was a complicated job,” says Jiménez Barroso. Only after seven months of negotiations was the contract finally signed. “It was too much for a single company to manage. And awarding the contract to four companies was also a kind of precaution to ensure that the project would not be hampered by delivery problems,” he adds. Almost every department in Lasercor was involved, from the sales team to the department specializing in precision cutting, which was constantly faced with new challenges due to the delicate nature of the material.

### Quality is paramount

“We’re a family business, just like TRUMPF,” says Jiménez Barroso. Everyone plays their part, and they trust each other to come up with pragmatic solutions. Quality is the priority. “If one machine isn’t up to the job, then we look for another one; if the material isn’t good enough, we find a better option,” he says. None of their machines are more than four years old. “We never stop investing. And if we make a mistake, we learn how to do it better next time,” he adds.

Lasercor is exploring the concept of the smart factory. All its TRUMPF machines are already connected in a network. Some, such as the TruLaser Weld 5000 and the TruBend Cell 7000, are largely automated anyway. The TRUMPF Smart Factory Consulting team has been supporting Lasercor ever since it embarked on its smart-factory journey. The company’s next goal is to eliminate paper from the entire plant and achieve full digitalization. “We’re already close to achieving that,” says Jiménez Barroso.



IMAGES: Klaus Schwaiger



**Getting everyone involved:** Every part of the Spanish company was involved in the stadium project.

The roof and facade of the Santiago Bernabéu Stadium were completed in early 2023. Jiménez Barroso is a big Real Madrid fan who attends every match; at home games, he never tires of seeing the contribution that Lasercor made to revamping this iconic stadium. “All the fans think it’s fantastic, even Pep Guardiola [*the former head coach of Madrid’s arch-rivals FC Barcelona – Ed.*] thinks it’s great,” he says proudly. “It feels good to be part of that.”

“ All the fans think it’s fantastic – even **Pep Guardiola** thinks it’s great. It feels good to be part of that. ”

Julián Jiménez Barroso, CEO of Lasercor







**Laser cutting, welding and engraving:**  
Lasercor uses a wide range of TRUMPF solutions.

“ We never stop **investing**.  
And if we make a mistake,  
we learn how to do it better  
next time. ”

Julián Jiménez Barroso, CEO of Lasercor

But Lasercor is far from finished with the Bernabéu. Its next task is to use TRUMPF machines to engrave the Real Madrid logo on sheet-metal signs for the interior. And it's still using its TRUMPF machines to make parts for the mechanism that lowers the soccer turf to make way for a solid ground slab suitable for concerts and other events. Right now, Lasercor's football-loving CEO is eagerly awaiting the draw for next season's Champions League. Its perfectly possible that Real Madrid will play a German team at the Bernabéu. That would allow German fans to get a glimpse of the astonishing structure built using German-made technology.

**A family business:** Lasercor's founder Julián Jiménez Candano (center) has passed the reins to his sons Julián Jiménez Barroso (left) and Miguel Ángel Jiménez (right), but he continues to offer hands-on support.



IMAGES: Klaus Schweiger

02

*A closer look:*

## Better together: SortMaster Station and SortMaster Vision

Automation is a game-changer for companies such as **Madrid-based Lasercor**, providing the perfect way to tackle skilled-labor shortages. To meet this demand, TRUMPF has added two new innovative solutions to its automation portfolio: **SortMaster Station** and **SortMaster Vision** can be used to remove and sort parts fabricated by 2D laser-cutting machines.

Read on to find out how they work.



*In brief*

# The ultimate automation duo for removing and sorting parts

SortMaster Station and SortMaster Vision are the latest additions to TRUMPF's automated systems for 2D laser-cutting machines. These innovative systems boost productivity, eliminate the programming work typically required for part sorting, and help companies tackle the shortage of skilled workers. They offer a reliable, **automated part removal and sorting solution** – even for small parts or those with complex geometries.

## Current challenges

### Hard-to-remove parts

Some parts are difficult to remove from the scrap skeleton by hand, and impossible to remove automatically. Thick parts are easy to misjudge, small parts can tilt, thin parts can slip beneath the scrap skeleton, and parts that get accidentally welded to the slats can be hard to separate. Once the parts are out, the operator still has to dispose of the heavy, unwieldy and sharp-edged scrap skeleton a complex task that risks injury and pushes up part costs.

### Complex programming

Job shops that cut and sort a wide variety of parts often have very high programming costs. To set up automated part removal, a programmer has to define and program gripper points for each differently-shaped part. This is the only way to tell the sorting solution how to grip parts properly to get them out of the sheet. If a part falls or ends up in the wrong place due to the movement of the pallet changer, the operator has to intervene manually.

### Non-productive downtime

Traditional sorting solutions are often unable to keep pace with the increasing speed of laser-cutting machines. In some cases, the machine has to wait until all the parts have been removed before it can transfer the next cut sheet to the pallet changer. This leads to non-productive downtime.



## New TRUMPF solutions

### SortMaster Station

Once laser cutting is complete, the unloading rake transfers the cut sheet to the SortMaster Station. A combination of pressure and vibration removes all the parts from the scrap skeleton, even those with complex geometries. No programming is required for part removal. This process reliably removes even small or thick parts, and the scrap skeleton is then automatically disposed of by the SortMaster Station while the parts are forwarded for sorting. At the same time, the system is already picking up the next sheet ready for part removal.

Once the parts have been freed from the scrap skeleton, the operator can choose to sort them manually or have them sorted in combination with the automated SortMaster Vision system. Since the parts are already loose, they can be grabbed from the side, and disposing of the skeleton is no longer a problem. Sorting loose parts is much easier, as anyone will know who has ever tried to remove parts from a scrap skeleton by hand. Using the SortMaster Station cuts the time required for manual sorting by 50 percent.

### SortMaster Vision

The robot uses an AI-assisted camera system to calculate the position of all the loose parts. Even if the parts are skewed, overlapping or out of their originally programmed position, SortMaster Vision can work out how to proceed without requiring programming. The Vision system makes picking up and placing parts much more reliable. Thanks to the AI's ability to recognize part geometries, parts can then be palletized by job, shape or downstream process. This optimizes the entire production line. The combination of AI image recognition and an innovative robot is a milestone in robotics programming. It eliminates the laborious task of teaching movements and programming gripping points. And the solution carries out sorting independently of the machine's pallet changer, which is another key advantage.

### SortLine

The new SortLine function ensures reliable laser processing and prepares parts perfectly for subsequent removal and sorting. Thanks to an optimum combination of various cutting strategies, the parts remain perfectly positioned in the scrap skeleton, and there is no longer a problem of small parts tilting or falling into the scrap area. This makes the process more reliable. Slugs and pieces of scrap are also safely cut up and disposed of within the machine. SortLine is integrated into TruTops Boost and offers optimum support for downstream processes. The system also offers benefits for manual sorting.

### Who are these solutions aimed at?

Companies that work in two or three-shift operation and fabricate a flexible range of parts will see particular benefits, especially if they face the challenge of small batch sizes and wish to avoid high programming costs. These solutions are also suitable for companies that wish to increase machine utilization and productivity and introduce a reliable method of removing and sorting parts.

### Compatibility

The solution is compatible with three-meter variants of the 2D laser flatbed machines in the 3000 and 5000 series and the LiftMaster Compact.

## Customer details

**CORTES ESPECIALES LASERCOR, S.L.**  
St. Alcorcón 7, 28850 Torrejón de Ardoz,  
Madrid, Spain  
www.lasercor.com  
Phone: +34 916 768 277  
Email: lasercor@lasercor.com

## Machinery

- 2x TruBend 5130
- 1x TruBend 5170
- 1x TruBend 5230
- 2x TruBend 7036
- 3x TruBend 7050
- 1x TruBend Cell 5320
- 1x TruBend 5320
- 5x TruLaser 5030 fiber
- 2x TruArc Weld 1000
- 1x TruLaser Weld 5000
- 1x TruMark 3130
- 2x TruMark 5050
- 1x TruMark Station 7000



*Leadership in Ballarat*

# BLAZING A NEW TRAIL IN BALLARAT

A few years ago, **MaxiTRANS** was seriously considering scrapping its business in heavy-duty truck trailer manufacturing. It seemed an era was coming to an end at the Australian company, which had spent decades building up its production facilities, relying heavily on manual processes and a skilled workforce. Now, high labor costs and long lead times were eating into its profits, and it faced a crucial decision. But in a Herculean effort, the management team opted to transform the company's old manufacturing facility into a **Smart Factory**. It figured it would take three tough years to turn things around – and now the company is seeing the first signs of success.



