

TRUMPF

THE MAGAZINE FOR SHEET METAL EXPERTS

01 Debrecen

Grandpa goes digital:
why a digital native chose to set up a high-tech fabrication shop with his grandfather

02 Schopisdorf

Dynamic duo makes for a winning combo:
how a Tunisian-German friendship gave rise to a smart factory

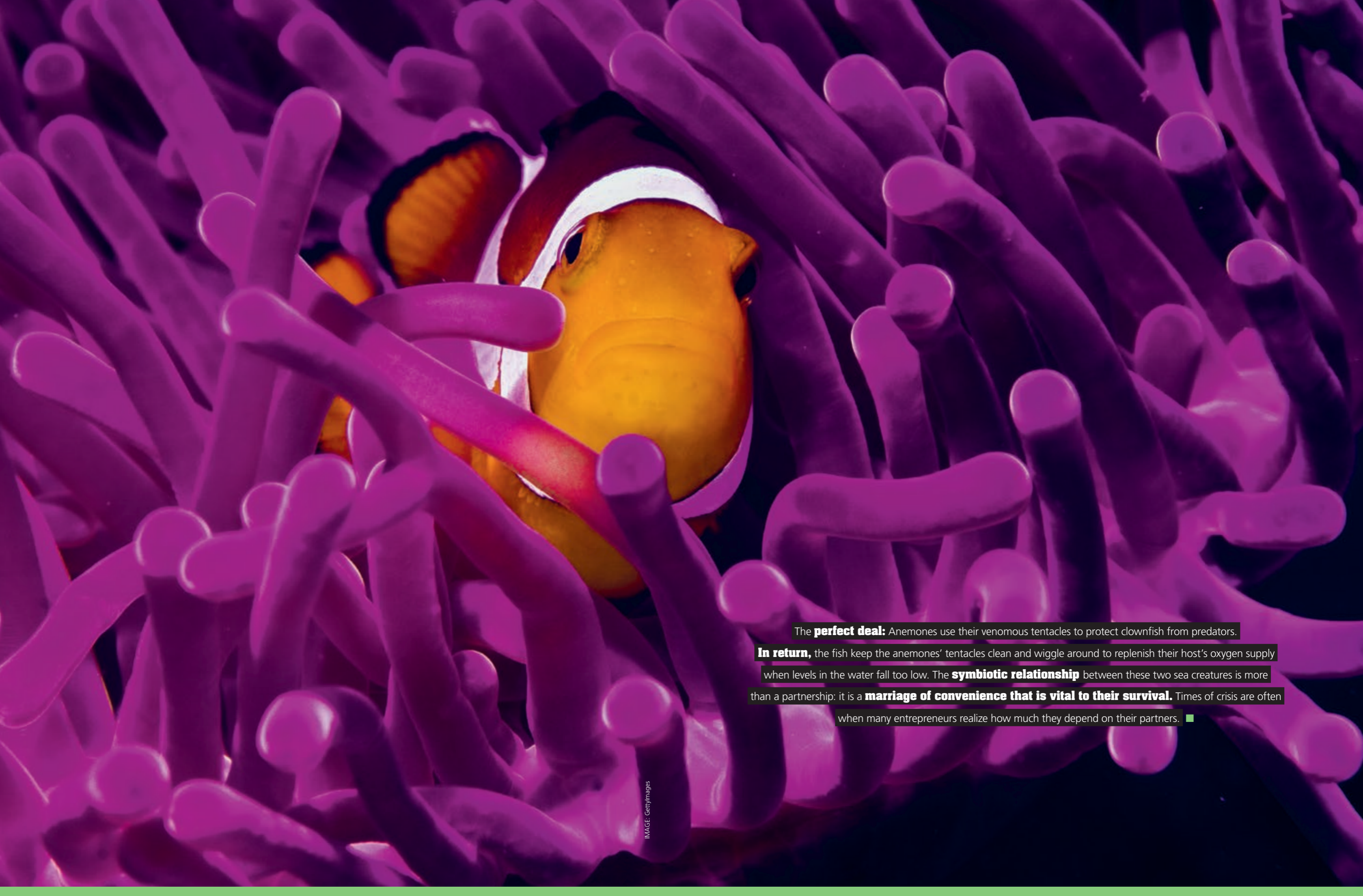
13# 2021 PARTNERSHIP

03 Sheridan

Cowboy state 4.0:
why EMIT Technologies opted for connected sheet-metal fabrication on the Wyoming prairie

04 Ditzingen

Two euros, please:
why we might soon be paying for our machine tools on a pay-per-part basis



The **perfect deal**: Anemones use their venomous tentacles to protect clownfish from predators.

In return, the fish keep the anemones' tentacles clean and wiggle around to replenish their host's oxygen supply when levels in the water fall too low. The **symbiotic relationship** between these two sea creatures is more than a partnership: it is a **marriage of convenience that is vital to their survival**. Times of crisis are often when many entrepreneurs realize how much they depend on their partners. ■



The **comedy duo** Stan Laurel and Oliver Hardy epitomize the idea of helping each other **through thick and thin.**

Up until the 1950s, they made over a hundred films, many of which are still popular today.

They were **close partners** on set, and **lifelong friends** outside work. Their real-life relationship was based on a quality that also makes for great partnerships in the business world: **solid mutual trust.** ■



Countries seem to **cooperate** better in space than on Earth. Some 60 years ago, during the **Cold War**, space travel primarily concerned the race between the US and Russia to get to the moon. Nowadays, cooperation is the norm. Representatives from NASA, the Russian space agency Roscosmos, the China National Space Administration (CNSA), the Japan Aerospace Exploration Agency (JAXA) and the European Space Agency (ESA) all work together on **projects** and send their cosmonauts on joint missions to the International Space Station (ISS). There's a lesson there for entrepreneurs: even **former rivals** can turn out to be **valuable partners**. ■



IMAGE: Frederik Dulay-Winkler

TRUMPF believes in **Partnerships**

Dear readers,

Partnerships play a big role in today's business world – perhaps the most important role of all. Just think how the pharmaceutical industry has responded to the coronavirus pandemic, with partnerships formed between BionTech and Pfizer, CureVac and Bayer, Moderna and Lonza, and AstraZeneca and the Serum Institute. Without strong partnerships between these companies, mass vaccination – and victory over the virus – would be impossible.

Of course, the idea of being “stronger together” isn't limited to big pharma. This simple truth is just as applicable to providers of connected manufacturing solutions like TRUMPF. Laying proper foundations to optimize productivity in our customers' factories also means integrating solutions and technologies within the overall system that complement and enhance TRUMPF's products. These might include technologies such as deburring and straightening, automated part transfer between machines, or intelligent storage systems that feed materials straight into the machine. These are areas where companies such as Jungheinrich, ARKU, STOPA and others have far more experience than us. In the partnerships we have established with these companies, one of our shared goals is to standardize interfaces. This is a key requirement if we wish to use our TruTops Fab software to control the manufacturing process across the entire value stream and create maximum transparency. You'll meet some of our partners in this issue of TRUe – and you can also check out the solutions they offer at our new smart factory

EDITORIAL



in Ditzingen, which you are welcome to visit at any time.

Our partnership with German reinsurance company Munich Re goes one step further. We have joined forces to develop an “Equipment-as-a-Service” model that will enable sheet metal fabrication companies to use our fully automated laser machines without having to buy them. Instead, they will simply pay a prearranged price for each cut part on a pay-per-part basis. You can read more about the advantages of this partnership model in our interview on page 30 with Torsten Jeworrek, Member of the Board of Management of Munich Re, and Mathias Kammüller, Chief Digital Officer at TRUMPF.

The added value of partnerships is echoed by our customer Robert Áncsán, who founded his own company when he was just 20 years old. Our article on page 12 explores how his grandfather, himself an entrepreneur, gave him invaluable advice on the journey toward connected manufacturing. Meanwhile, the company EMIT reveals how a close partnership with its employees lies behind its success in building a high-tech manufacturing company on the Wyoming prairies in the USA. On page 18, we hear from a successful duo of CEOs from Saxony-Anhalt, Marcel Wendt and Hatem Drira, whose employees are benefiting from paperless production fueled by our connected solutions. Right now, we are busy expanding our range of solutions to include two new digital assistants (page 17), both of which stem from a partnership TRUMPF forged with a company that specializes in this field.

As you can see, choosing TRUMPF gets you more than just a machine vendor. We give you access to a network of partners who can help you safeguard your future – and expand your business.

YOURS, HEINZ-JÜRGEN PROKOP
Chief Executive Officer Machine Tools

TRU^e

Table of contents

#13/2021

PARTNERSHIP ...



...in Schopisdorf

02

It took just a few years for Hatem Drira and Marcel Wendt to establish their modern factory on the outskirts of Saxony-Anhalt. Their success is a story of sheet metal, data, and how differences between people can strengthen their bond.

Page 18



...in Debrecen

Hungarian entrepreneur Robert Áncsán founded a high-tech company when he was just 20 years old. The digital native's path to success relied on robots, software – and some useful advice from his grandfather.

Page 12

01



...in Ditzingen

In the future, sheet metal workers will have machines that come at no charge. With the pay-per-part model from TRUMPF and Munich Re, they will only pay for each cut part produced. The advantages of this digital business model are the all-inclusive service – and the costs.

Page 30

04



...in Sheridan

EMIT Technologies have achieved success in the challenging environment of the North American prairies. Where others see only Wild West charm and coal mines, EMIT focuses on fabricating cutting-edge catalytic converters and compression systems for natural gas plants. Attracting skilled workers to such remote locations can be tough, so CEO Osborn relies on welding, connectivity – and chopping wood.

Page 24

03



Editorial 08

01 The grandfather connection 12

02 Power of two 18

03 Chopping wood in the smart factory 24

04 Pay-per-part 30

BIZ+ shortcuts 34

Cobot makes welding easier 36

Help from afar: solving problems with Visual Assistance 37

What happens in a smart factory? 38

05 Future: Partners for life 40

TEC+ shortcuts 44

Sharing manufacturing experience 46

Smart savings with TRUMPF part optimization 48

pARTgallery 49

Column 50





01

HUNGARY

Partnership in Debrecen

THE GRANDFATHER CONNECTION

Robert Áncsán was just 20 years old when he founded **AR-Robotics** in the Hungarian city of Debrecen.

He started out providing design engineering services for sheet steel products. Since then, his company has expanded to cover the entire sheet metal process chain.

Today, his **smart factory** places him firmly as a leading innovator in Eastern Europe – all thanks to his resourceful 84-year-old grandfather.

Robert Áncsán leans back in his chair: “The less human intervention you have in production, the lower the chance of error,” says the 28-year-old entrepreneur. “Conventional manufacturing was never where I wanted to be; AR-Robotics focused on automation and software right from the start.” Áncsán even chose his 16 highly qualified employees based on their shared philosophy of a highly efficient smart factory. Yet, without his grandfather, it might all have come to nothing.

Metal in his blood

Even today, 84-year-old Mihály Áncsán is still an active and important figure in the Hungarian metal business. In 1990, he set up the company Techno-Trade in Debrecen to supply customers with raw sheet metal. Techno-Trade works closely with a steel mill in nearby Košice, enabling it to supply blanks in a range of custom sizes and material compositions. Recently, more and more of his customers had been asking Mihály Áncsán for help with CAD part design. Thinking that might be a good option for his grandson, who had studied electrical engineering, he said to Robert: “Why don’t you just set up a company on your own?” Robert was only 20 at the time, but, keen to give it a go, he launched AR-Robotics as a one-man design engineering company. A few years passed, and Robert Áncsán decided he wanted to start producing parts as well as designing them. “Robert is so determined and loves creating things,” says Mihály Áncsán proudly. “That’s why I backed his plan to expand his company by adding a job shop to produce sheet metal parts.” For Robert,



Experienced advice: At 84, Mihály Áncsán continues to be a key figure in the sheet metal fabrication business. He encouraged and supported his grandson Robert’s efforts to set up a smart factory.

