TRUe

THE MAGAZINE FOR SHEET METAL EXPERTS

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Express train meets sheet metal – one woman helping to drive change in India

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Tomorrow's world: are robots better people?

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TRUMPF

IF YOU WANNA MAKE THE **WORLD A BETTER PLACE** TAKE A **LOOK AT YOURSELF,** AND THEN **MAKE A CHANGE.**

MAN IN THE MIRROR – MICHAEL JACKSON

IMAGE: GettyImages

The Chinese word for **“change”** is composed of two symbols signifying **“risk” and “opportunity”.** These two words nicely sum up the different facets of **change,** because everything depends on how we approach it. We can endeavor to avoid risk in all its forms, but that causes us to miss **miss fantastic opportunities.** Equally, we can hunt down every opportunity while underestimating the risk. **Finding the right path** between these two extremes is one of the biggest **challenges** companies face**.** ■

IMAGE: GettyImages

New is always better. That at least seems to be the motto some urban planners live by.

They are currently facing some major challenges in the **world's biggest cities**, because every city wants to be the biggest, tallest and best **on the international stage.** But who decides what to keep and what to let go?

For example, the new **720-meter long Dongshuimen Bridge** in Chongquing, China, signaled the demise of the old cableway.

So when is the right time to change things? **And when should we hold on to what we are familiar with?**

Business leaders must ask themselves these questions, too, as they strive to find their own path between **tradition and vision.** ■

IMAGE: Stephan Reedel

IMAGE TRUMPF; IW Medien/Gottfried Stoppel

To **increase productivity,** sheet metal fabricators need to consider the **production process** as a whole. **Sensors, software, services** and the **cloud** can help them tap into the wealth of potential that extends above and beyond individual machines.

I have been looking forward to this year's EuroBLECH more than ever. The 2018 edition of the fair will see us showcase products and solutions that are destined to set new standards and transform the sheet metal industry. From leaps in laser cutting productivity to more efficient manufacturing through intelligent data analysis, our innovations aim to open up exciting new opportunities.

Our vision is an autonomous factory – and TRUMPF's portfolio includes an increasing number of products focused on that goal. As our machines become more and more automated, they are making operators' lives easier in many areas of their work. One example is Active Speed Control, a new sensor system that gives the power of sight to the optics in laser cutting machines. This innovation enables our machines to adjust cutting speed automatically to match the properties of the metal sheet. It means the machine can work as fast as possible while maintaining an outstandingly robust cutting process. Active Speed Control is yet another demonstration of our firm belief that production processes should be both reliable and efficient – something that cannot be achieved solely by increasing laser power.

With our new Track&Trace indoor positioning system, sheet metal parts can broadcast their location and report to the next machining station. The system also tracks the routes they take, so you always know exactly where everything is – even when dealing with shrinking batch sizes. Track&Trace prevents parts from getting lost, makes it quicker and easier to find things, and helps eliminate paper from the shop floor. Whenever a customer enquires about their order status, you can be confident of having the right information on hand. Track&Trace offers all sorts of ways to refine your processes.

By investing in the digitalization of our machines and systems, we aim to give you a decisive competitive edge. But we can't do that by fixating solely on our machines. Instead, we take a holistic view of the entire manufacturing process – from customer inquiry right through to delivery. Further examples will be on show at our EuroBLECH booth.

I value each and every opportunity to talk to you about our innovations. That's because we rely on your feedback to develop the right products to meet your needs – paving the way for successful manufacturing both now and in the future.