**Equipment:** Manufacturing at MaxiTRANS is now far more precise and transparent, which also makes life easier for employees.

Greg L'Estrange was working in the company's facility in Ballarat when his phone rang. On the other end of the line was a forklift driver from the factory. "He asked me about one particular part. He wasn't entirely sure where it was meant to go, but he had already worked out what he was going to do with it," recalls L'Estrange, Executive Chairman of MaxiTRANS. This casual conversation between a worker and a chief executive may seem surprising, especially given MaxiTRANS' size and prestige as Australia's leading manufacturer of semi-trailers.

But L'Estrange and his right-hand man general manager Brad Givvens are big believers in flat hierarchies. Both men favor a straight talking, down-to-earth approach, and they are happy to chat to TRUe on the shop floor clad in their work gear. Together, they embody the spirit of the forging shop where the MaxiTRANS story began – even though L'Estrange only joined the company three years ago. From its humble beginnings, MaxiTRANS has now grown into a manufacturing powerhouse employing 700 employees, with a turnover last year of 400 million Australian dollars.

### Core business in the balance

But a few years ago, things looked a whole lot bleaker. MaxiTRANS was stuck in an outdated style of manufacturing, and its inefficient methods were causing costs to spiral. The company's initial attempts to digitalize and automate processes had come to nothing, and MaxiTRANS soon found itself losing market share to its competitors. When a group of private investors acquired the company three years ago, it felt like everything was on the line. The jewel in MaxiTRANS' crown, its manufacturing operations, were on the brink of being shut down.

The solution proposed by the new owners – among them Greg L'Estrange – seemed like the most rational and logical way forward. The idea was to close down the entire struggling manufacturing business, including the main production site in Ballarat, 100 kilometers north-west of Melbourne. They would then switch to importing trailers from abroad and focus all their efforts on sales.

**Ride on:** MaxiTRANS has secured its future as a manufacturer of top-quality trailers.



“ The right technology gives us the **key to the door**, but we're the ones who decide whether or not to walk through it. ”

Greg L'Estrange, executive chairman of MaxiTRANS

The money they would raise by selling the manufacturing facilities was certainly tempting – but things ultimately took an unexpected twist. The owners suddenly made a 180-degree shift: instead of selling the factories, they decided to divide up the company and invest heavily in manufacturing.

“We anticipated seeing no return for three years and pumping all our cash flow back into the business,” says L'Estrange, who lobbied the investors to back the new approach. Over the long-term, he figured that this option would produce higher returns than selling the manufacturing facilities. “Fortunately, we passed up the opportunity to make a quick buck and agreed to go for the second option!” says L'Estrange. His task then was to turn their traditional factories into an advanced center of excellence within the space of just a few years. The goal was to reduce operating costs and double production volume in order to secure the company's long-term profitability. But how was such a radical turnaround to be achieved? MaxiTRANS had virtually no experience in modern manufacturing technology, and the few attempts it had made to update its facilities had ended in failure.

**Game-changer:** Previous efforts by MaxiTRANS to automate its processes came to nothing. Its new setup promises to be much more successful, with highlights including an automated storage system and software-based production control.

It quickly became apparent that MaxiTRANS needed to find some experienced partners – and the combination of TRUMPF and local company Headland Technology proved to be a perfect fit. MaxiTRANS put machines and software from the Ditzingen-based family-run company at the heart of its strategy to create a “factory 4.0”. At its main Ballarat site alone, the company invested 50 million Australian dollars – equivalent to over 30 million euros – in new machines. From TRUMPF, MaxiTRANS acquired a TruLaser 5040, a TruLaser Tube 7000, two TruBend 5000s and a STOPA large-scale storage system. It also opted to incorporate TRUMPF's Oseon software solution into a new SAP-based IT architecture. The management team is now working flat out to embed the new machines into its production processes, and L'Estrange calculates that their transition to a smart factory will be complete by early 2026.





“ Our managers want to get **stuck in**, not just sit in their offices. ”

Brad Givvens, general manager at MaxiTRANS

### Transparency is the key

The new level of precision provided by this technology is a major step forward, says L'Estrange. TRUMPF systems can produce parts to much more exact specifications than the company's old machines, and tighter tolerances are essential for automated processes. L'Estrange speaks from experience: past attempts to introduce robot-assisted welding ended in failure for precisely this reason, and that taught him a valuable lesson: “If you haven't laid the groundwork to produce a reliably high-precision part, then you shouldn't even be thinking about automation.”

As well as relying on precision machinery, MaxiTRANS has also adopted the Oseon software solution for controlling production and material flow. Oseon ensures that everyone involved in a process gets the information they need at the right time and in the right place. L'Estrange argues that this transparency is “fundamental” because it clarifies whether processes are working or not. L'Estrange and Givvens firmly believe that this radical transformation will only succeed if the workforce gets behind it, and that can't happen unless management leads the way. “Managers want to get stuck in, not just sit in their offices. We like to make decisions quickly, and we have a low tolerance for bureaucracy,” says Givvens, noting that both he and L'Estrange spend more time on the shop floor than in their offices.

### Support from the workforce is essential

He regards the transformation as exciting – but not everyone feels the same. Some of his colleagues have spent decades working at MaxiTRANS and would prefer to keep doing things the old way. They are reluctant to switch to a smart factory, which is why the management team has taken a two-pronged approach. The company is training up employees who have embraced the changes, but L'Estrange and Givvens are also taking on new staff. They are specifically looking for young people who are enthusiastic about technology. Ultimately, they want people who understand why change is necessary. “Greg has made it clear to everyone what will happen if we fail to

**Getting things done:** The two managers take a hands-on approach. Their teamwork is a crucial part of their strategy's success.



Where it all happens: Brad Givvens keeps a keen eye on production operations.

make this transition,” says Givvens. Many of the employees only understood the scale of this approach when they saw the new laser tube cutting machine from TRUMPF in action. “They were amazed when we showed them what the machine can do. Their attitude changed completely,” says Givvens. The importance of such defining moments should not be underestimated, say L'Estrange and Givvens. They count them as milestones in the change process because it is ultimately their employees – rather than the machines or software – who make the difference between success and failure. “The right technology gives us the key to the door,” says L'Estrange, “but we're the ones who decide whether or not to walk through it.”



IMAGES: Lynton Crabb

03

*A closer look:*

## TruLaser Series 1000 Lean Edition

Investing in laser-cutting is a major decision for any company, as **MaxiTRANS** knows from experience. TRUMPF makes it easier to **get started with laser technology** with its new TruLaser Series 1000 Lean Edition.



*In brief*

# The best price-performance ratio for 2D laser cutting

TRUMPF has released a series of affordable machines that are ideally suited to the needs of entry-level users. The new **TruLaser Series 1000 Lean Edition** is specifically tailored to this target group and preconfigured to meet their needs. Although it offers a more modest range of functions than other machine series, it is in no way inferior in terms of quality or reliability. With its low capital outlay, easy operation and superb service, it is an excellent choice.

## Robust cutting unit

At the heart of every laser-cutting machine is the cutting unit. The TruLaser Series 1000 Lean Edition comes with the same cutting unit as the 1000 and 3000 Series. This universal cutting unit with adaptive line system also offers reversible collision protection. In the event of a collision, the cutting unit tilts to the side to avoid damage; the user can then manually return it to its original position. Even high-end machines from other manufacturers don't offer this technology.

## Nanojoints

To prevent collisions from happening in the first place, the Lean Edition features special technology patented by TRUMPF. Tiny retaining tabs known as nanojoints hold the part securely in place until cutting has been completed. Because the tabs are so small, the cut part can then be easily removed from the scrap skeleton.

## High part quality

Users can bank on getting stable cutting results and high part quality. Suitable cutting processes are available for every type of material.

## Laser safety

TRUMPF protects users and helps to prevent eye injuries by using laser-safe viewing windows and a special enclosure that prevents laser radiation from escaping.



## Low initial investment and operating costs

The Lean Edition costs substantially less than the TruLaser Series 1000 and omits functions that are aimed more at highly automated, large-scale production. The design has deliberately been kept simple, so it is not possible to add expansion or automation modules at a later date. The machine also comes with pre-installed cutting data for compressed air cutting to minimize day-to-day operating costs.

## Easy to use

Machines in the new TruLaser Series 1000 Lean Edition offer intuitive operation and quick and easy programming, with no prior expertise required. TRUMPF has included pre-tested cutting data in the operating software for a range of materials and sheet thicknesses, so jobs can be started at the touch of a button. Should an error arise during cutting, the operator can use the "Cutting Guide" feature to get step-by-step instructions on how to identify the cause and solve the problem.