“ At AR-Robotics, I put the focus on **automation and software** right from the start. ”

Robert Áncsán, CEO of AR-Robotics

this was the perfect solution: “Techno-Trade and AR-Robotics work closely together. My grandfather has so much experience in this business – and his connections to other companies made it far easier for me to get my job shop up and running.”

Primed for data

In 2018, Áncsán began fabricating parts with two flatbed laser machines and two press brakes – all of them made by TRUMPF. “Many of my grandfather’s business partners use TRUMPF machines,” he says. “They told me the machines were robust and reliable, and their enthusiasm won me over.” But his entrepreneurial spirit was focused on more than just good machines. He has a keen interest in innovative software that makes manufacturing faster, more efficient and more transparent. So he approached TRUMPF to get detailed advice on their digitalization solutions.

The modular TruTops Fab manufacturing execution system immediately caught his eye, but it hadn’t yet been released in Hungary in 2018. “The experts at the TRUMPF subsidiary in Hungary recommended that I should start by creating an interface between my existing ERP system and the TruTops Fab bus system,” says Robert. That enabled me to install TruTops Monitor and hook up my existing machines.” TruTops Monitor provided the basis for Robert Áncsán to establish his first smart factory solution on the shop floor. This employed a condition monitoring module to record and analyze machine data – such as error messages, causes of faults and stoppages – and use that data to avoid downtime. But that was only the beginning.

IMAGES: Daniél Végel

“ Robert is so determined and loves creating things. That’s why I backed his plan to expand his company by adding a **job shop to produce sheet metal parts.** ”

Mihály Áncsán, CEO of Techno-Trade

Machines at full capacity, paperless manufacturing

The next step came in June 2020 when Robert became one of the first customers in Hungary to incorporate the TruTops Fab Quickjob module in his production process. “Our company was successful right from the start,” he says. “But with so many orders and such a complex mix of materials and parts, we were starting to experience processing bottlenecks, a lack of transparency and underutilized machine time. Quickjob improved the situation from one day to the next.” The TruTops Fab Quickjob module controls and manages production jobs, with machines automatically reporting back on their job status to ensure the best use of available machine capacity.

To maximize his opportunities right from the tender stage, Robert Áncsán also opted for the TruTops Fab module Calculate. “This stores all the relevant data such as the machine hour rate, the overhead rate and technology data,” he explains. “The part cost calculator takes all that into account automatically, which saves a lot of time when we are calculating costs.”

With his latest addition – the TruTops Production module – Robert Áncsán now has better control over all his production operations,

from programming, laser cutting, bending and welding to assembly and quality assurance. Áncsán is delighted with the results: “We’ve now gone completely paperless. We have a well-structured workflow, optimized machine utilization, plus the end-to-end transparency we need to accelerate our manufacturing processes. Obviously my employees had to learn how to use these programs, but they are delighted with how quickly they have improved our manufacturing processes.” Áncsán’s customers are equally enthusiastic when he takes them on tours of his production facilities: “Using modern processes builds trust – that’s how we’ve managed to acquire some major international customers even though we’re such a young company.”

On the same page: Mihály and Robert Áncsán both believe that modern machines and a high degree of automation are what you need to achieve success on the international stage. They are taking a rapid, step-by-step approach to digital transformation at AR-Robotics.



Digitalization is the future

As well as introducing new software, AR-Robotics recently added another bending machine and a TruMatic 6000 fiber. Robert Áncsán still has a lot of plans, so all the machines are equipped with automation interfaces: “I want to keep investing in machinery and automation components, because that’s where the future lies.” Another TruTops Fab module – Storage – will be up and running by the end of the year. In tandem with the warehouse management software, Áncsán soon hopes to hook up his machines to a Stopa storage system. “In recent months we’ve taken a rapid, step-by-step approach to the digital transformation of our production processes,” he says. “There’s no way this would have happened so quickly, and so smoothly, without the advice we received from our expert partners at TRUMPF. My grandfather was right when he taught me all those years ago that strong and reliable partners are the backbone of success.”

“ My grandfather was right when he taught me all those years ago that strong and **reliable partners** are the **backbone of success.** ”

Robert Áncsán, CEO of AR-Robotics



01

A closer look:

The new digital assistants

Robert Áncsán, founder of AR Robotics, already uses a number of software solutions and machines from TRUMPF’s broad portfolio. Two software solutions that his production and logistics teams are yet to try are TRUMPF’s **digital assistants**. Here we take a closer look at how they work.

In brief

The new digital assistants

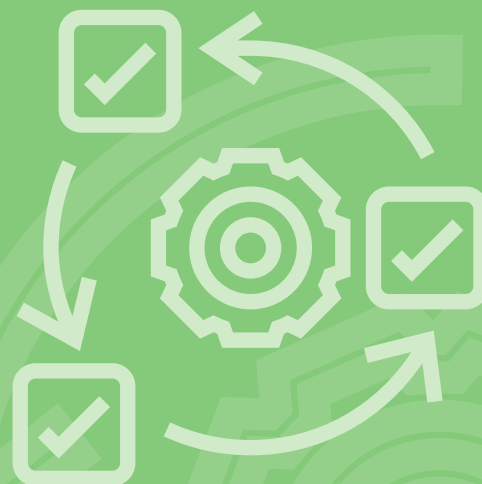
The digital assistant **Workmate** supports machine operators and workers at manual workstations in their day-to-day work. A second digital assistant helps logistics staff deal with job-related issues concerning materials, inventories and storage locations. Both tools save time and help people work more efficiently and independently.

Workmate is a digital assistant for production workers. Accessed on a tablet, the software assists them with everyday tasks such as job scheduling, job preparation, part picking, machine setup, job completion and sorting of finished parts. The software can also be used for material postings and to send digital notifications of scrapped parts.



Clear overview at all times

Workmate provides a constantly updated overview of how each job is progressing. Whenever a job requires a new material or tool change, Workmate gives detailed instructions and guidance to help the operator equip the machine with the right tools for the job and make sure everything is set up exactly right. Workers can see at a glance which parts they need to put in the machine and where those parts are stored. Once the job is completed, Workmate helps the operator to remove, stack and label the finished parts properly.



Assistance with manual work

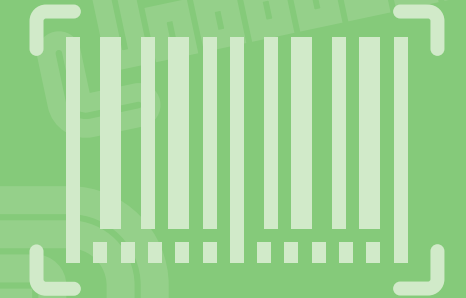
Workmate also provides detailed job instructions for manual workstations, such as bending, welding and assembly, helping workers to move confidently from one step to the next.

Software for multiple skill sets

Workmate is designed for both experienced and unskilled workers. In both cases, it enables them to work independently and efficiently by following step-by-step instructions. The software helps save time and avoid errors.



The software solution for logistics is a digital assistant that provides support with material management and material handling tasks to production workers and/or logistics staff on the shop floor. In combination with Workmate, this digital assistant provides optimum support to shop floor manufacturing staff in their day-to-day work and helps them complete tasks more efficiently.



Operational use

The digital logistics assistant helps workers deal with everyday challenges related to materials and storage locations. Using the digital assistant on a tablet, logistics workers can carry out key tasks on-site, including initiating postings and managing material stocks, containers and storage locations. The assistant also makes it easy to perform other tasks such as searching for materials and checking individual and over-

all stock levels. It includes a useful built-in scan function, which can read barcodes or QR codes and access whatever additional logistics functions they link to. Combined with Workmate, this offers the double benefit of synchronizing information on the job and material status and making this digitally accessible.



Mobile use

The digital logistics assistant can be used on the move and is optimized for tablets. Workers can access the software directly on the shop floor and during manual warehousing tasks. It provides a quick, efficient and simple means for each individual to organize their logistics activities

Customer details

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Machinery

- 2x TruLaser 5030 fiber
- 1x TruMatic 6000 fiber
- 1x TruBend 5170
- 1x TruBend 7036

02

GERMANY

Partnership in Schopisdorf

POWER OF TWO

Based in Schopisdorf in the German state of Saxony-Anhalt, ABP Innovative Blechbearbeitung GmbH is a relatively young company – yet it puts many established SMEs **in the shade**. For its two CEOs, the company's **ongoing success** is based not only on a strategy of connected manufacturing, but also on the lessons learned from a **failed** start-up.





Hatem Drira is passionate about his work: He takes every opportunity to check how things are going and swap ideas with his employees.

It wasn't so long ago that Schopisdorf was a struggling industrial area. But thanks to companies like ABP, the town is now looking to the future with confidence, a sentiment also shared by Marcel Wendt and Hatem Drira. The two CEOs of ABP – Innovative Blechbearbeitung first met while working for their former employer – and they soon came to the same conclusion: “We realized we could do the work faster and better, but only by sticking together and staying local,” says Hatem Drira.

Differences make us stronger

First impressions of the two CEOs suggest they are as different as chalk and cheese. “When we started out, we had different views on all sorts of management and organizational issues. But those differences have actually made us stronger. We’ve succeeded in combining the best of two cultures,” says Marcel Wendt. Structure, flexibility and serenity – each of the founding partners brought their own strengths to the table. When Tunisian-born Hatem Drira came to Germany to study 20 years ago, he probably didn't expect to end up running a company with 50 employees in the country he now calls home – but that's how things worked out. “I only go back to Tunisia on special occasions. People there see me as German, while most people here still see me as Tunisian,” says Drira. He has now lived in Germany longer than he did in Tunisia – and he has grown to love his adopted country.

Marcel Wendt likes the attitude of the local people: “I like how people here want to make a difference.”

People who make a difference

Marcel Wendt and Hatem Drira launched ABP – Innovative Blechbearbeitung in 2013 in the Saxon district of Jerichower Land, and the company continues to be in a league of its own in this region. That has, however, never stopped them forging ties with more traditional companies in their vicinity – ties that go a lot deeper than a mere business relationship. The highlight of their working day is the lunch they share with colleagues from across the industrial estate. “It's great to take a short break and leave our work behind us for a while. I like how people here want to make a difference,” says Wendt. Schopisdorf is close to where he lives and was the logical choice of location to establish their company. “I spent years driving past this site before we decided to set up ABP. It looked perfect, because it already had key metalworking services such as hot-dip galvanizers and powder coaters. So many great companies have chosen to base themselves in the former East German states in recent years.”

“ It's these machines that give us the **confidence to approach customers and optimize how their parts are designed.** ”

Marcel Wendt, CEO of ABP – Innovative Blechbearbeitung



IMAGES: Fredrik Dulay-Winkler



Beware of wildlife! Entering the ABP site is not for the faint-hearted. Visitors are greeted by several dinosaurs, including this T-Rex. A local theme park stores some of its attractions here over the winter break.

Sheet metal for a smart grill

It's certainly been a rocky ride since they bought this 33,000m² plot of land in Schopisdorf. At first, they worried they might never be able to exploit its full potential. Since then, they have set up two production halls, won several industry awards and installed over a dozen TRUMPF machines. “It was a steep learning curve for us both in the first few years,” says Hatem Drira. “But that's why we came into this as partners. It means we can talk everything through before deciding on the best way forward.” Each of them has gradually taken on specific roles: Wendt trained as a metalworker and handles most of the planning and purchasing tasks, while Drira tends to handle the day-to-day administrative work. “But the way we divide our work isn't set in stone; it's all pretty flexible!” says Wendt. So flexible that, a few months ago, while scrolling through his social media channels one evening, he came

across a start-up looking for crowdfunding for the “smartest grill”. Wendt thought the product looked great and immediately offered hands-on support. The collaboration eventually turned into a contract for volume production – a good example of what ABP can achieve by being receptive to their surroundings and striving to improve whatever they can.



At a glance: Marcel Wendt loves walking the shop floor – but it never hurts to take a quick look at the TruTops Fab app.