YOURS, HEINZ-JÜRGEN PROKOP

TRUe

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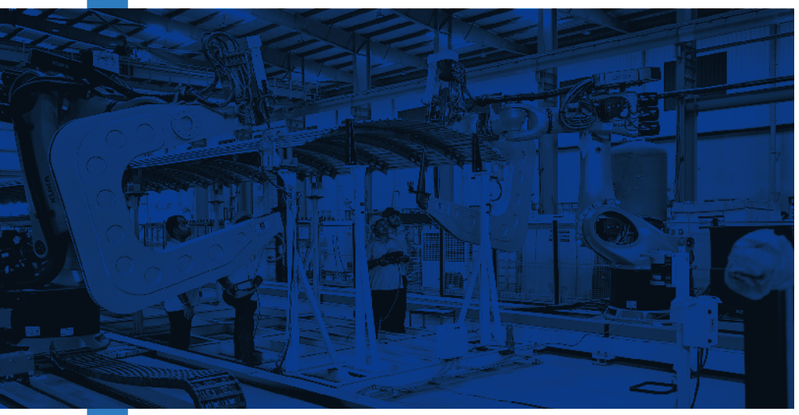

01 ...in Chennai

Mention India's public transport system and most people probably picture an uncomfortable journey on an overcrowded train. The CEO of Universal Engineers knows it doesn't have to be like that – and reveals how change can start with something as simple as a train toilet.

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02 ...in Numana

Many people dislike change, but Marco Grilli loves it and embraces it at every opportunity. Robots are part of everyday life at his company, and digitalization seems to run without a hitch. So what's the Italian's secret?

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03 ...in Trimmis

"Far too big and far too complicated, not what we're looking for." Sometimes initial skepticism can give way to enthusiasm – and suddenly a company can find itself reassessing its entire production strategy. That's what happened at Keller Laser AG. But how did one machine prompt such a radical change in thinking?

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04 ...in Le Bourget du Lac

Employees spend six weeks a year looking for things at work. That felt like a waste of time to Jean-Marie André, so he worked with his team at BeSpoon to come up with a solution. An inspiring story of satellites, GPS and James Bond.

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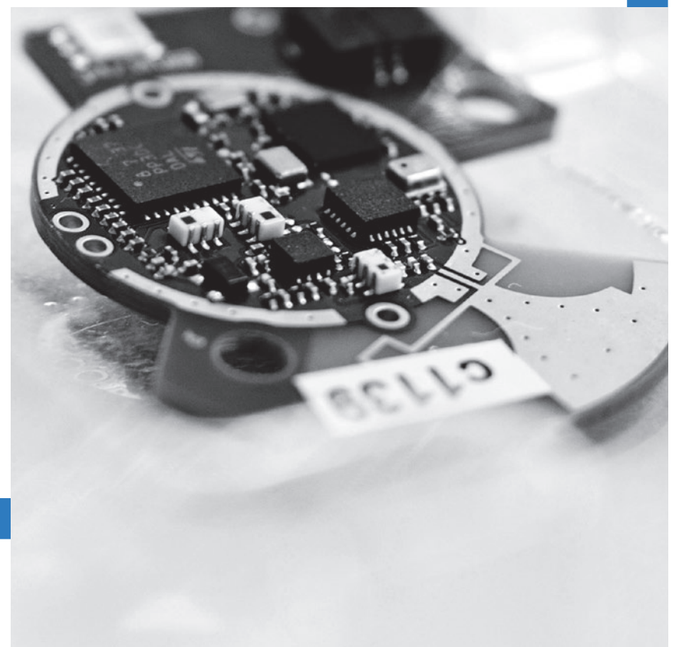


01

INDIA

Change in Chennai

CAUTION, TRAIN APPROACHING!

Trains are an **essential part** of India's transportation infrastructure – more so than in almost any other country. One of the most enthusiastic admirers of India's railway network is Hamsa Venugopalan. Not just because her job brings her into contact with trains on a daily basis, but also because they are a **symbol of the change** currently sweeping across India. The company she runs, **Universal Engineers**, is playing an important role in this ongoing transformation.