## Customer details

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## Cost-effective even at low capacity utilization

Previously, the purchase of a laser-cutting system didn't make financial sense for a company with low production volumes. But the TruLaser Series 1000 Lean Edition is specifically aimed at companies in this position. Reasonably priced and built with proven TRUMPF quality, it can be run cost effectively even at low capacity utilization.



## Machinery

- STOPA large storage system
- TruLaser 5040
- TruLaser Tube 7000
- 2x TruBend 5000 (one with ToolMaster)

## Diverse materials

Companies can use the TruLaser Series 1000 Lean Edition for a broad range of applications. The machine series can comfortably handle a wide variety of materials, including mild steel, stainless steel, aluminum, brass and copper.

## This new generation of machines comes in three different formats:

- 3 x 1.5 meters
- 4 x 2 meters
- 6 x 2.5 meters
- Laser power: six kilowatts





04

GERMANY

*Leadership in Ditzingen*



# NEXT-LEVEL SERVICE

IMAGES: Stephanie Trenz

Good after-sales service keeps machines running, minimizes downtime and turns simple business relationships into successful partnerships. In an interview with TRUe, **Marcella Montelatici**, managing director for sales and services at TRUMPF Machine Tools, and **Florian Zock**, who is responsible for global machine tool services, explain why TRUMPF is introducing artificial intelligence to its service offerings – and how its professional support services help make its customers more successful, profitable, agile and competitive.

“ Good after-sales service means having a **partner you can rely on** – not just when you make a purchase, but also throughout a machine’s entire service life. ”

Marcella Montelatici, managing director for sales and services at TRUMPF Machine Tools

**What role does after-sales service play at TRUMPF?**

**Marcella Montelatici:** It’s a key part of TRUMPF’s business. We have a saying that the first machine is sold by the sales department, while the second is sold by good after-sales service. When customers purchase a machine, they carefully weigh up what they’re getting for their money. They want their machine to run reliably for many years to come, and they want upgrades and regular updates. Their expectations of after-sales service go far beyond basic repairs.

**Is good after-sales service also an investment in the customer’s future?**

**Florian Zock:** Any investment in good technical support is going to improve performance. Regular maintenance translates into less downtime and increases the residual value of the machine, so it has a direct impact on the customer.

**Marcella Montelatici:** Absolutely. Buying a machine without good after-sales service is a poor investment. At TRUMPF, we strive to sort out our customers’ problems. We know how hard it



**Success factor:** Marcella Montelatici and Florian Zock see professional, fast and reliable after-sales service as crucial to the efficiency and success of TRUMPF’s customers.

is for most of them to find and retain skilled machine operators. That’s why we use our digital Remote Control Center to connect to our customers’ machines and take on some of the many technical support responsibilities. We also perform security updates remotely, which is becoming more important by the day.

**How would you define good after-sales service?**

**Marcella Montelatici:** For TRUMPF customers, good after-sales service means having a partner they can rely on – not just when they make a purchase, but also throughout the machine’s entire service





**Ready to listen:** Marcella Montelatici and Florian Zock get regular feedback on new solutions from TRUMPF service employees.

life. Our service technicians are locally based and highly skilled. They understand their customers and know how to fix problems.

**Florian Zock:** That's something we offer everywhere, worldwide. Our subsidiaries organize our 2,800 technicians on a regional basis and also take steps to ensure that we can rapidly supply customers with spare parts. So our customers know we always have their back.

#### **What's special about the service TRUMPF provides?**

**Florian Zock:** We aim to always be there when the customer needs us, with highly qualified technicians ready to help. We've been successfully solving many problems remotely for a number of years: around 75 percent of issues are now tackled remotely by our in-house team. The customer gets a fast and reliable solution, and it's all included in the service agreement. And if a problem can't be solved remotely, our worldwide presence enables us to react quickly and send a service technician to the customer's site.

**Marcella Montelatici:** Our customers can contact us in their native language and know they will be understood. Wherever they are, they can get support in their own language – by phone, email or TRUMPF Visual Assistance. Clear and effective communication is essential when trying to understand a problem, rectify a fault or provide instructions on how to use a machine. It's the same if I go to the doctor: I want to be absolutely sure that we both understand each other, otherwise I might feel uncomfortable or even get the wrong treatment.

#### **What role do digitalization and artificial intelligence play in these support services?**

**Florian Zock:** Digitalization is crucial for us. We're already getting half of all technical support cases through the TRUMPF Service app or our MyTRUMPF online portal. Incidents logged

through these channels can be assigned and processed even more quickly. We also provide step-by-step instructions for identifying problems with our Solution Guides and for solving them with our Technical Guides. And we're currently trialling chatbots that will enhance personal contact in after-sales service in the future and make the process even faster. The idea is to have an AI-based solution for technical customer service that works in a similar way to ChatGPT.

**Marcella Montelatici:** AI is not some kind of distant prospect – it's already playing a key role at TRUMPF, for example by helping us to identify fault patterns and come up with solutions.

#### **What distinguishes TRUMPF's after-sales service from that of its competitors?**

**Marcella Montelatici:** Our organizational structure is designed to handle every eventuality. We have locally-based service technicians who can reach customers quickly. And we have specialists based in



IMAGES: Stephanie Trenz



each region who can support those technicians where necessary. Those specialists work closely with the development department assigned to them. It's the follow-the-sun model of offering a 24/7 response to customers all over the world.

**Florian Zock:** This set-up enables us to tackle any kind of problem. We know how important machine availability is to our customers. That's why customers can contact our hotline at any time and speak to their direct contact. And if a customer contacts us through the TRUMPF Service app, we call them back the next day at the latest. We offer a good balance between price and performance, and our service agreements make expenses predictable.

And we also help our customers make their business more sustainable. They have a 15-year timeframe in which they can order spare parts, even if the machine has been discontinued. With spare-part depots in China, the US and Ditzingen, we make sure our customers get their spare parts quickly.

#### **How do you see after-sales service developing over the next few years?**

**Florian Zock:** It's about aiming even higher! We want to anticipate problems before they even arise. We're already using Condition Monitoring to help customers schedule maintenance in a timely manner and configure machines to prevent problems occurring in the first place.

**Always improving:** Marcella Montelatici and Florian Zock are keen to keep expanding TRUMPF's after-sales service in areas such as upgrades and retrofits, software updates and customer training.



.....  
 “ We want to  
**anticipate problems** before  
 they even arise. ”  
 .....

Florian Zock, responsible for global services at  
 TRUMPF Machine Tools

**Marcella Montelatici:** We're looking at stepping up our activities in many areas. For example, in regard to tools, retrofitting, software updates, consulting, production support and customer training. By offering customers a full range of service offerings, we aim to make them more successful, profitable, agile and competitive. Our primary goal is to support our customers in meeting the challenges they face.





*Innovations, technologies and future trends.*



## TRUMPF and Mercedes-Benz expand collaboration

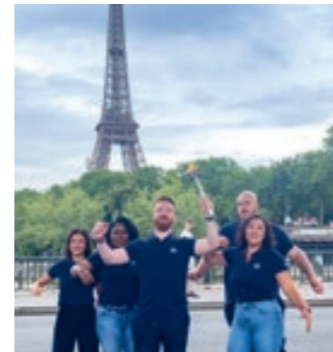
Mercedes-Benz and TRUMPF are stepping up their long-standing collaboration that aims to deploy complex manufacturing systems in more efficient and resilient ways. The pilot project at the Sindelfingen site has set new standards in **predictive digital maintenance** and created a blueprint for all Mercedes-Benz plants worldwide. With the help of Manufacturing Service Bus (MSB) and the MO360 data infrastructure, around half of the 400 TRUMPF lasers used at Mercedes-Benz are now connected in one cloud. "The future of automotive production is about forward-looking digital processes, dynamic maintenance and maximum failure avoidance," says Jörg Burzer, member of the Board of Management

of Mercedes-Benz Group AG. TRUMPF experts **use algorithms to carry out centralised monitoring of the connected lasers while the machines are in operation.** They instantly detect any anomalies, thereby preventing unplanned downtime. Over **80 percent of all service incidents can be predicted and proactively planned.** "Digital connectivity is the key to greater efficiency in production," says Hagen Zimer, CEO Laser Technology and member of the TRUMPF Board of Management. The system securely transmits data to the TRUMPF cloud – but only laser status data, not any production-relevant data.