“ We talk everything through before deciding on the **best way forward.** ”

Marcel Wendt, CEO of ABP – Innovative Blechbearbeitung

“Three is one too many”

So far, their two-way partnership and flexible approach to business has worked well. In fact, it was so successful that the duo decided to take another bold step. A few years ago, after building up enough of a financial buffer, they decided it was time to set up another business. Keen to spread the risk a little, and based on the geographical location of the new company, they opted to take on a new partner as a third CEO. But they soon realized that, with neither of them present on-site, things were not turning out as planned. “Three is one too many,” says Wendt. Drira nods;



“we’re like an old married couple”, he adds wryly. Wendt likes to keep things low-key and comfortable. He enjoys being on-site so much that it is not unusual to see his wife, baby and dog all in the office with him.



Swift progress: It only took a few years for Hatem Drira and Marcel Wendt to build a successful company with 50 employees.

TRUMPF from the word go

As well as their success as a hard-working duo of CEOs, another constant in their careers has been TRUMPF. Both had come into contact with machines made by the Ditzingen-based manufacturer in their previous jobs, and they agreed that no other systems could even compete. They started out with a TruLaser 3030 and a TruBend 5230, and have added many more over the years: “We’re always looking for new, exciting technology that will help drive the company forward. TRUMPF has often given us a glimpse into the future by letting us try out innovative test machines and components, and now we couldn’t imagine being without them! It’s these machines that give us the confidence to approach customers and optimize how their parts are designed.” ABP has over a dozen TRUMPF machines connected up via TruTops Fab. “It makes sure we don’t miss anything, which is great! If something gets stuck, I can get things working again in a matter of minutes,” says Wendt.

ABP and TRUMPF have scored real success with their innovative approach to sheet metal fabrication, automation and digitalization – and that’s a partnership that’s set to continue. At the same time the successful duo want to continue helping out their neighbors, so local companies can turn up with a sketch under their arm and get exactly the part they need in no time.

IMAGES: Frederik Dulay-Winkler

02

A closer look:

Service app

Just like ABP – Innovative Blechbearbeitung, many sheet-metal fabricators rely on **digital solutions from Ditzingen** to optimize complex processes and large-scale machinery. Based in Saxony-Anhalt, ABP put its faith in the **TRUMPF Service app** to help manage its fabrication business, making it much easier to spot and rectify faults.

In brief

Service app 2.0

The more machines a company has, the more they appreciate the benefits of the TRUMPF Service app. Long downtimes and time-consuming service requests occur far less frequently for app users. The Service app from Ditzingen now includes four additional features to make it even easier to keep faults and problems at bay.

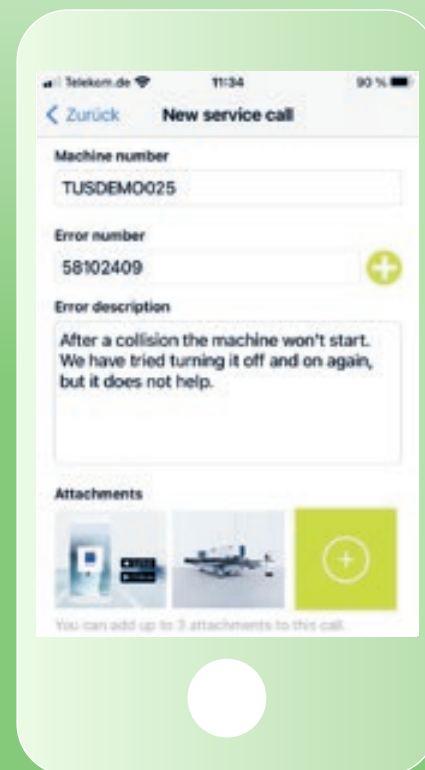


Dedicated technical guides via a QR code:

All too often, machines malfunction when there is nobody around to fix them, especially on night shifts. So what should a company do if they can't reach a TRUMPF service technician until the next morning? In the updated version of the Service app, some error messages displayed on TRUMPF machines include a QR code that links to a dedicated technical guide for that error code. This gives workers the chance to rectify errors and avoid downtime even when there is nobody else around to help.

A picture speaks volumes:

Some time ago, TRUMPF introduced a feature allowing users to take pictures in the event of a fault and to send these to a technician via the Service app. A number of customers have given feedback saying they would like to continue having access to these images even after the problem has been solved. This feature has now been implemented.



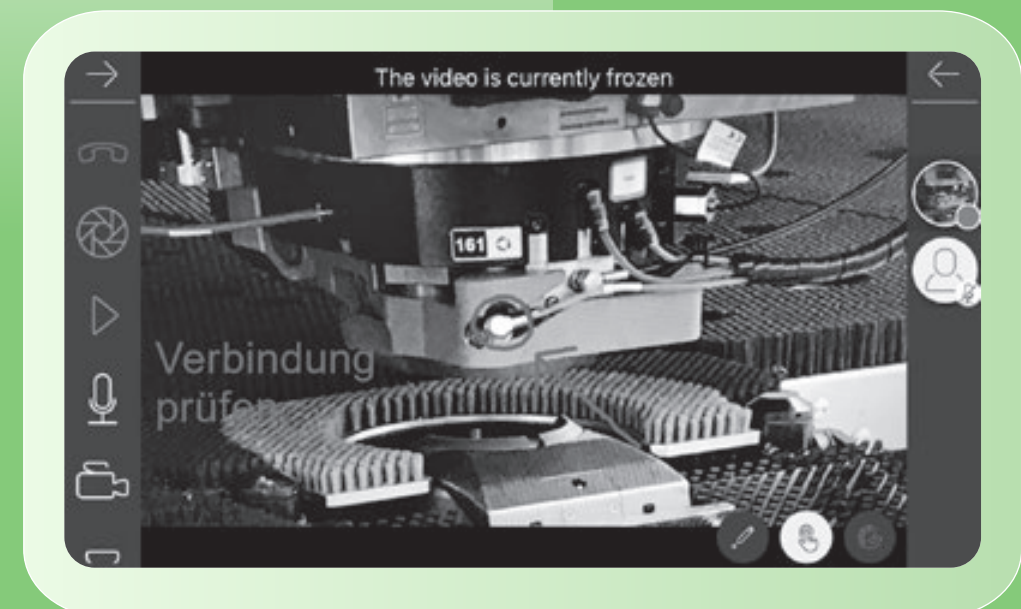
Customer feedback:

Feedback is important. As already proven, it can help make it even easier for customers to sort out the kind of annoying faults that are always a hassle to deal with. From now on, the new version of the Service app will solicit feedback from customers once a service case has been resolved. This will allow TRUMPF to continue adding useful features and processes.

SERVICE
TRUMPF

On-screen assistance from Ditzingen:

Deploying service technicians to customer sites is a complex and time-consuming business. Yet complex faults and problems with machines are hard to describe over the phone. The new version of the Service app allows service technicians working on a service request to set up a direct video call with the employee on-site. The calls include interactive features, such as sketching and highlighting points in the video stream, so even the most complicated situations can be quickly described and clarified.



Customer details

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Machinery

- 2x TruLaser 3030
- 1x TruLaser 3030 fiber with TruStore
- 1x TruMatic 1000 fiber
- 1x TruBend 5230 with ToolShuttle
- 1x TruBend 5085
- 1x TruBend 7036
- 1x TruLaser Robot 5020
- 1x TruArc Weld 1000
- 1x TruMark Station 5000
- 1x TruLaser Tube 7000 fiber
- 1x TruLaser Tube 5000 fiber

03

USA

Partnership in Sheridan

CHOPPING WOOD IN THE SMART FACTORY

Fabricators don't have to be in major urban centers to be successful. **EMIT Technologies** is based in the wide-open prairies of Wyoming – yet it is seen as a pioneering force in its industry. **Digital manufacturing** and robust partnerships across thousands of kilometers easily make up for any downsides their location may have, says CEO Casey D. Osborn.



The small prairie town of Sheridan in the north of the U.S. state of Wyoming lies no more than a hundred kilometers from the craggy heights of the Rocky Mountains. Once home to Buffalo Bill, the town makes its money from coal mines, winter sports and the romance of the Wild West. Yet Sheridan has also built a reputation for catalytic converters, compression systems and steel fabrication. Casey D. Osborn, owner and CEO of a local industrial fabricator, argues that its remote location is actually one of its strengths. "I don't think we would have the same corporate culture if we were based in a metropolitan or industrial region," he says.

A core business with significant fluctuations

As a second-generation owner, he is determined to keep the company strong despite its relative isolation – and that means embracing diversification. "Our core business – compression systems for natural gas plants – experiences significant fluctuations," he says. "That's why we decided to branch out by offering our material processing and fabrication skills to other industries as a custom manufacturer and job shop."

Minimal market research

Osborn first heard the name TRUMPF in 2009. "We needed some new machine tools and were looking to boost automation and integrate our material store," the CEO recalls. "We did some minimal market research, but TRUMPF immediately stood out as the best option. We liked how they were so receptive to our ideas, and we were impressed by the sheer variety of their portfolio and their willingness to engage with our modest, small-scale business. We've been happy ever since and never had any reason to look elsewhere."



Chicago smart factory offers inspiration

When EMIT decided to transform itself into a smart factory in 2017, TRUMPF was immediately on hand to help. Aiming to establish a completely digital manufacturing system, Osborn merged his two existing sites into a new building covering a good 10,000 square meters. His team drew on various sources of inspiration, including the TRUMPF smart factory in Chicago. They invested in TruTops Fab software, a material storage system from STOPA and a TruLaser that slotted seamlessly into the fully integrated concept.

Pushing the envelope

Osborn is clearly proud of their new equipment – especially since it allows the company to make inroads into new markets. "Great tools don't end up being expensive. Obviously, they do require some investment, but they also motivate employees to perform at

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 " We want our people to have the **confidence** they need to experiment and push the envelope! "

Casey D. Osborn, CEO of EMIT Technologies

IMAGES: Matthew Idler

Flexibility: EMIT is a long way from any major industrial region. So it often comes down to the employees themselves to create the solutions their customers need.



their best. They become a kind of extension of our creativity and work ethic." TRUMPF machines are designed so you can get the best out of them, he says. "And we want our people to have the confidence they need to experiment and push the envelope of what those machines can do!"

Facing challenges head-on

At the end of the day, survival in the Wild West is about being resourceful. "A major reason we have grown and acquired skills is because we couldn't simply cross the street to get hold of whatever expert we needed," Osborn says, reflecting on the pros and cons of their location. If the EMIT team wants to respond fast to a customer request, they generally have to come up with the solution themselves. "We'll figure it out," is the company's go-to motto. "Challenges need to be tackled head-on, with no excuses. You have to believe you can do it!" Osborn sees clear parallels to TRUMPF in that attitude: "I don't see TRUMPF as a company that just sticks to the status quo. They choose to take calculated risks and never take the easy path."

Chop wood to make a fire

Another of EMIT's mottoes is "chop wood". "Obviously we don't actually make anything out of wood, but the idea behind it is to embrace simplicity. Fire and water are the keys to survival. But if you don't chop wood, you don't have a fire," Osborn says. That's the attitude he expects from EMIT employees on both a personal



and professional level. But he admits hiring people isn't always easy, because it can be tough to fuel their enthusiasm to move to the prairie. "What matters is finding people who enjoy what our community has to offer and appreciate this kind of lifestyle."

EMIT takes responsibility

Osborn is referring not only to the rural setting and the mountains but also to the local people. His parents, who founded EMIT 20 years ago, now devote all their time to the company's foundation, which provides support for early childhood education, seniors and environmental projects in Sheridan and the surrounding area. Osborn sees this as one of EMIT's key responsibilities as a community member: "There's a difference between just being an employer, and being a successful employer that is firmly embedded in the local community."

Production and administration under one roof

The ability to work as a team is another key survival skill – in the community, in the economy at large, and within a company. "Nothing works unless you have good relationships between sales, development, manufacturing and the supply chain," Osborn says. He explains how the new building has brought administration and production under one roof for the first time. It was designed with a single entrance, because Osborn didn't want people saying "that way to the shop floor, this way to the offices". As he puts it, "Nothing was allowed into the design of this building that didn't clearly help production, the supply chain, sales and, ultimately, the customer."