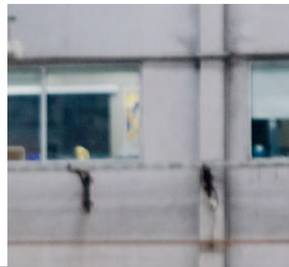
IMAGE: Kunal Daswani

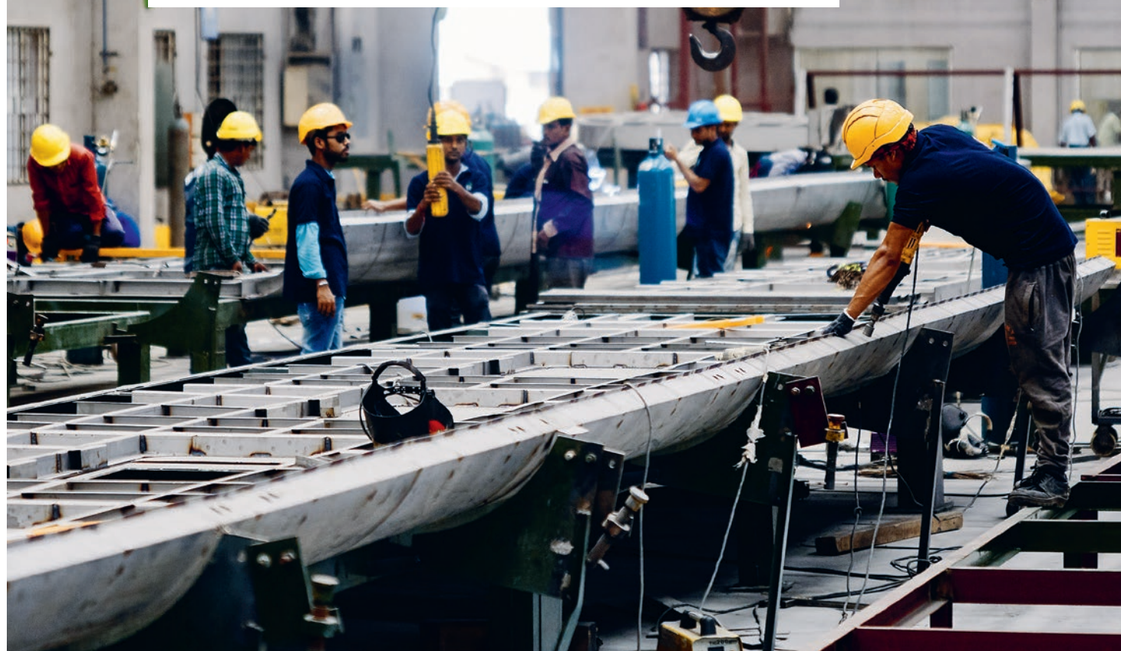
Plenty of space: The production facility covers an area of over 20,000 square meters.

That's how I got to know the railway business, and eventually it became one of my real passions.

Universal Engineers has supplied fittings for many railcars over the past ten years. How have you coped with such large production volumes?
We always strive to use the latest technologies in our manufacturing process to achieve the highest quality standards. We use CNC machines, robots and TRUMPF laser cutting machines, all of which help us satisfy our customers' expectations. We have implemented a quality assurance process to ensure product standards are met. And TRUMPF India supports us with their machines and great service.

> " We involve employees **at all levels** in the planning process. "
>
> Hamsa Venugopalan, Managing Director of Universal Engineers





Universal Engineers has built up a solid reputation in India as a metal fabricator. How did the company start out?
The entrepreneur Vinod Bomb founded Universal Engineers in 1984, initially to make products for the electrical industry. I joined the company as part of the sales team, and I enjoyed the job of forging links with new customers. Eventually Mr. Bomb asked me if I would like to become a partner. I rose from a junior partner to the level of a Managing Director. I am tremendously proud and thankful for this opportunity.