## TRUMPF opens new headquarters in Spain

TRUMPF has officially inaugurated its new **Spanish headquarters in Torrejón de Ardoz** (Madrid), marking another important milestone in its 36 years of doing business in the country. The opening of this new facility – which has over 115 employees – underlines TRUMPF's commitment to **sustainability and technological innovation.** In designing the new premises, which extend over 10,000 square meters, TRUMPF placed a particular emphasis on energy efficiency. The modern facility features state-of-the-art TRUMPF solutions for a range of applications, as well as a smart factory.



## TRUMPF machine crafts Olympic torches

TRUMPF got involved in the Summer Olympics in Paris in two different ways. Production of the Olympic torch was carried out on a **TruLaser Cell 7040** by international steel group ArcelorMittal, based in Luxembourg. Working to precise specifications, the company made 2,000 of the torches out of recycled steel. Each one weighs just 1.5 kilograms and is 70 centimeters tall. Inspired by this endeavour, TRUMPF apprentices designed and built their **own Olympic torch** using TRUMPF machines and lit it using a TruLaser Station 7000. At the start of the Olympic Games, the apprentices sent the TRUMPF torch on a journey to TRUMPF locations stretching from China to France as a homage to the athletes.

IMAGES: TRUMPF



## Fifty years of TRUMPF UK

In July 2024, TRUMPF UK organized a festive gala in Luton, near London, to celebrate its **50th anniversary.** TRUMPF CEO Nicola Leibinger-Kammüller and CDO Mathias Kammüller both took part in the event. Leibinger-Kammüller thanked TRUMPF's customers and partners for their many years of loyalty: "Without you, none of us would be here today." Lee Moakes, managing director of TRUMPF UK echoed this sentiment: "We will continue to invest in our employees, processes and solutions. Today is the day to celebrate our customers. They are the reason we strive to give our best every day." TRUMPF began trading in St Albans in 1974, before relocating to Luton in 1989. Today, more than 100 employees work at the Luton facility, which includes a 1,000-square-meter showroom.



## Partnership for connected industry

Telekom Deutschland, T-Systems and TRUMPF have been collaborating for some time on **positioning systems for connected industry.** The partners have now signed a cooperation agreement that will facilitate a joint market launch. The solution offered by the partners enables productivity gains and cost savings, particularly for companies in the **production and logistics** sectors. Customers benefit from the combined industry and digitalization expertise of the three partners. The **Real-Time Locating System (RTLS)** developed by TRUMPF can be used by customers to track the position of mobile objects in real time. These could be autonomous transport systems or transport containers, for example. TRUMPF relies on ultra-wideband

(UWB) technology, which facilitates precise positioning with an accuracy of between 10 and 30 centimeters – both indoors and outdoors. Permanently mounted receivers, or "satellites", communicate with mobile transmitters, or "tags". The transmitted position data is processed by powerful software. Customer applications can then access the data through standardized interfaces and use it as required.



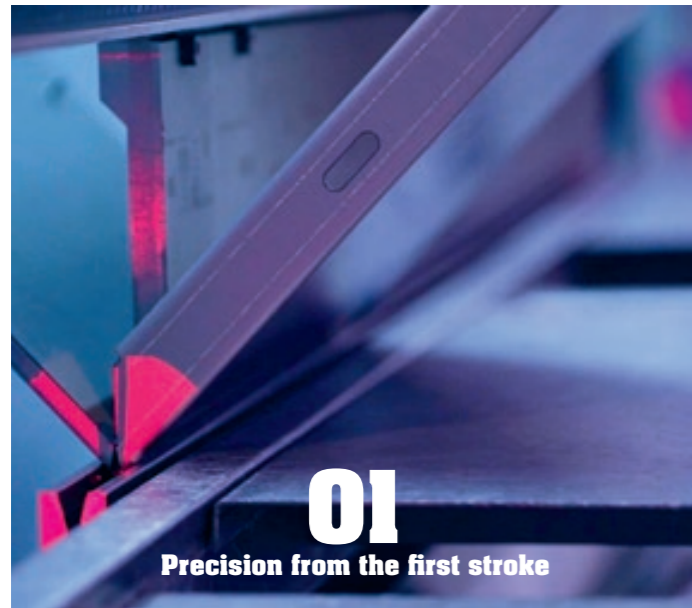
## TRUMPF to launch AI degree program

Starting September 2025, TRUMPF and the Karlsruhe-based Baden-Württemberg Cooperative State University (DHBW) will be launching a new degree course on **Data Science & Artificial Intelligence.** Four places will initially be available in the pilot phase. Artificial intelligence (AI) is seen as an important key technology for the future of mechanical engineering, and TRUMPF is keen to train specialists in this field itself in the future. Functional AI stands and falls by the quality of the data available to it, and high-quality learning materials and skilled support are essential to maximizing advances in AI and keeping errors to a minimum. TRUMPF hopes this **practical, applied degree course** will provide the perfect training in AI and data science while familiarizing experts with the specific machines and processes used at TRUMPF.



# Bending at its best: five things that make TRUMPF's fastest mobile bending cell better than ever

The Flex Cell mobile robot cell can be docked to the TruBend 7050 bending machine in just a few simple steps, rapidly increasing production capacity for simple parts. And now TRUMPF has made this solution even better. We took a look at some of the key highlights.



**01**

**Precision from the first stroke**

The TruBend 7050 now offers higher-quality bending thanks to a new method of Automatically Controlled Bending (ACB), which is integrated within the machine. "ACB Smart" takes springback into account, which is a critical factor in a precise bend. It looks up the springback parameters for each material in a comprehensive database. This enables the TruBend 7050 to find exactly the right bending angle in just one stroke, saving time and boosting productivity.



**02**

**Efficient transport of parts**

The Flex Cell conveys bent parts along a belt to increase efficiency. This gentle mode of transport also protects the parts from scratches. The conveyor can also be used to automatically eject larger parts. Alternatively, the system can also be equipped with a part chute instead of a conveyor, depending on what the customer sees as the best match for their manufacturing process.

IMAGES: TRUMPF



**03**

**New transport carts boost efficiency**

Two types of cart are available for the Flex Cell. The first variant is suitable for boxes and pallets, while the second can be adjusted to accommodate different items. The cart can be loaded with up to six stacks of parts while the Flex Cell is still working. Switching from one cart to another is efficient and safe thanks to the guide rail.



**04**

**Order and ergonomics**

The tool store docked to the side of the machine offers a neat and efficient solution for keeping tools in order and makes it easier for the operator to find the tool they need.



**05**

**Electromechanical drive for efficiency, precision and durability**

The TruBend 7050's electromechanical drive (high-torque motor) significantly reduces energy consumption while ensuring that the machine works quickly and accurately. It also leads to lower maintenance costs and has a longer service life than other drive systems.



Check it out!

# THE ROLE OF AI IN SHEET-METAL FABRICATION

**Artificial intelligence (AI)** is revolutionizing not only how we live our lives, but also how we produce things. And the journey has only just begun. Here, we take a look at some **specific applications and examine AI's future potential.**

### Faster product development

AI-based computer simulations and modeling can accelerate prototype creation and speed new products to market.



### Fewer rejects

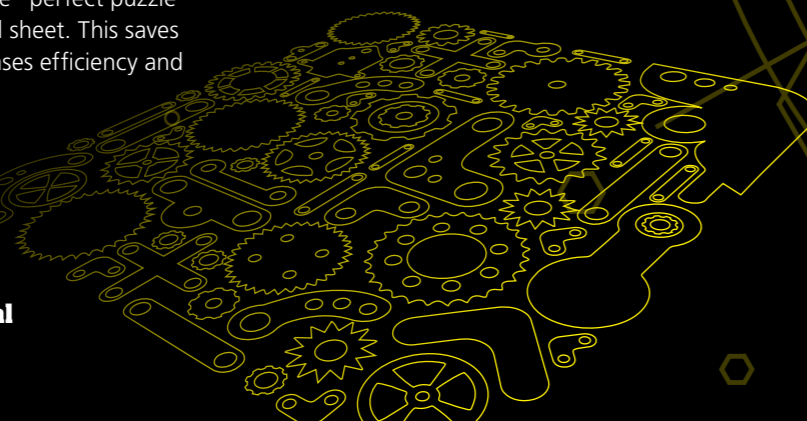
With AI, smart sheet-metal processing machines such as TRUMPF's fully automated laser systems never stop learning. That translates into fewer errors, which results in higher part quality and a lower scrap rate.