Shared direction: EMIT's new smart factory combines production and administration under one roof. That's the only way to get great results, says Casey D. Osborn.

A partner who goes the extra mile

EMIT's collaboration with TRUMPF has been a genuine success story, which Osborn believes comes down to a combination of community spirit, commitment and courage. "I think we've already built a strong partnership." He argues that TRUMPF has remained a family business at its core, so it still has the attitude of wanting to give something back to society. The two companies also have the same inherent understanding of high quality standards. "It's great to have a partner who you know will never let you down." That steadfast support was particularly in evidence when EMIT was planning its transition into connected manufacturing, says Osborn. "We never had any trouble communicating and developing the groundwork we needed to meet our goals. I've always appreciated that aspect of our partnership."



03

A closer look:

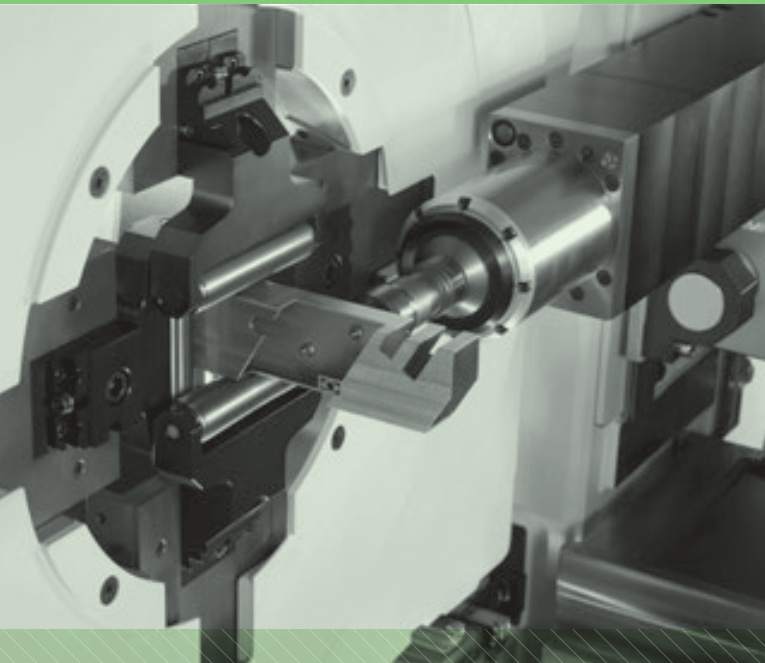
The TruLaser Tube 7000 fiber

Opting for a TruLaser Tube 7000 fiber paid off for EMIT Technologies. Not just because the company processes **such a large number** of tubes but also because the **fully automated material storage system** can supply the machine with **many other** materials. EMIT has discovered the **flexibility** of the smart factory – and there's no going back!

In brief

Laser tube cutting as a path to growth: the TruLaser Tube 7000 fiber

Conventional tube processing is coming under increasing cost pressure. That's where the versatility of the TruLaser Tube 7000 fiber can help make a real difference. From sawing, drilling and milling to deburring and thread forming, this machine takes on multiple steps in the process and combines them into a single operation. That pushes design to the next level and paves the way for new products, jobs and customers. Combining different steps reduces the organizational burden and opens the door to a wider range of parts. The TruLaser Tube 7000 fiber offers a fast and economical way to fabricate custom designs and small batch sizes. That gives the company a competitive edge – and gives customers exactly what they want.



The future lies in a single machine

It often takes several machines to turn a tube into a finished product. But the TruLaser Tube 7000 fiber can get the job done on just one. The technology package for tapping lets users cut tubes and tap threads without switching machine. That makes production faster and reduces the risk of errors.

Wide range of machining options

The TruLaser Tube 7000 fiber can also process XXL tube profiles. It can handle tubes with a diameter of up to 254 millimeters made from mild steel up to 10 millimeters thick.

Speed boost

The RapidCut feature gets things working even faster. It makes the most of the solid-state laser's high feed rates even on smaller contours, especially with thin materials. That speeds up tube cutting significantly and boosts the overall productivity of the machine.

Special-format wizard

The SmartProfile Detection feature uses a camera to detect profile position and alignment, even for unusual geometries. This function allows the machine's clamping system to automatically adjust to the position in which the profile is rotated and align the tube as required. This makes fully automatic loading a reality for both standard and special profiles.

Easily accessible

The ergonomic design of the TruLaser Tube 7000 fiber is truly impressive. By providing maximum accessibility, the developers have made it even easier to load and unload a diverse range of tube profiles.



Customer details

EMIT Technologies

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82801
USA

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www.emittechnologies.com

Machinery

- TruMark 3000
- TruMark Station 5000
- TruBend 3120
- TruBend 5230
- LiftMaster
- TruLaser 3040
- TruMatic 7000
- TruLaser Tube 7000 fiber
- STOPA storage system



04

GERMANY

Partnership in Ditzingen

PAY-PER-PART



Video call: A face-to-face meeting between Mathias Kammüller from TRUMPF and Torsten Jeworrek from Munich Re was called off due to the coronavirus. Video calls were the preferred choice in January, so the duo decided to make the most of meeting up online. They got along fantastically well – and are now planning to hold one of their next meetings at Munich’s Oktoberfest.

IMAGES: TRUMPF, Munich Re

TRUMPF and German reinsurer **Munich Re** have joined forces on a bold venture to launch **a promising new business model**. Under the **“pay-per-part”** model, customers will no longer need to purchase a machine. Instead, they will pay a previously agreed price-for each cut sheet metal part. The machine will still be installed on their factory floor, however, and **full service is included**. We spoke to Mathias Kammüller, Chief Digital Officer of TRUMPF, and Torsten Jeworrek, who has been on Munich Re’s Board of Management for 17 years. They told us why pay-per-part might soon take on a **major role** in the sheet metal fabrication industry.

TRUe: *This is a collaboration between mechanical engineers and mathematicians. How smoothly did that work when it came to setting up the partnership?*

Jeworrek: Technology companies and insurance companies are obviously very different, but we built a basis of trust right from the start. The first job was to learn each other’s language and conventions and understand our partner’s industry. Although there are some differences, it’s the things we share that are more important. Our two companies have similar values and focus on long-term customer relationships. We also share a set of business principles that emphasize fairness – so we immediately had a connection.

Kammüller: I couldn’t agree more. At first, we were surprised that a reinsurer would come up with this kind of idea. But we quickly saw the benefits of collaborating and soon found a common language. The trust was there right from the outset. You can only launch something new like this if both sides are determined to make it work as a joint effort.

TRUe: *What prompted Munich Re to contact TRUMPF in the first place?*

Jeworrek: About five years ago, when we were working on digitalization processes, we realized that the increasing use of sensors had the potential to provide manufacturing companies with more and more data on their machines. Combined with intelligent interpretation of the data, it was clear this would benefit our industry customers by reducing the number of traditional claims for damages. The knock-on effect of that would be a reduction in their

“ We believe this payment model is an attractive option for **companies of all sizes.** ”

Mathias Kammüller, Chief Digital Officer of TRUMPF

insurance needs. So, we started to think about how we could develop our business model in this segment. That’s how we hit on the idea of an integrated product that combines our skills in risk solutions, IoT technology and financing to create something far more comprehensive than a standard insurance solution. We aim to use our expertise to enhance the services we provide to manufacturing companies. That means giving them the best possible support in the digital realm and offering them smart solutions for connected manufacturing. Joining forces with a market leader like TRUMPF was the obvious next step, because we both have a competitive edge in digital connectivity



Kammüller: Munich Re got in touch at a time when we were putting a lot of our energy into sensor systems and machine data, because we knew they could have a tremendously positive impact on productivity. All those years of working with customers has taught us that investing in new machinery is one of the biggest obstacles for companies that want to move into new technologies. Munich Re's idea came at the perfect moment, and we were keen to take it forward.

TRUe: How exactly will customers benefit from this partnership?

Kammüller: Together, we have developed a new payment model for customers called pay-per-part – and we believe it makes the risk of investing in a new machine very low. For customers who want to cut sheet metal with a machine but are not bothered about actually owning it, this new model makes real financial sense. They don't have to bear the cost of purchasing a machine, yet they still get the chance to use state-of-the-art TRUMPF technology, and each sheet metal part they produce comes at a very good price. Our fully automated TruLaser Center 7030 laser machine is a great choice for this new model. It is fully digitalized, uses artificial intelligence, and can produce high-quality parts around-the-clock in an automated process; it also learns from its own data, which makes it unique in the industry – but it also requires a major upfront investment in the low seven-figure range.

Jeworrek: Every sheet metal fabricator wants a good machine with good service included, and that's exactly what TRUMPF offers. Together, we can offer customers a unique package: instead of just providing insurance to cover loss or damage, we actually offer a planned performance guarantee. Another benefit is that customers know in advance the price of each metal part they produce, which makes long-term planning much easier. They can respond quickly to unexpected changes, and they can flexibly tailor their production processes and costs to changing market conditions. There's no financial downside to this model for customers – quite the opposite, in fact.

TRUe: How do you mean? Surely Munich Re needs to make money from this too ...

Jeworrek: The customer benefits from the efficiency of this business model. We guarantee reliable machine availability and consistently high-quality part production. Many small and mid-sized

customers are unsure how capital-intensive they can make their business; in other words, what financing costs they will face if they want to grow their company. Pay-per-part is a very appealing option for these customers because we cover the investment in the machine, which keeps the customer's capital costs as low as possible.

Kammüller: With our fully automated laser machine, customers can be confident of getting the lowest prices. Our machines work at very high levels of reliability, in part because the new payment model includes full service and an affordable supply of materials.

“ I'm confident there will be significant demand for business models such as pay-per-part in 2030. ”

Torsten Jeworrek, Member of the Board of Management of Munich Re

TRUe: What size company is this new model most suitable for?

Kammüller: We believe pay-per-part is an attractive model for companies of all sizes. For example, it can help big companies to reduce their capital costs and plan their production more confidently. But pay-per-part is particularly interesting for smaller customers, because they often struggle to invest large sums in new machinery.

What matters is finding the best solution for each customer. That might mean paying for a new machine themselves, financing their purchase through our in-house TRUMPF Bank or, in the near future, opting for the pay-per-part model.



IMAGES: TRUMPF, Munich Re

TRUe: Processing machine data is a key aspect of pay-per-part – but how secure is that data?

Kammüller: We have set up a dedicated department to focus systematically on this issue. Protecting ourselves and our customers against cyberattacks is one of our top priorities. We can't allow the risk of hacking and viruses to become the next pandemic once the coronavirus is finally over!

Jeworrek: Obviously, protecting and securing data is a huge priority for us, and we take that just as seriously in regard to production processes. As the world's leading insurer of cyber risks, we have numerous experts on our staff. Being a reliable partner to our customers is our number one goal.

TRUe: Looking ahead, what role do you think pay-per-part will be playing in 2030?

Kammüller: By 2030, every machine will be digitally connected. That means we'll be able to use the data from all machines and processes to steadily improve machine productivity and quality. This will mostly happen autonomously through machine learning, and the goal will always be to help customers use their machines even more efficiently. There's no doubt in my mind that pay-per-part will play a key role in that scenario. We could easily see more than 30 percent of all machines running on that payment model.

Jeworrek: I would agree that's where we're heading – and I can give you three key reasons. The first is that we're now seeing a second big wave of digitalization. This comes on the heels of multiple new business models in areas such as retail, banking and media, all of which have been fueled by digitalization and the availability of data. The spotlight is on manufacturing processes in this second wave. This is an area that is rather more complicated, so the transformation will take longer to complete, in part because machine data is harder to interpret than personal data, for example. But, as a major industrial nation, we should be looking to play a pioneering role in this second wave, too.

The second reason is that we can expect to see a sharp rise in demand for services over the next few years, because manufacturing companies will have to react far faster to changing markets and evolving customer needs – and digital solutions will help them do that.

The third point is that owning machinery and systems will become less important if it doesn't lie at the heart of the business model. We're already seeing this in other sectors of the economy, such as leasing models in aviation. I'm confident there will be significant demand for business models such as pay-per-part in 2030.