How did the company make the jump from electrical products to trains?
Believe it or not, it all started with coach toilet handholds. We were commissioned to make a batch of handholds by the Chennai-based Integral Coach Factory ICF, which is India's largest manufacturer of trains and motor coaches. They were delighted with the results and encouraged us to focus more on that side of our business. So we started evolving and gradually added various other products such as pantry equipment to our portfolio. In addition to handholds, we started supplying seating, doors, windows and more for trains and began fabricating assemblies. Nowadays, we make not only fittings for car interiors, but also their entire shell. ICF Chennai is very supportive and encourages our development. It is a win-win-situation for both of us.

Your style of interior outfitting runs counter to the image many people have of Indian passenger cars. The designs are superb, with a modern and comfortable feel. Is that a sign that things are changing in India?
Absolutely, we have seen some huge changes in design, technology, passenger comfort and safety. I think our country is at a turning point. India's infrastructure is undergoing a massive transformation, and the trains are a reflection of what people here increasingly say they want – in other words a modern, comfortable experience.

What product are you particularly proud of? And why?
That's a good question, but really we are proud of all the products we make. I'm a big fan of the railway, and that's why I'm so pleased to see our company having such a big impact on the outfitting of India's rolling stock. I think we are part of the tide of change that is currently sweeping across our country. And that's something we can be genuinely proud of.

It's clear how much you love trains. Did that stem from having toy trains when you were little?
I'm afraid not (laughs). When I was younger I wanted to study medicine, but unfortunately that wasn't possible for family reasons. So I began working for a company that supplied Indian Railways.