### Saves material

AI-based algorithms create the "perfect puzzle" of nested parts on each metal sheet. This saves material, reduces costs, increases efficiency and boosts sustainability.

up to **14%** less material

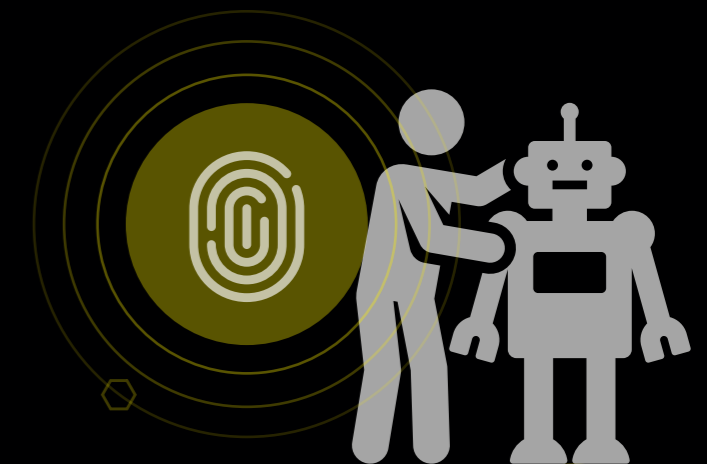


### Detects defects

AI can detect defects in sheet-metal products before they even reach the end of the line. The benefits are twofold: enhanced quality control, and optimized manufacturing processes. Examples in sheet-metal fabrication include smart image recognition software from TRUMPF.

### Saves money

AI-based analyses identify unnecessary costs in production and logistics. This helps users to optimize material orders, to create a smart schedule of shift work, and to reduce idle time to a minimum.



### Makes life easier for workers

AI-controlled robots can handle repetitive tasks, so employees can spend more time on other activities. With skilled workers in short supply, this makes AI a game-changer in the world of manufacturing.

### Anticipates problems

TRUMPF Condition Monitoring uses smart sensors to predict what maintenance will be required next and to monitor machines in real time. This reduces downtime and makes production more efficient – because just one hour of stoppage can lead to major losses.



### Improves safety at work

Artificial intelligence can even be used to "police" the shop floor. With the right technology, it can monitor processes and flag potential hazards in the production environment. That means fewer accidents and better safety all round.



AI  
10101  
01011



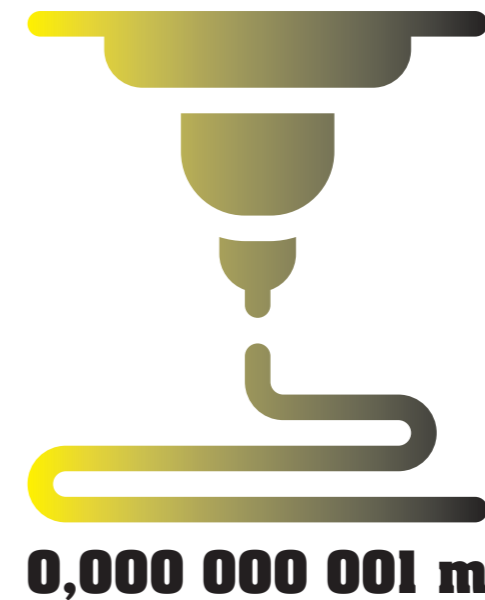
*Lighter, stronger, tougher:  
what nanotechnology means for manufacturing.*

## MEASURED IN BILLIONTHS OF A METER

A 3D printer stands on the factory floor, humming gently as it prepares to start work. Displayed on its screen is a design for a complex metal part which has a snaking coolant cavity at its heart. Activating its high-precision sensors and print heads, the printer suddenly comes to life, depositing layers of metal alloy while integrating nanoparticles that will make the material light and strong. A few hours later, the finished part is carefully removed from the printer and inspected to assess its quality.

Using high-resolution scanners, the quality control team confirms that the part is perfect: the cavity has been flawlessly executed, and the material properties are optimal. This combination of 3D printing and nanomanufacturing offers exciting new potential for the future of manufacturing. Soon, it may be possible to print highly complex parts with outstanding nano properties. Layer-by-layer 3D printing allows cavities to be incorporated naturally in the fabrication process, with efficiencies far greater than those of time-consuming, material-wasting drilling methods. This, of

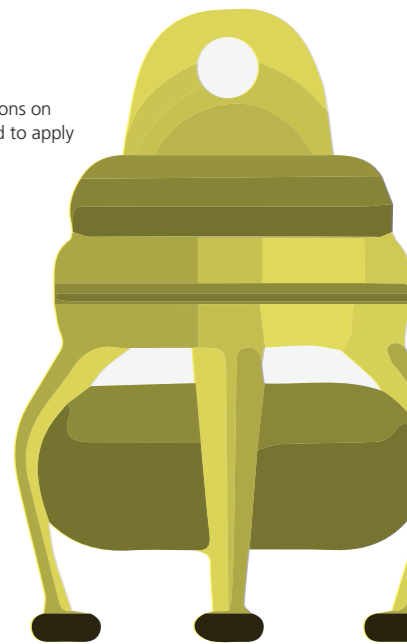
Modifications at the nanoscale can significantly improve the **quality of materials**. As well as ushering in new production processes, this could also pave the way for digital networks of nanosensors that take **real-time maintenance** to a whole new level.



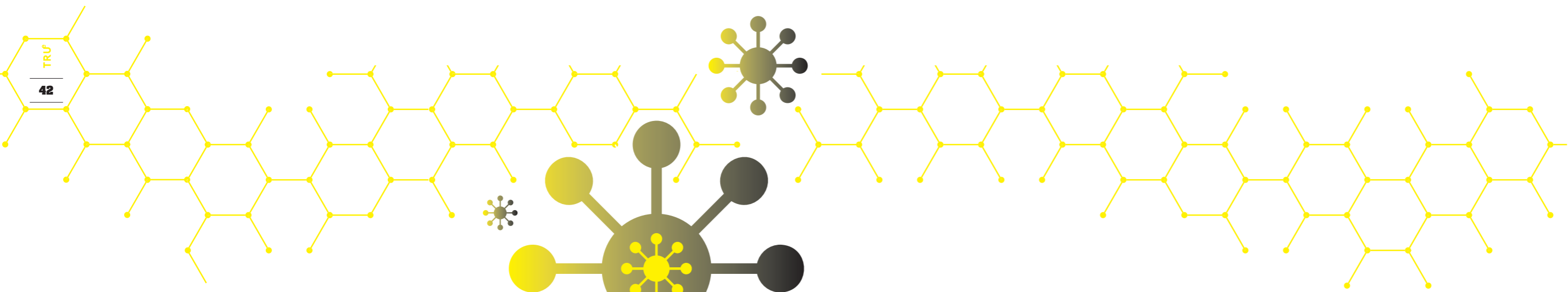
course, is nothing new – but now nanomanufacturing is taking the whole process to a completely different level.

“Adding nanoparticles can significantly enhance printed materials,” says Gunther Richter, Head of the Central Scientific Facility Materials at the Max Planck Institute for Intelligent Systems in Stuttgart. As well as making parts stronger and more robust, the integration of nanoparticles can also improve the precision of the manufacturing process. Richter believes that the combination of nanomanufacturing and 3D printing, also known as additive manufacturing, could potentially be a game-changer for industrial production.

**NANOBOTS:** Nanorobots are able to carry out operations on an extremely small scale. For example, they can be used to apply special non-stick or antimicrobial coatings to surfaces.







## When nanotechnology meets digitalization

The term nanomanufacturing refers to manufacturing at the nano-scale, typically at dimensions of between 1 and 100 nanometers. A nanometer (nm) is a billionth of a meter; by way of comparison, one nanometer is to a meter as the diameter of a hazelnut is to the diameter of the Earth. A strand of DNA is just two nanometers wide, a single red blood cell 9,000 nanometers, and a human hair 80,000 nanometers. "Nanomanufacturing offers extremely precise control at the atomic level," says Richter. Working at this

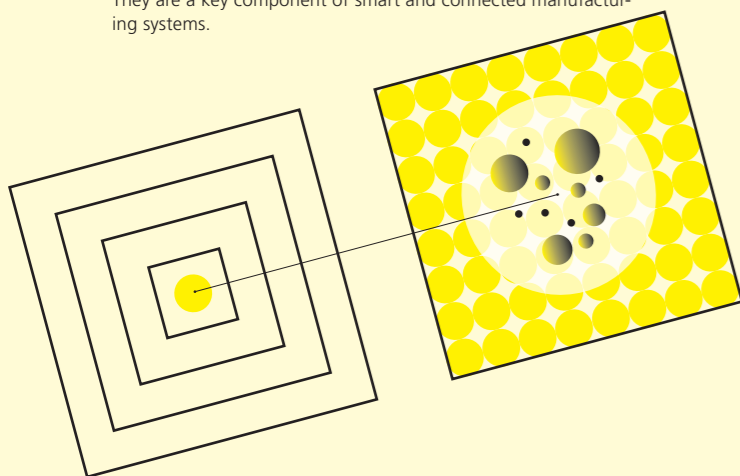


**NANOPARTICLES:** Their ability to create materials with unique properties is revolutionizing the manufacturing industry. Nanoparticles can improve strength, conductivity and functionality at the molecular level.