How TRUMPF's and Munich Re's pay-per-part model works: The new "pay-per-part" model allows sheet metal fabricators to use the latest fully automated laser machines from TRUMPF on their own factory floor without having to buy or lease any equipment. Munich Re bears the investment risk, and the customer pays a previously agreed price for each cut sheet metal part instead of paying the machine's purchase price. This allows the customer to make their production processes significantly more flexible and react more dynamically to market changes. The full-service package includes comprehensive maintenance and warranty services designed to maximize efficiency and productivity on the shop floor.



Why connectivity is important: TRUMPF is using its fully automated TruLaser Center 7030 laser machine for the project's learning phase, which is currently underway. A wide array of digital connectivity features makes this machine the perfect choice. The TruLaser Center 7030 removes cut parts from the metal sheet using pins and suction plates, employing various techniques to prevent parts from getting jammed. If the first attempt to remove a part fails, the machine automatically repeats the process in slightly different ways to release the part. TRUMPF collects the data on which techniques failed and which succeeded in each case and uses a centralized AI solution to automatically analyze this data. The results of this data comparison can then be extrapolated from that individual machine and applied to all other machines of the same type. This enables other machines to learn the best way to remove a similar part at the first attempt. The machines continuously improve by harnessing data from hundreds of thousands of customer reports.

What the data reveals: The data enables Munich Re to reliably assess the risks involved and calculate the individual prices of cut parts. It also provides information on how many of each type of part the customer actually produced and determines whether the customer can get additional discounts on cut parts due to high capacity utilization. Equipped with this information, sheet metal fabricators no longer have to plan production capacity for a certain number of years to pay off the machine. Instead, they can respond flexibly to fluctuating orders without constantly questioning whether such a major purchase was worthwhile.



Munich Re is a leading global provider of reinsurance, primary insurance and insurance-related risk solutions. Since it was founded in 1880, Munich Re has been known for its unrivaled risk-related expertise and its sound financial position. This enables it to provide coverage for extraordinary risks such as rocket launches and cyberattacks. Munich Re is playing a key role in driving forward the digital transformation of the insurance industry. In doing so, it has further expanded its ability to assess risks and the range of services that it offers. Its tailor-made solutions and close proximity to its customers make Munich Re one of the world's most sought-after risk partners.



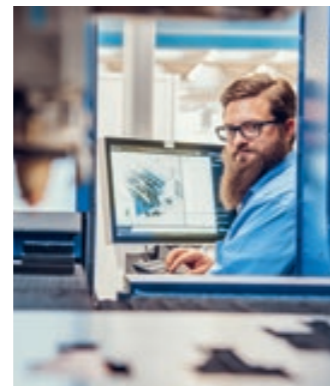
Fascinating facts and exciting innovations



Partnership in automated guided vehicles

TRUMPF will be joining forces with global automation specialist Jungheinrich to develop intralogistics solutions in the future. Jungheinrich's contribution includes driverless vehicles that transport sheet metal parts between machine tools and storage systems. TRUMPF has upgraded its TruTops Fab production software to prioritize transport jobs and forward them in real time to the Jungheinrich transport vehicles. The vehicles start and finish each job at a machine docking station or storage system, while sensors capture data on all the logistics processes throughout the sheet metal fabrication shop. By combining their expertise, the two companies can make the flow of materials more efficient. This joint solution has already proven its worth in TRUMPF's smart factories in Chicago and Ditzingen. Automating the trans-

port processes has significantly reduced the amount of time parts spend waiting at each machine.



Start-ups for digital sheet metal processing

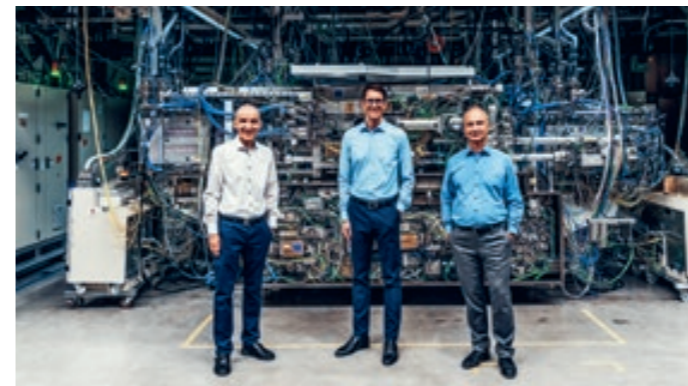
TRUMPF spin-offs Optimate and ScaleNC offer digital solutions for sheet metal processing. The two start-ups stemmed from TRUMPF's Internehmer-tum program, which allows employees to spend half their working hours developing business ideas and starting up their own company. Optimate is an online platform that helps to produce sheet metal parts more cheaply using artificial intelligence. ScaleNC prepares design drawings and assists sheet metal fabricators by performing NC programming tasks through a cloud platform. ScaleNC's services are primarily aimed at small and medium-sized enterprises. Both companies are based in Stuttgart and are independently operated.



TRUMPF and KIT join forces in educational partnership

TRUMPF and the Karlsruhe Institute of Technology (KIT) plan to embed digital approaches in students' courses to encourage the adoption of state-of-the-art sheet metal design. The two organizations have set up an educational partnership to create closer ties between research, teaching and industrial applications. To this end, TRUMPF is providing funding for the KIT Learning and Application Center as well as supplying machines and software. In the future, the Center will provide up to 1,000 students per semester with access to IT and production planning solutions and the corresponding TRUMPF machinery. Cutting-edge solutions will enable them to develop, design and manufacture their own products while benefiting from real-world design expertise. Construction of the Center is due to be completed in 2023.

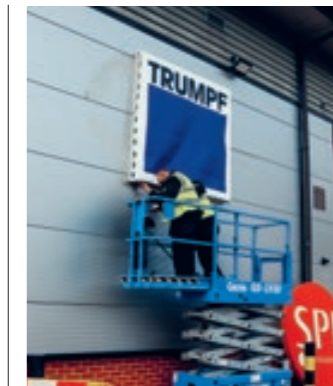
IMAGES: TRUMPF



German Future Prize awarded to TRUMPF, Zeiss and Fraunhofer

Last November, German President Frank-Walter Steinmeier presented the prestigious German Future Prize 2020. This year's prize went to Michael Kösters from TRUMPF, Peter Kürz from ZEISS and Sergiy Yulin from the Fraunhofer Institute in Jena for the development of EUV lithography. EUV lithography is central to the production of cutting-edge chips for the latest generation of smartphones and autonomous vehicles. The team of developers based in Baden-Württemberg and Thuringia has achieved a major leap forward in the development of EUV technology, paving the way for the manufacturing of microelectronic components with extremely fine structures. EUV manufacturing technology has gained a unique place in the semiconductor industry, strengthening Germany's and Europe's position in

this market. A key component is the world's most powerful industrial pulsed laser, which is made by TRUMPF. "We were delighted to see the German Future Prize go to Michael Kösters, Peter Kürz and Sergiy Yulin from TRUMPF, ZEISS and the Fraunhofer IOF," says TRUMPF Vice-Chairman and Chief Technology Officer Peter Leibinger. "With their inventive spirit, understanding of technology, perseverance and teamwork, they are the perfect example of how future technologies can be brought to industrial maturity through strong partnerships." The award comes with a prize money 250,000 euros. Michael Kösters has donated his share to charitable causes.



TRUMPF brand takes laser expertise to the next level

TRUMPF and SPI Lasers UK Ltd. will be working together more closely in the future. SPI Lasers UK Ltd. has been part of the TRUMPF Group since 2008 and has established itself as an expert in the development and manufacture of fiber lasers. In the future, the company will operate under the TRUMPF brand. Customers will benefit from the merger through synergies in the field of disk and laser technologies and from first-class customer service. Products from SPI Lasers have been available through TRUMPF sales channels since July 1, 2020.



TRUMPF to take over 100 percent of joint venture with SISMA

TRUMPF plans to acquire all the shares in TRUMPF SISMA S.R.L. in order to strengthen its Additive Manufacturing division. TRUMPF currently holds 55 percent of the joint venture. The remainder of the shares are held by SISMA S.p.A., a leading manufacturer of high-tech machines. TRUMPF SISMA was established as a joint venture in 2014 and is based in Schio in northern Italy. It employs some 60 people in the development and production of metal 3D printing machines. After taking full ownership of the joint venture, TRUMPF intends to continue SISMA's activities in the industrial, dental and medical sectors and cooperate in the field of 3D printing for the jewelry and fashion industry.

Cobot makes welding easier

TRUMPF's TruArc Weld 1000 is the perfect entry-level machine for automated arc welding. Its innovative use of a collaborative robot allows users with virtually no prior experience to create programs for parts. That makes welding quick and easy – even for less experienced operators.



Programming made simple: The user manually guides the robot arm along the weld path from one waypoint to the next.

Endlessly obedient, it follows the path indicated by the programmer's hand with painstaking accuracy. Staying perfectly steady, it never once goes off track. Meet the "cobot", a collaborative welding robot that has just started its next shift. Equipped with a Fronius welding source, the cobot allows itself to be manually guided over a component, before automatically carrying out the weld. This is much more efficient than welding by hand, because the quality and speed of the welding process remains consistent at all times. In two-station operation, the operator can set up the next part on one side while the robot is busy welding on the other.

Learning to use the cobot is child's play, both for the welding expert who creates the welding program and for the operator who works with the cobot to process the various batches of parts.

Plug and play

Sheet metal fabricators and metalworking shops can get the TruArc Weld 1000 robot welding cell up and running on their shop floor without requiring a TRUMPF service technician. Starting up the cobot is simple: a quick scan of the machine's QR code with a smartphone or tablet takes the customer to an e-learning tutorial. This provides step-by-step instructions on how to set up and operate the machine, including clear illustrations and



Collaborative approach to arc welding: The TRUMPF robot cell includes a welding source from Fronius.

IMAGES: TRUMPF

Help from afar

Solving problems with Visual Assistance

When a machine stops working, the key thing is not to waste any time! That's why TRUMPF uses video calls to give customers rapid access to a service technician. Visual Assistance lets the experts see exactly what the customer sees – so TRUMPF can solve the problem remotely in no time.

"Thanks to Visual Assistance, we're losing far less time and capacity to breakdowns," says Abdullah Bekki enthusiastically. As Chairman of the Board of Bekkiler Metal, he works in the city of Balikesir, some three hours from TRUMPF's technical service center in Istanbul. Founded in 1967, the company now employs 63 people in a 6,000-square-meter facility. Ten TRUMPF machines have joined the workforce since the year 2000, providing additional laser cutting, punching and bending capacity.



Visual Assistance recently proved its worth when an electronics system failed. "We were able to fix it very quickly," says Bekki. This illustrates how much simpler technical support has become: "With Visual Assistance installed on our iPads, our operators were able to speak directly to TRUMPF technical support in Turkey. Our experts were able to examine the malfunction just as if they were standing in front of the machine," says the Chairman of the Board.



User-friendly app: Visual Assistance from TRUMPF gets faults sorted quicker than ever before.

When trouble strikes, Visual Assistance is easy to get up and running. Once the app is installed on a smartphone or tablet, users can simply launch a video stream with their technical product specialist at TRUMPF. The app makes it easy to share live videos and images with the experts, and you can even freeze an image and insert labels and comments. The service technicians can highlight parts of an image to clarify where the fault lies and explain to the customer how to fix the problem themselves.

"We can rely on TRUMPF to get the job done!"

Abdullah Bekki, Chairman of the Board of Bekkiler Metal

Bekki sees Visual Assistance as a useful tool for quickly identifying and eliminating problems. "I would definitely recommend it to industrial companies that have a large number of machines," he says. The app makes it far quicker and easier to solve problems remotely. Yet, for Bekki, it feels like the technician is standing right in front of the machine. He sees the service as a positive step forward: "We can rely on TRUMPF to get the job done!"