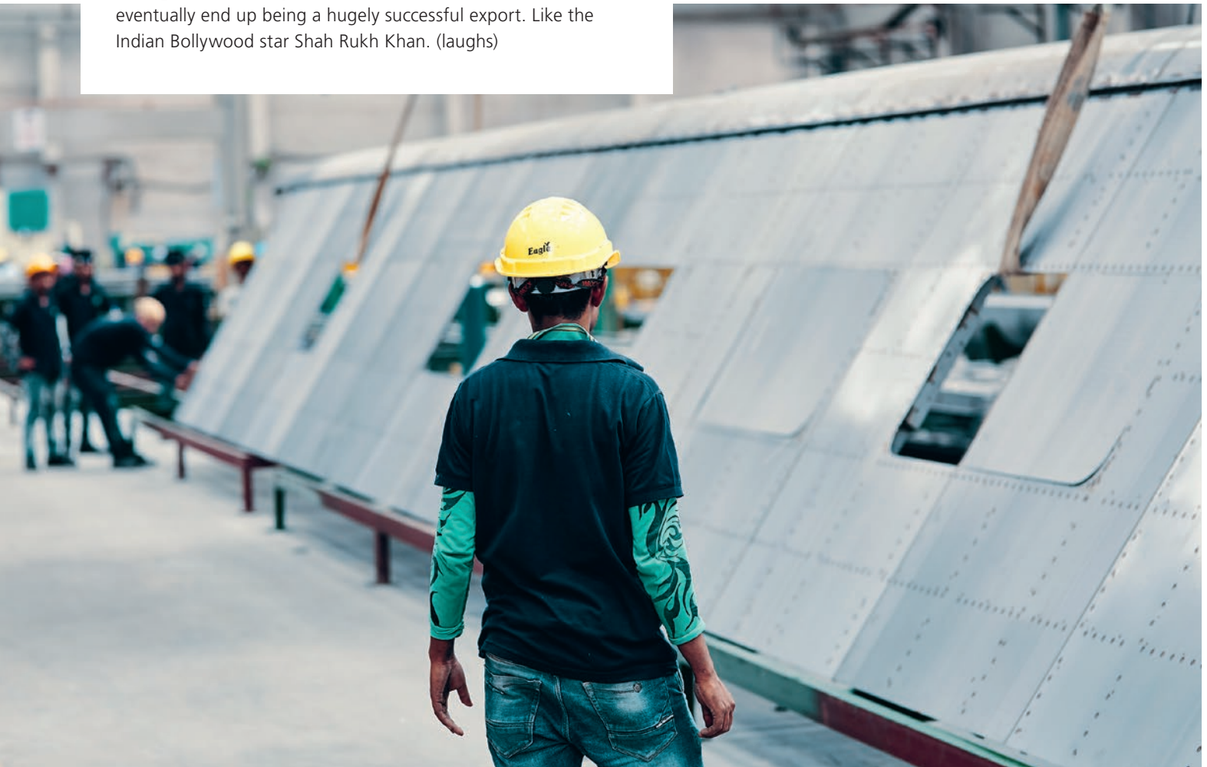
IMAGES: Kunal Daswani

Multi-purpose machine: Universal Engineers relies on the TruLaser 3030 to get the job done.

How about your workforce? How do your employees keep pace with the new technologies?
We started this organization with seven employees and now we have 750. We constantly evaluate their skills and ensure they receive regular training in the relevant areas. We involve every level of employee in the planning process. An important factor in our success is their dedication, their ability to think creatively and their willingness to embrace ever-changing technologies and customer requirements.

Creativity is clearly a major part of your company's ethos. Does Universal Engineers actually come up with the designs for the passenger cars, too?
Yes, we have an in-house team that works full time on refining our designs, and I really get the feeling that it works. You mentioned just now that Indian railcars look much better than they did just a few years ago. The impetus that is currently driving Indian Railways as a whole could mean our trains will eventually end up being a hugely successful export. Like the Indian Bollywood star Shah Rukh Khan. (laughs)

> **" India's infrastructure** is undergoing a massive transformation. **"**
>
> Hamsa Venugopalan, Managing Director of Universal Engineers



IMAGES: Kunal Daswani

01

Key facts:

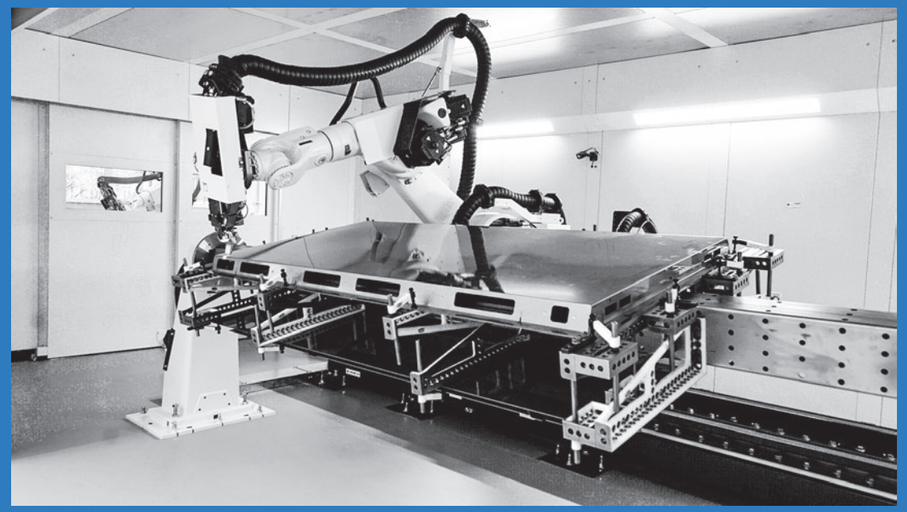
TruLaser Weld 5000

Companies such as **Universal Engineers** that cut and process large sheet metal parts need the right machines to get the job done. TRUMPF recently launched a new, larger version of its **TruLaser Weld 5000 welding cell,** providing the support customers need to handle **XXL parts.**