“ Nanomanufacturing is the path to **revolutionizing fabrication** and making products that are simply inconceivable today. ”

Gunther Richter, head of the Central Scientific Facility Materials at the Max Planck Institute for Intelligent Systems in Stuttgart

**NANOSENSORS:** Able to detect even the tiniest changes in their environment, nanosensors can be used to carry out ultra-high-precision measurements. They are a key component of smart and connected manufacturing systems.



scale, experts can position individual atoms or molecules at an exact point within a structure. This paves the way for companies to print structures that are more delicate and complex than those that can currently be produced by conventional methods.

Richter also sees significant potential in the field of nanosensors. These highly sensitive devices are able to detect even the tiniest quantities of chemical or biological substances, such as very low levels of contaminants in the air or water, for example. Integrated within larger systems, nanosensors can provide the real-time data required for precise process monitoring and control. For example, a 3D printer could be used to integrate sensors directly into the structure of a material during the printing process. These could then wirelessly transmit real-time data to the system while continuously monitoring a wide range of parameters.

### Sensor networks in nanomaterials

But Thomas Herlan – a lecturer in forming technology at Karlsruhe Institute of Technology (KIT) – is already thinking one step ahead. He envisions a future in which sensor networks embedded in nanomaterials are able to measure changes at the atomic level. Integrated in the metal of a car body, for example, they would detect even the tiniest mechanical stresses, chemical reactions and structural deformations. "So if a car came back from a drive with a small dent in the bodywork, you would be able to detect a corresponding change in the original digital signal," says Herlan.



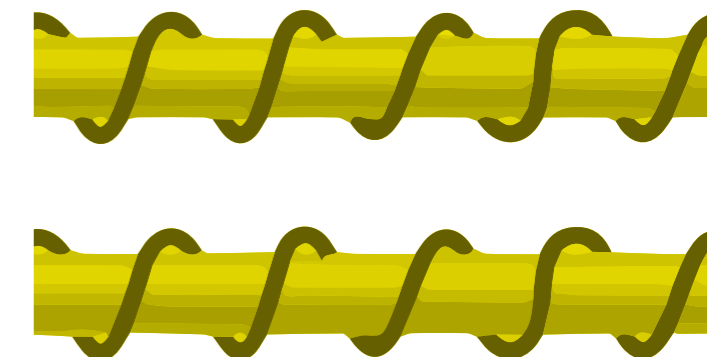
**NANOCOATINGS:** These coatings offer exceptional levels of protection and functionality. They make surfaces more resistant to scratches, corrosion and dirt – perfect for fabricating durable, high-quality products.

He envisages applications in various industries, including aviation, where bird strikes can cause superficial damage to aircraft, for example. "The digital signal could tell us whether a panel is too deformed and needs to be replaced," says Herlan. He cautions, however, that this combination of nanomaterials and digital systems is still some way ahead of current research. "But it's the kind of thing that might be possible 20 or 25 years from now," he says.

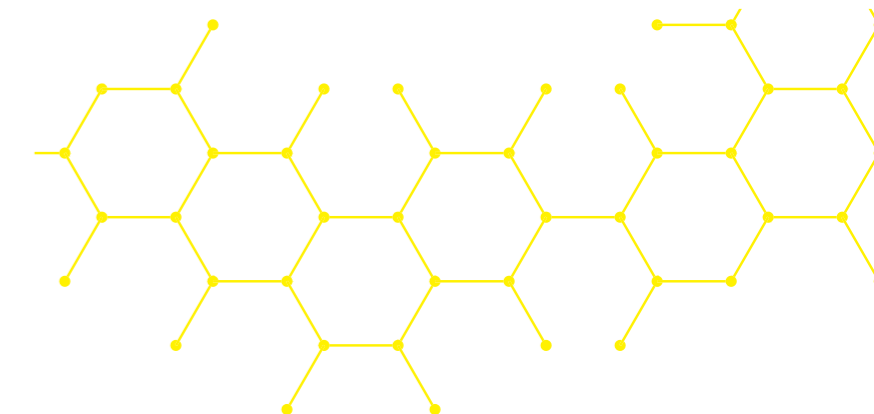
In its broadest sense, nanomanufacturing has actually been around for some time. Bicycle owners, for example, already benefit from lighter, stronger and more robust steel frames thanks to the nanoparticles used in frame coatings. However, experts have not yet succeeded in making nanostructures stable and durable enough to play a central role in industrial production. "If we could overcome that hurdle, we would revolutionize manufacturing and be able to manufacture products that are simply inconceivable today," says Richter.

The example of Dutch technology company ASML – a TRUMPF partner – shows how much progress can be made in nanotechnology in the space of just a few decades. ASML makes lithography

machines that use extreme ultraviolet light (EUV) to create incredibly precise circuit patterns on silicon wafers, which form the basis of microchips. While early machines were able to get feature sizes down to 65 nanometers, the latest generation is now capable of fabricating chips smaller than 7 nanometers. This is equivalent to using a laser beamed from the moon to inscribe a grain of sand. Using this technology, chipmakers can now pack more than ten billion transistors onto a chip smaller than a fingernail.



**NANOFIBERS:** Exceptionally strong and lightweight, nanofibers are the perfect choice for high-performance textiles and composite materials and ideal for making durable, innovative products.







*Innovations, technologies and future trends.*



### Third pallet station for greater efficiency

At EuroBLECH, TRUMPF presented its **third pallet station for 2D laser cutting systems**, which is designed to boost production efficiency. While the machine cuts one sheet and a second pallet stands at the ready loaded with further material, the machine operator can clean the slats of the third pallet **without interrupting the manufacturing process**.

If the laser cutting machine is connected to a storage system, the operator can use the third pallet station to load up the machine with the required material for **spontaneous jobs**, saving time that would otherwise be required

to bring it from storage. Sheets thicker than 25 millimeters, which often pose a problem for storage solutions, can easily be processed in the machine via this third pallet station. The third station also creates an additional point for **manual or automated part removal**, which significantly increases productivity.



### Solution for stubborn slag

Stubborn slag is getting tougher to remove due to steady increases in laser power and the use of new material mixes. Current slat-cleaning solutions can struggle to tackle this residue, and at least some slag typically remains on the slats. TRUMPF has now released its **TruTool TSC 200**, which is designed to **reliably remove even the most stubborn slag**. Regular, thorough cleaning with the TruTool TSC 200 extends the service life of slats as much as fourfold, thereby reducing costs. The patented geometry of the cleaning tool features serrated teeth that break off and remove the slag, scraping the slats to leave them smooth and clean. It takes just 15 minutes for a standard pallet where only part of the surface is used.



### Battery recycling on an industrial scale

**Using laser technology** from TRUMPF, automakers and battery manufacturers can now **recycle used or faulty batteries from electric vehicles** on an industrial scale for the first time. TRUMPF has developed laser systems that safely cut open used batteries and remove the valuable raw materials from the battery foil. "Recycling batteries is good for the **environment** – and laser technology has now made it **economically viable**. TRUMPF has extensive expertise in laser welding and cutting for the manufacturing of EV batteries. We have spent years working with all the leading automakers and battery manufacturers, and we drew on that experience to develop the new process," says Hagen Zimer, CEO Laser Technology at TRUMPF.

IMAGES: TRUMPF



### New energy-efficient cooler

TRUMPF has unveiled a **new cooling system** from Technotrans. Offering a **50-percent improvement in energy efficiency**, it only takes up about **half the space**. The new system is a good choice for processing thick sheet metal with TRUMPF laser cutting systems. The system works with a particularly eco-friendly refrigerant. Speed-controlled pumps, compressors and fans ensure energy-optimized operation under all loading conditions. Greater energy efficiency enables TRUMPF customers not only to protect the environment, but also to reduce costs. TRUMPF is currently working on a digital connectivity solution for the cooling system. The aim is to use Condition Monitoring to monitor the system remotely and offer service options with telepresence.