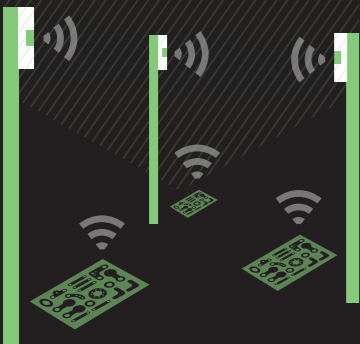
IMAGES: TRUMPF

Check it out!

WHAT HAPPENS IN A SMART FACTORY?

The TRUMPF smart factory in Ditzingen is a testimony to the company's comprehensive expertise in finding solutions for **digitalized sheet-metal fabrication**. A look behind the scenes.

A total of **80 satellites**, that use Track&Trace to locate individual orders, ensure an overview of the production process at all times.



50 employees demonstrate processes, machines and solutions to customers.

20

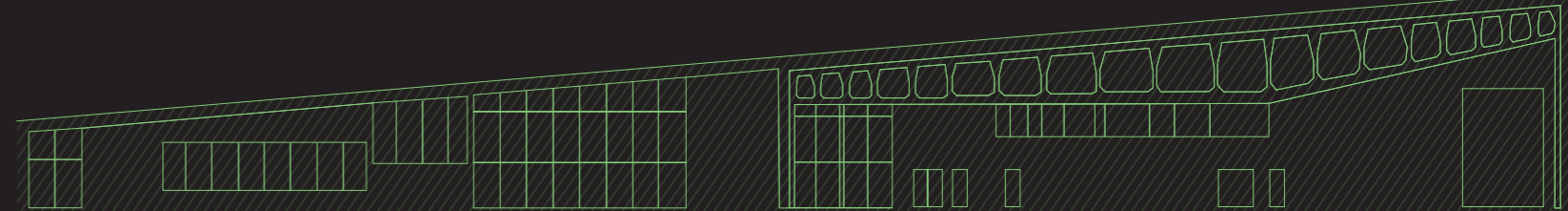
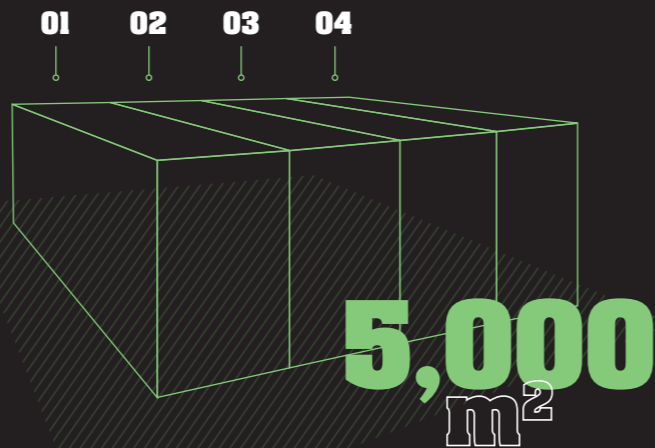
million euros

The machines and systems have a total value of **20 million euros**.

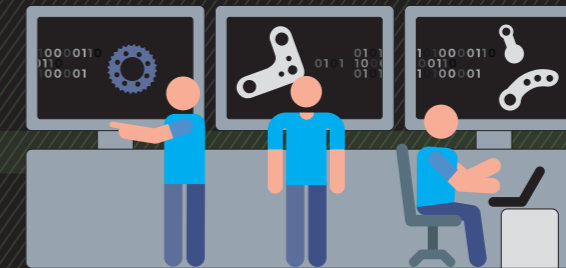
TRUMPF **partners** play a key role in the running of the smart factory. Examples include the driverless transport system from **Jungheinrich**, the leveling and deburring cells from **ARKU**, the **STOPA** large-scale storage system and the 3D inspection machine from **Inspecvision**.

The driverless forklifts ensure seamless transportation. They drive back and forth between **25 docking stations** in the smart factory.

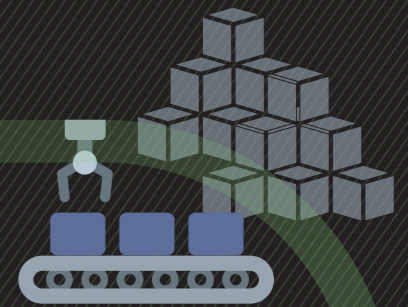
In an area measuring **5,000 square meters**, **30 machines** operate in **4 bays** in various levels of automation.



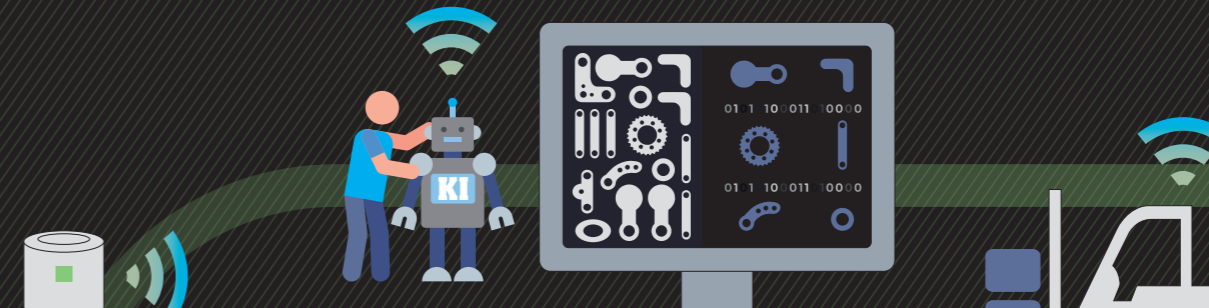
Mouse clicks instead of paper drawings: The customer orders the part online. Complex drawings on paper and tedious ordering processes are a thing of the past.



Efficiency instead of chaos: The control center is where all the data come together. This speeds up throughput times enormously.



Automation instead of muscles: The automatically controlled warehouse ensures that all of the required materials are always available.



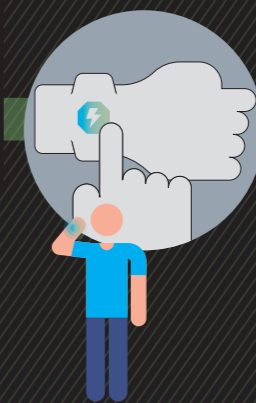
Simple instead of complicated: The AI assistant helps with sorting and prevents errors.

Knowing instead of searching: The orders can be located in the production process at any time.

Nonstop operation instead of downtime: When a machine stops, a notification is sent to the employee's smart watch, tablet or PC, and they can take immediate action.

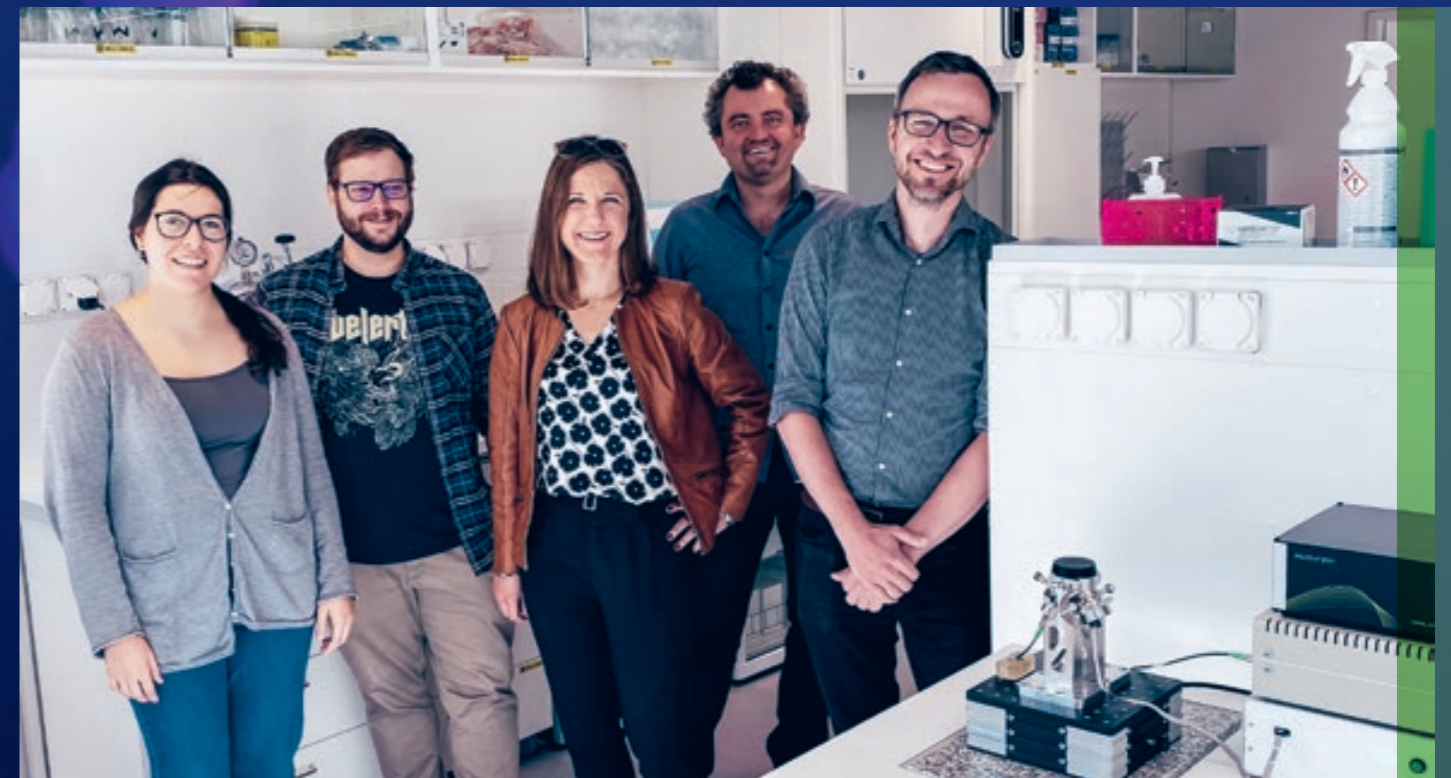


Production instead of logistics: The driverless transport systems bring the components to the next production step – employees can fully focus on production.



Fast instead of slow: When the component leaves the factory after a short lead time, this information is immediately sent to the control center and to the customer.

Antibiotics are a miracle cure against infections – but they are becoming less and less effective. **Swiss start-up Resistell** hopes its rapid test for evaluating **antibiotic resistance** will help prevent severe forms of disease. **TRUMPF Venture** is on hand to help as an experienced partner.



A good reason to smile: Danuta Cichocka and her team at Resistell AG took eighth place in the TOP 100 Swiss Start-up Award rankings. Their antibiotic susceptibility diagnostic device is on course for technical approval in 2021.

When dangerous bacteria attack the body, a rapid response is required – and finding the right antibiotic is crucial. Yet family physicians often lack the time and resources to test which drug would do the best job against the disease. They therefore tend to prescribe a broad-spectrum antibiotic. These get the job done because they cover such a wide range of bacteria. However, the body's response to antibiotics means that resistance starts to form after just one dose. Take broad-spectrum antibiotics multiple

times and their effectiveness could start to diminish, or even disappear altogether. In acute illnesses, such as sepsis, this may allow the disease to continue unchecked, with serious or even fatal consequences for the patient. If this resistance can be spotted in advance, medical professionals can act accordingly. That's where Resistell AG can help.

05
FUTURE

PARTNERS FOR LIFE

Fast and effective

Swiss start-up Resistell AG uses a new method to reliably identify which antibiotics will be effective in each case. Tiny light sensors measure how the microbes react to antibiotics. This allows physicians to accurately and rapidly predict a patient's antibiotic resistance and ensure they administer the right drugs. Resistell has also developed a device the size of a standard lab instrument that can determine resistance in less than an hour. "Our Resistell device is approximately the size of four shoe boxes, so it can be deployed in a regular physician's office. And that's exactly where these tests are most useful," says Danuta Cichocka, CEO of Resistell.

The new device has brought widespread application of their new method one step closer. Although it is already possible to measure antibiotic resistance, the nuclear microscopes required to do this are bulky and expensive, and usually only available to hospitals.