### Machine diagnostics reduce production downtime

**TRUMPF machine diagnostics** can help sort out machine problems before they affect production. This adds further value to the Condition Monitoring service, which allows TRUMPF service experts to remotely check machine status. "Our new machine diagnostics allow us to capture the kind of in-depth machine data that we couldn't previously measure, such as motor currents and sensor signals. Before, it's like we were only taking the machine's temperature, but now we can get a complete blood count!" says Martin Schober, head developer of machine diagnostics at TRUMPF. The digital Condition Monitoring service already allowed service technicians to view data on a machine's status, such

as lubricant fill levels. But the addition of machine diagnostics now provides **more in-depth information**. The machine carries out measurements automatically at regular intervals, and the resulting data is then checked by TRUMPF service experts to detect patterns of errors that might suggest the machine is not behaving normally. Using automated search algorithms, they compare the data with pre-defined indicators and limit values. This enables TRUMPF to perform an even more reliable analysis of the machine's condition and **detect anomalies** before they have a negative impact on production.



### Lasers with artificial intelligence

TRUMPF and leading machine-learning company SiMa.ai have entered into a partnership to develop lasers with AI. Their goal is to **equip a number of TRUMPF laser systems with AI technology** in the near future, including systems for welding, cutting and marking. The collaboration will draw on the strengths of both companies: laser application expertise from TRUMPF, and machine learning system-on-chip (MLSoC) technology from SiMa.ai. "AI has a high strategic relevance for TRUMPF. **SiMa.ai is the ideal partner** for this next big step toward intelligent industrial solutions," says Richard Bannmüller, CTO of TRUMPF Laser Technology.



# MACHINE

SAFETY

at TRUMPF

MARTHA METAL IS RESPONSIBLE FOR SAFETY AT TRUMPF. TODAY, SHE IS TRAINING UP A NEW COLLEAGUE.

YOU MUST BE WILLY WORRIED. READY FOR THE TOUR?

WE WON'T BE NEEDING THESE.

WELL, UM, I SUPPOSE SO... BUT WHERE ARE OUR HARD HATS AND SAFETY GOGGLES?!

TRUMPF LASERS ARE CE CERTIFIED AND MEET THE MOST STRINGENT SAFETY STANDARDS. THERE ARE NO GAPS IN THE MACHINE ENCLOSURES, AND THE VIEWING WINDOWS ARE DESIGNED TO BLOCK HAZARDOUS LASER RADIATION.

WILD HORSES COULDN'T DRAG ME OVER THERE! IN MY OLD FACTORY...

... THEY PROBABLY JUST GAVE THE GLASS A GREEN TINT TO PRETEND IT WAS SAFE. BUT OUR WINDOWS PROTECT AGAINST ALL HAZARDOUS LASER RADIATION.

LASER CUTTING CAN RELEASE TOXIC AIRBORNE PARTICLES. THE COMPACT EXTRACTOR CAPTURES THOSE SUSPENDED PARTICLES AT SOURCE.

BUT YOU SHOULD BE WEARING A PROTECTIVE MASK! IN MY OLD FACTORY...

...I DOUBT YOU HAD A COMPACT DUST EXTRACTOR WITH THE RIGHT FILTERS. THEY CAPTURE EVERYTHING. BUT WHEN YOU REPLACE THE DUST CONTAINER...

...YOU DO NEED TO WEAR AN FFP3 MASK.

NEXT STOP: THE BENDING MACHINE.

...I'M NOT SURPRISED! THESE MACHINES POSE A REAL RISK OF CRUSHING SOMETHING.

BUT TRUMPF MACHINES USE A SAFETY DEVICE CALLED BENDGUARD. IT DETECTS ANYTHING BLOCKING THE PATH TO THE BENDING PART. SO YOU'RE NOT GOING TO LOSE ANY FINGERS, I PROMISE!!

OUCH! I STILL HAVE BAD MEMORIES OF WORKING ON THESE...

ILLUSTRATION: Piers Goffart

MARTHA SHOWS HIM ONE OF THE ROBOTS ON THE SHOP FLOOR. ROBOTS CAN HELP WITH MANY PRODUCTION TASKS – THIS ONE IS UNLOADING RECENTLY CUT TUBES.

KEEP IT AWAY FROM ME!!

AAR-GH!!

NO, STOP!

DON'T WORRY! THE ROBOT WORKS IN ITS OWN SEPARATE SPACE. THE SENSORS WOULD IMMEDIATELY DETECT IF THE ENCLOSURE WAS OPEN AND STOP THE ROBOT JUST LIKE THAT.

Factories can get noisy sometimes. Perhaps not as loud as an AC/DC concert, but over time it can cause ear damage. That's why you should always wear ear protection in noisy environments!

WE HAVE SOLUTIONS LIKE WHISPERTOOLS AND SOFTPUNCH TO KEEP THE NOISE DOWN. BUT IT'S STILL IMPORTANT TO WEAR THESE!

MY OLD PLACE DIDN'T HAVE ANY...

BUB! BUB! BUB! BRUMM!-DRRA!

OK, I SEE WHAT YOU MEAN. EVERYTHING HERE IS A LOT MORE SAFE AND SECURE THAN IN SOME OTHER FACTORIES.

RIGHT, BUT THAT DOESN'T MEAN...

IT'S BEEN QUITE A DAY...

THANKS FOR SHOWING ME AROUND. COULD I SEE THE LASER AGAIN?

THAT'S BETTER! SURE, LET'S GO!

ALL'S WELL THAT ENDS WELL – AT LEAST AT TRUMPF!





## SMART SAVINGS: TRUMPF PART DESIGN

Higher quality at lower cost: TRUMPF part-design workshops teach users how to get the best out of their parts and machines in order to make production more efficient and cost-effective. Each issue, TRUe takes a look at a different application to illustrate how this process works.

### **This issue:** **Designing clamping fixtures for welding quickly and cost-effectively using the TRUMPF method**



**Sergej Darst**, senior consultant  
TRUMPF Part Design

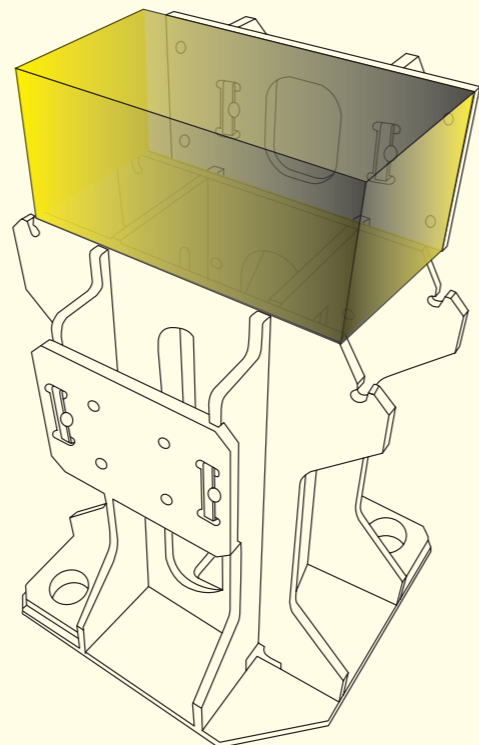
Custom-made clamping fixtures can push up the cost of automated laser and arc welding, but are essential for reliable processing. TRUMPF's new design method saves time and drives costs down by giving users a quick and easy way to produce the clamping device from sheet metal.

"Normally, users design a fixture by working up from the baseplate to the part," says Sergej Darst, senior consultant at TRUMPF Part Design. This conventional approach typically involves milling parts from aluminum and assembling

them like building blocks to create the fixture. This is a time-consuming process that drives up costs.

But participants in TRUMPF's Part Design workshops learn to approach this task in a different way, starting with the part and working their way back down to the baseplate. First, they come up with a clamping concept and create a detailed description of what the fixture should do. The fixture design is then derived from this clamping concept. "Design engineers who have never attended one of our workshops immediately try to conjure up a picture of the fixture in three dimensions. That's impossible, which is why we take things one layer at a time," says Darst.

The TRUMPF method is in a class of its own: designing the fixture in this example took just six hours instead of three days – a time-saving of 70 percent. By using laser-cut sheet metal, the TRUMPF Part Design team was also able to reduce the amount of material used by some 80 percent. The workshop shows how this method can be applied routinely and gives participants the skills they need to design and manufacture new, fully functional fixtures themselves – quickly and efficiently.



The part to be welded (yellow) sits snugly in a clamping fixture which was designed by workshop participants using the TRUMPF method.