Danuta Cichocka is CEO and co-founder of Resistell AG. The 40-year-old scientist has a doctorate in microbiology and a master's degree in biotech, medtech and pharmaceutical management. Originally from Poland, she was fascinated by science as a child and demonstrated extraordinary talent, winning her first national chemistry competition aged just 14.



Just the right size: Resistell offers a standard lab-size device that will fit in any physician's office.

“Knowing which antibiotics are resistant can **save lives** every single day.”

Danuta Cichocka, CEO of Resistell

"It also takes several hours, or even days, to get the test results, because the bacterial cultures have to be cultivated. That's time that could have been spent on treating the patient," says Cichocka.

Hundreds of thousands of lives at stake

Demand for antibiotic susceptibility testing is on the rise. The gradual spread of multidrug resistant pathogens is making it increasingly difficult to choose the right antibiotic for acutely ill patients. In 2020 alone, figures suggest that some 700,000 people worldwide died from infections caused by antibiotic-resistant bacteria. Some studies claim that as many as ten million people a year could die from drug-resistant infections by 2050 unless we drastically rethink our approach. The European Centre for Disease Prevention and Control (ECDC) estimates that around half of the antibiotics currently prescribed to patients are unnecessary. Overprescribing of antibiotics increases resistance to the drugs.

IMAGES: TRUMPF, Resistell

A reliable long-term partner

Swiss company Resistell was quick to spot the importance of antibiotic susceptibility testing and to declare war against bacteria – and Ditzingen is providing them with valuable support. As a corporate investor, TRUMPF Venture Capital GmbH gives promising start-ups access to the world of TRUMPF. "We're more than just



Dieter Kraft is a managing partner at TRUMPF Venture GmbH, he supports strategy development and is always on the lookout for new ideas. Kraft has a doctorate in physics, but he also has a personal reason for working with Resistell. He used to work as a nuclear medicine physician in pediatric oncology – and medicine is still very much a part of his life.

a venture capital investor," says Dieter Kraft, Managing Director of TRUMPF Venture GmbH. "Our network – and our experience in industrializing products – makes us a reliable strategic partner that offers long-term support to innovative business and technology start-ups." This was exactly what Danuta Cichocka and

her team were looking for. Originally from Poland, the 40-year-old scientist has a doctorate in microbiology and a master's degree in biotech, medtech and pharmaceutical management. But Cichocka's motivation to make Resistell a success stems not just from her professional background but also from a personal experience: "I spent three years on antibiotics as a child. So I know from my own experience how important it is to identify resistance."

“We're more than just an investor. Our goal is to be a **reliable partner.**”

Dieter Kraft, Managing Director of TRUMPF Venture GmbH

Resistell is currently conducting initial preclinical studies. Analysts estimate the market for antibiotic resistance testing will be worth 4.5 billion euros in 2026. As well as helping Resistell to obtain funding, TRUMPF Venture also puts the start-up in touch with helpful contacts and provides the team with advice and support on the back of its industry experience. "TRUMPF is a high-tech company with a global reputation. Our product requires expertise in machine tools, laser technology and electronics – exactly the areas TRUMPF Venture operates in. That made them the perfect company to partner with," says Cichocka. She anticipates they will receive technical approval to commercialize their new Resistell device later this year – so it looks like bacteria have some tough times ahead.

A good mix: Resistell is home to experts from a wide range of fields, including engineering, nanoscience, physics, microbiology and medicine. Their next goal is to incorporate data analysis based on artificial intelligence.





Innovations, technologies and future trends



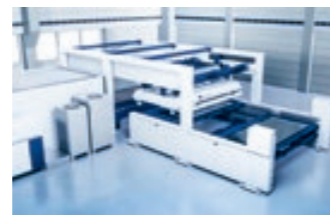
Digital training leads to success

With multiple training courses now available in digital format, it has never been easier to become an expert in TRUMPF machines. Welcomed into a “virtual learning world”, participants can join in as avatars to listen to their instructor. Split-screen displays and live images of the machines are available, and software training sessions are based around video conferencing and screen sharing. Remote solutions allow participants to access and take direct control of machines to put what they have learned into practice. Stored on an online platform, the learning content can be accessed at any time. Overall, digital formats made up over 30 percent of the learning offered in 2019/20, equivalent to more than 5,900 participant days. This is a big rise over the previous fiscal year’s figure of 8 percent.



Clean bending of painted, coated and high-gloss parts

Bending visible parts without leaving marks is a real challenge – especially when it comes to painted, coated or high-gloss surfaces and film-coated sheets. The new RollBend RBK plastic bending tool enables mark-free bending even with variable material thicknesses and in combination with bending film. The tool can create short side lengths as well as recesses and holes close to the bending line, all without causing deformation. The RollBend RBK can also be used in combination with the standard RollBend tool. The tool is specially designed to enable rapid, toolless replacement of the jaws at a reasonable cost.



Cutting sheets without reloading

The new materials store from TRUMPF is the perfect entry-level solution for companies embarking on automated sheet-metal fabrication. This innovative product enables flatbed laser machines to run independently for up to 11 hours without the need for workers to manually reload the machine with heavy sheets. The user-friendly materials store ensures an adequate supply of raw material without requiring any additional software. Customers can choose the number of storage compartments to best match their existing machinery. This new solution allows fabricators to work through the night and increase their capacity utilization. That means higher productivity – especially for companies that are still at the start of their automation journey.



Direct connection to TRUMPF through OCI

Many customers already order their TRUMPF spare parts online. Now they can use the Open Catalog Interface (OCI) to connect their ERP system directly to the TRUMPF e-shop. As well as ensuring compliance with their in-house ordering and approval processes, this avoids the need to manually enter the same order data in their ERP. Once they are hooked up to the OCI, customers can simply find the parts they need in the TRUMPF e-shop, transfer them to their own ERP system, and complete the order through their regular ordering system.

IMAGES: TRUMPF



TRUMPF and SICK develop quantum sensors

November 2020 saw the signing of a cooperation agreement between wholly owned TRUMPF subsidiary Q.ANT and SICK to develop quantum technology for industrial use. The two companies plan to work together on the development of quantum optical sensors in the future. Having successfully completed functional testing in summer 2020, the partners hope to deploy the first sensors in 2021. Quantum sensors can detect particles two hundred times smaller than the width of a human hair. The new sensor marks a major shift in the established boundaries of measurement technology. It paves the way for a wealth of new applications and looks set to become a standard feature in a number of industries in the future.



Lightweight metals ready for industrial 3D printing

3D printing of amorphous metals is now a reality thanks to a partnership between Heraeus AMLOY and TRUMPF. Amorphous metals are twice as strong as steel, yet substantially lighter and more elastic. The new process can be used to manufacture parts that are subject to significant stresses in sectors such as medical devices, aerospace and mechanical engineering. Amorphous metals are formed by cooling molten metal extremely quickly. They are very light by nature, so the combination of 3D printing and amorphous metals can significantly reduce part weight.

This collaboration sees Heraeus AMLOY combine its expertise in amorphous metals with TRUMPF’s experience in 3D printing. Heraeus AMLOY has optimized its alloys for 3D printing and tailored them for use with the TruPrint systems. The latest TruPrint 2000 system can prepare excess powder in an inert gas environment.



Smart material flow cuts costs

TruConnect intralogistics solutions from TRUMPF make the transportation of materials through the production chain more efficient. They include hardware, software and services to help companies digitally model the flow of materials and make targeted improvements. This allows them to increase capacity utilization while simultaneously reducing costs. By creating a digital twin of their production environment, they can systematically plan and control the entire manufacturing process. Logistics staff and production planners benefit from greater transparency on the shop floor, making it easier to identify inefficiencies. Workers can spend their time on value-added activities instead of materials handling and administrative tasks.

Sharing manufacturing experience

As a machine maker, TRUMPF has gained insights into numerous sheet metal fabrication businesses. Its Smart Factory Consulting (SFC) service is a way of sharing that accumulated knowledge of best manufacturing practices with other customers. Four entrepreneurs describe how they have benefited from TRUMPF's problem-solving skills – and why a new machine is not always the best solution.

Tackling the challenges of business growth sounds like a luxury rather than a chore – but building new facilities requires careful consideration.

That's something Jens Pohlmann – Managing Director of Wittlich-based company **ProContur** – knows from first-hand experience. As his successful business in sheet metal and plastic products expands, space has been running short. More customers,

bigger batches and ever-larger products called for more room. But he was struggling to analyze the requirements for a new building. "That's when I thought of all the fabrication shops TRUMPF must have seen over the years, and I figured they could help me out," he says.



The results speak for themselves: "I now have a clear picture of a new facility in my head and a good idea about how the processes would run," says Pohlmann after a two-day visit from TRUMPF's smart factory consultants. He was impressed by how quickly the consultants helped him to define and achieve his goal, and he already has an offer on the table for what a completed facility might look like. Right now, that would still be a little bigger than he needs, "but I can definitely imagine getting to that point," says Pohlmann.

“ I thought of all the fabrication shops TRUMPF must have seen over the years, and I figured they could help me out. ”

Jens Pohlmann, Managing Director of ProContur Individuelle Feinblech- und Kunststoffprodukte GmbH, Wittlich, Germany

“ Ultimately, it's not just about relocating to a new building – it's about being ready for the future. ”

Manfred Arndt, Chief Technology Officer, Dick & Dick

Dick & Dick Laserschneid- und Systemtechnik GmbH also needs to expand its facilities at its headquarters in Dingelstädt. The company's two divisions – Laser Cutting & Systems Technology, and Micro Waterjet Technology – are set to be brought under one roof once the new building is ready. "Right from

the start, we chose TRUMPF to develop a suitable manufacturing concept for the new facility. Ultimately, it's not just about relocating to a new building – it's about being ready for the future," says Chief Technology Officer Manfred Arndt. He explains that the

TRUMPF SFC project helped identify how to integrate machinery in the new building and determine where new machines are actually necessary.

The consultants began by examining the process workflows before highlighting where there was room for improvement. "As companies grow, they hold on to things without really thinking about it. So it's good to get an outside perspective on things," says Arndt. The conceptual design of the new building is now finished, and Arndt is pleased with the results: "We've made a really good start," he says.



Wilhelm Nusser also appreciates the importance of an outside perspective: "We took the coronavirus crisis as an opportunity to explore ways of improving our business," says the CEO of

W. Nusser GmbH in Schwabmünchen, a systems supplier to metalworking companies and sheet metal fabricators. Having heard about the smart factory consulting service from a TRUMPF sales representative, he worked with his team to define three objectives: better productivity, higher quality – including soft factors such as on-time delivery – and shorter throughput times.

Two SFC consultants scrutinized every aspect of his business on a three-day visit. "Two-and-a-half of those days were spent analyzing our production processes from a technical and commercial standpoint, both of which we consider to be important," says the CEO. "Our in-house team had already looked at the key issues, but

an outside perspective has a lot more weight," says Nusser enthusiastically. "At first, I was worried the consulting service might just be a way for TRUMPF to sell its machines, but that wasn't the case," he says. Quite the contrary: In fact, he was pleased to see that many of their recommendations could be implemented at relatively little cost.

“ Our in-house team had already looked at the key issues, but an **outside perspective** has a lot more weight. ”

Wilhelm Nusser, CEO W. Nusser GmbH, Schwabmünchen

“ It was interesting that it only took the consultants two days to determine **what direction** we needed to take. ”

Sven Schmid, Head of Production at TREIF Maschinenbau GmbH, Oberlahr

The consultants' impartial approach also benefited **TREIF Maschinenbau GmbH** in Oberlahr. "We worked with them to decide on the best way to organize our production, who should take on which responsibilities, and what each of us could bring to the table," says Head of Production Sven Schmid.

"It was interesting that it only took the consultants two days to determine what direction we needed to take."

In a follow-up project, the Smart Factory Consulting team examined the processes in more detail. "We were already aware that there was potential for improvement, but we wouldn't have been

able to put it into practice without their impartial advice," says Schmid. Jan Schumann, who is responsible for service and purchasing at TREIF, agrees: "The consultants confirmed we're already on a good path. All we needed to do was make a few tweaks to get the best out of our business. Open communication and an understanding of other departments helped us to jointly achieve the same goals. That's why it was so useful to have TRUMPF highlight what needed to be done," he says.

Both men are pleased with the results. "Customers now have better access to after-sales service, we're faster overall, and we're communicating better in-house," says Schumann. Schmid is equally enthusiastic: "Our business is running smoother than ever. We're not constantly putting out fires anymore!"

“ All we needed to do was make **a few tweaks** to get the best out of our business. ”

Jan Schumann, responsible for Service and Purchasing, TREIF Maschinenbau GmbH, Oberlahr





SMART SAVINGS: TRUMPF PART OPTIMIZATION

“Less is more” neatly sums up the philosophy behind TRUMPF part optimization.

Customers can choose from a range of part optimization workshops and seminars that teach them how to get the best out of their machines and parts.

The aim is to make production more efficient and cost-effective, ultimately leading to higher quality at a lower cost.

In this series, TRUe casts a light on various parts to show how this process works and what design principles users should focus on.

This issue: a transport bracket



Sven Marquardt
works as a training instructor
in TRUMPF's part optimization
business

The best way to make weld seams invisible is to avoid using them in the first place. For most parts, replacing welding with a bending operation can cut manufacturing costs by about a third.

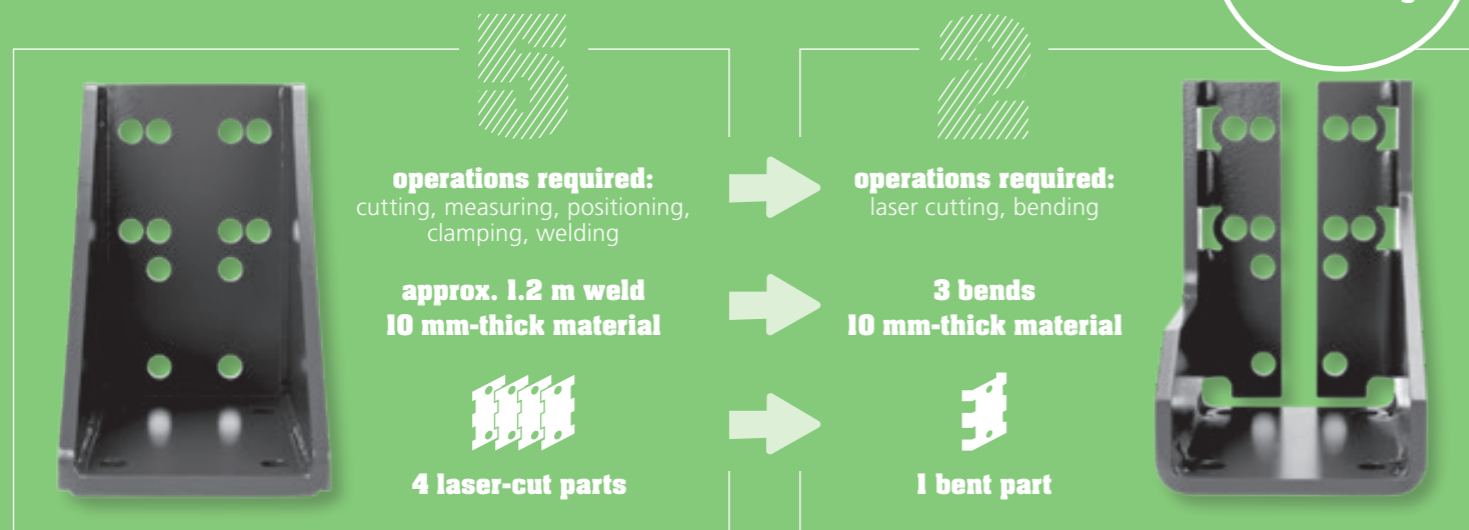
The transport bracket, which is used to securely fasten TRUMPF storage systems to the trailer of a truck, illustrates how this works in practice.

The conventional way to produce a transport bracket is by bringing together four parts at a welding station and welding them together using a robot arc welding system. The problem is that this method heats up the parts and causes them to warp. The only way to prevent this is by using a complex fixture and giving the part enough time to cool down.

“Our improved method works by bending a piece of sheet metal three times. The finished part has the same characteristics as the welded part. All it needs are a few modifications, such as pre-cuts in the corners and for the holes near the bending line. This prevents significant warping of the holes and stops bulging in the corners during bending, which would mean the part was no longer flat in the corners,” says Sven Marquardt, a training instructor from the parts optimization team.

All in all, the sheet metal bending solution offers clear advantages. The bending process is simple and cuts costs by up to 41 percent.

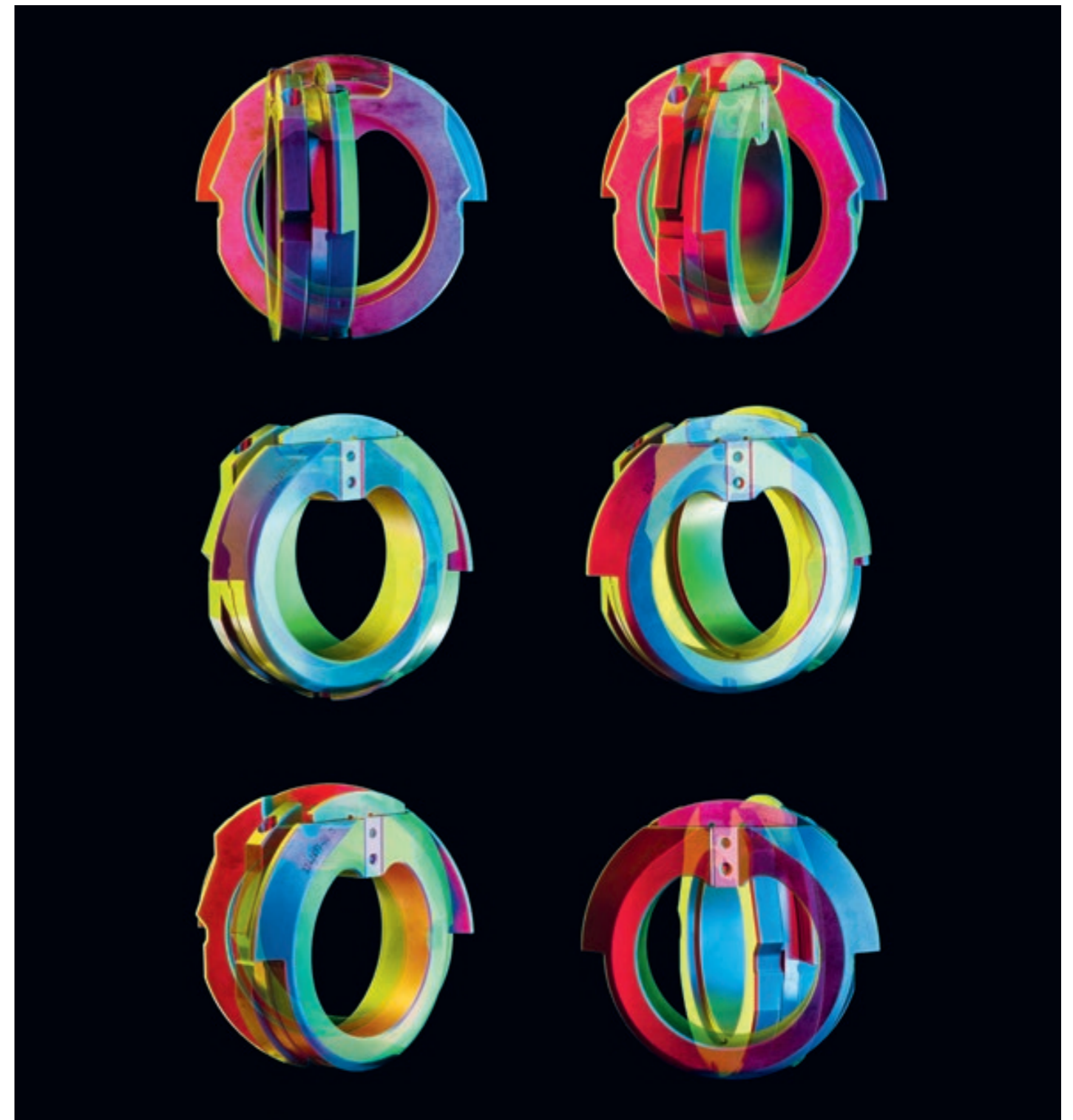
Better
fabricated part
41%
cost saving



IMAGES: TRUMPF

#13

pARTgallery



This picture shows a **die for an ejector tool** in a completely new light. The tool is used to sort parts in combination punch-laser machines. Using a series of targeted strokes, it removes laser-cut finished parts from the metal sheet and sorts them into “good” or “scrap” bins. Photographer **Jan Kornstaedt** has taken this tool out of its familiar environment and given it a whole new context.

Hungry lions meet a tough negotiator

Rounding off an unusually technical pitch for his start-up Hyconnect and surrounded by lions, Lars Molter looked them straight in the eye and asked if they wanted to make the world a better place. Two of the judges were clearly interested in his idea for a hybrid material that relies on a novel chemical bond between metal and glass fibers. Captivated by the idea of reducing the weight of ships, cars and aircraft to cut CO₂ emissions, they decided to make an offer to the young shipbuilding engineer with the reddish-blond beard.

This was all something of a novelty for “Die Höhle der Löwen”, a German version of “The Lion’s Den” show broadcast by commercial TV channel VOX, which is more accustomed to entrepreneurs selling scented candles in champagne bottles or Pony Puffin hairstyling gadgets. The slot ended with the casually dressed Lars Molter agreeing to give the lions a 17.5 percent share of the company. With the usual figure set at 21.5 percent, that made him the toughest negotiator in the show’s history.

Series founder and former lion Frank Thelen has seen numerous presentations by start-ups over the years and invested in several of them. The tech investor and entrepreneur says founding a company is a “crazily tough journey” – and he speaks from experience. He launched his first start-up as a 19-year-old skateboarder with 1.4 million German marks in venture capital. That ended in insolvency just a few years later. And, on the very day that VOX unveiled its version of “The Lion’s Den”, he announced the shutdown of his document management app Doo. Thelen’s résumé reads like something out of a business soap opera. In 2008, he sold his online photo platform to Fujifilm, becoming a multimillionaire in the process. Like Jeff Bezos, Thelen’s thinking is that success only comes if you are willing to take the chance of investing millions up front.

The 45-year-old fell in love with risk in his skateboarding days, and his tough-as-nails formula for success hasn’t changed much since. He tracks down promising companies working out of garages, puts his money in early, and rakes in the profits when the deal works out. He showed good instincts with the Mytaxi mobility app, which was acquired by Daimler. He also predicted “an incredibly promising future” for fledgling Berlin-based start-up 6Wunderkinder and was the first person to back their next-generation project management software Wunderlist. His skill at making money through other people’s ideas was confirmed when Microsoft acquired 6Wunderkinder’s to-do app for managing tasks just three years later.

The star of the start-up scene likes to think big, so it makes sense that Thelen’s new technology investment company is called Freigeist (“free spirit”). This is a lion that devours artificial intelligence, blockchain, quantum computing and future

mobility for breakfast. Yet his multimillion deal with the start-up Hardt Hyperloop in 2019 probably wouldn’t be much of a hit on “The Lion’s Den”. Big TV ratings come from telegenic ideas like pacifier dispensers for babies, not from epic transportation systems that shoot passenger capsules through tubes at speeds of up to 1,200 kilometers an hour.

Thelen has pulled off 22 coups over the years. His experience in hunting unicorns suggests you need great timing and the right concept if you want to quickly harvest millions from other venture capitalists. Recently, his sharp-eyed sleuthing led him to EnduroSat, a Bulgarian space start-up that makes small satellites weighing just ten kilograms. This is his biggest investment to date and, like all his investments, it has the potential to become a global market leader in its industry. Or, of course, to make one hell of a crash landing. We’ll join the crowd for the spectacle – and get ready for liftoff!

Karl Thomas



TRUe #13

IMPRINT

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