**70%**  
less time



**80%**  
less material

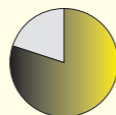
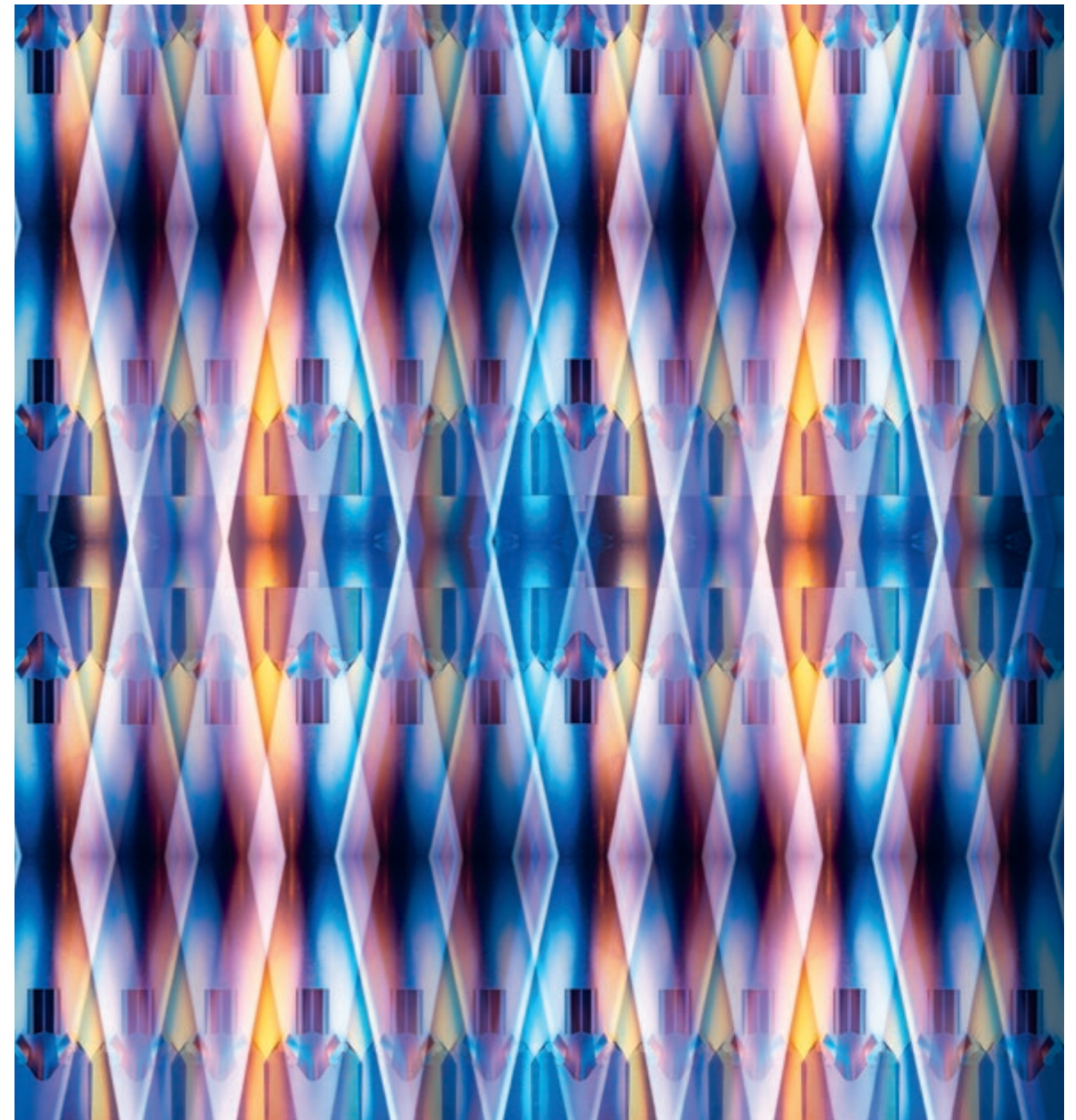


IMAGE: TRUMPF

#20

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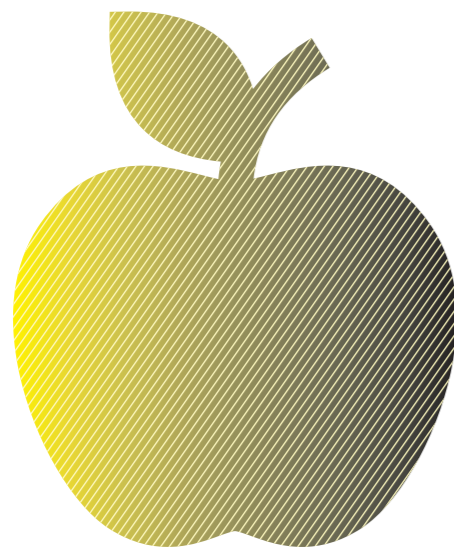
This picture shows **two lower tools for bending** as you've never seen them before. Lower tools, or dies, have a fixed shape into which the sheet is bent by an upper tool, thereby creating the desired profile in the metal. By taking these tools out of their familiar environment, photographer **Jürgen Bubeck** helps us see them from an entirely new perspective.



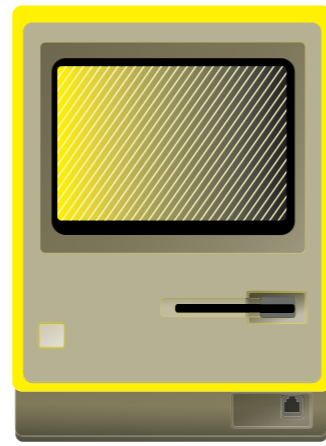
## Leadership with vision

At the end of the 1980s, a range of computers with innovative software took the world by storm. Featuring a logo of an apple with a bite taken out of it, these devices came with 4 megabytes (MB) of RAM and a 40 MB hard drive and comfortably completed tasks that other computers struggled with. The rest, of course, is history: the first graphical user interface, the first mouse, and the very first iMac in 1998; the first iPod in 2001, which revolutionized how we listen to music; the first iPhone in 2007, and so on, all the way through to the Apple Watch. Apple always had a cult following thanks to – and sometimes in spite of – the man at the helm of the company, Steve Jobs.

In 1976, Jobs and his two partners founded the company in a garage with a startup capital of just over 1,000 US dollars. By the end of 2023, Apple had a market value of 2.99 billion US dollars. Jobs, who was born in San Francisco in 1955 and died in 2011, is now recognized as one of the most transformative leaders of recent decades. His visions inspired passion in employees, investors and customers alike, and his single-minded focus allowed him to go further than anyone had believed possible. He had a gift for bringing together different threads in a way that nobody had previously been able to do, transforming individual products and technologies, many of which already existed, into captivating high-tech solutions that inspired and change the world. Beautifully packaged, strikingly designed and easy to use, Apple products quickly became a cult phenomenon.



Jürgen Brand



The first Macintosh computer was unveiled by Steve Jobs on January 24, 1984. Weighing in at just seven kilograms, the user-friendly computer included a mouse.

“Think different” was a tremendously successful Apple advertising campaign. But it was also a nod to Jobs’ unique way of thinking, which made him stand out from other entrepreneurs. He applied this motto every day and constantly used it to motivate his employees, especially in his legendary keynotes. When Jobs came to his signature “one last thing” announcement, he had thousands of employees and millions of viewers hanging on his every word.

But as well as the market-disrupting visions that drove competitors to distraction, Jobs was also known for his explosive temper. He was a perfectionist who obsessed over every last detail of a product’s design. His relentless focus on quality, his sometimes unrealistically high expectations and his unwillingness to compromise inevitably led to discord within his team, heated arguments and irreconcilable differences. There are plenty of stories that testify to this, perhaps the most famous of which was how he “invited” staff to share an elevator and then grilled them about their work during the short ride. His screaming fits were also notorious, and at one point Jobs even managed to get fired from his own company. He used that break to revolutionize the movie industry with Pixar and *Toy Story*, the first feature-length film to be made entirely using computer-generated imagery.

Today, his particular “style” of leadership would be unthinkable. Treating each other with respect, communicating openly, instilling a no-blame culture, supporting employee development and fostering teamwork are just some of the standards that are now widely accepted across the industry, from mechanical engineering and sheet-metal fabrication right the way through to Apple itself. We now have access to a vast number of books and workshops on the topic of leadership, containing countless tips, recommendations and guidelines. And however much a particular former German Chancellor may disagree, visions should never be suppressed, however crazy they may seem.



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