In brief

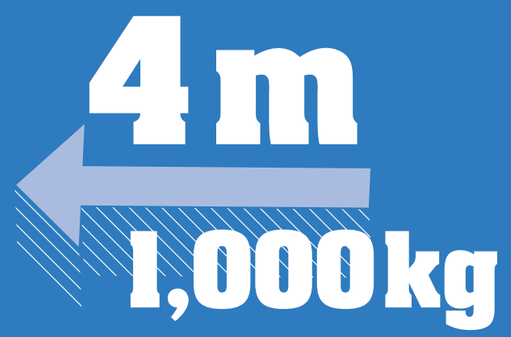
Big, bigger, TruLaser Weld 5000 XXL

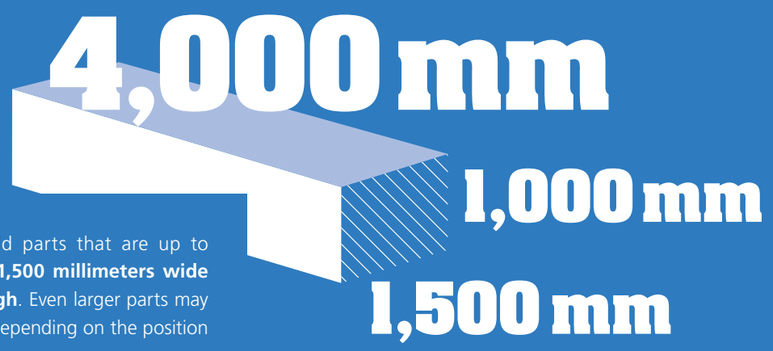
The new, larger version of the TruLaser Weld 5000 features a welding robot that can process parts up to four meters long. The booth in this XXL welding cell offers plenty of space for large housings and tanks. That means users can benefit from all the advantages a laser has to offer even when working on an XXL scale. The lager version of the TruLaser Weld 5000 produces robust and visually appealing weld seams that help minimize the need for rework. At the heart of the system is a new large-scale turnover positioner.



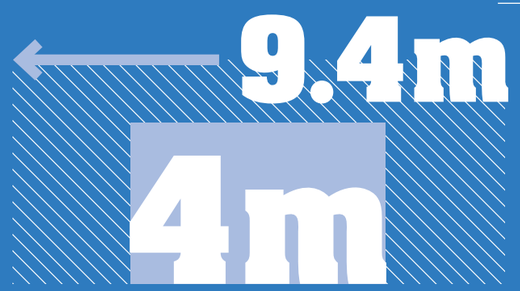
The turnover positioner

The TruLaser Weld 5000 robot travels along a linear axis that allows it to cover a large work area. To enhance its abilities even further, the system also boasts a **four-meter** long turnover positioner with a carrying capacity of up to **1,000 kilograms.** It owes its name to the rotary axis that enables it to align assemblies in the correct position for the welding robot.





The new system can weld parts that are up to **4,000 millimeters long, 1,500 millimeters wide** and **1,000 millimeters high**. Even larger parts may be possible in some cases depending on the position of the weld seam.



The booth is up to **9.4 meters long** and is equipped with a **four-meter wide door.** Inside, there is enough space for additional component positioners, such as a table that turns and tilts. This positioning system allows users to weld complex parts without having to interrupt the process to re-clamp them. The machine can also be used with an additional positioner that lets users load the system from the outside while the welding robot is working inside the cell.

About the customer

Universal Engineers
Managing Director: Hamsa Venugopalan

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Tel. +91 44 2625 2158
director@universalengineers.in

Machinery

- TruLaser 3030
- TruDisk 4kW Laser

The latest in optics and programming

During operation, a built-in sensor system monitors the amount of dirt that accumulates on the protective glass. LEDs on the optics and messages on the screen indicate the current degree of contamination. This sensor-based solution saves time that would previously have been spent on visual inspections. The welding program also includes a new feature that allows users to set the amount of shielding gas and the strength of the compressed air crossjet in the optics system, eliminating the need to make these adjustments manually.

IMAGES: Frederik Dilay-Winkler

02

ITALY

Change in Numana

THE INNOVATORS' CLUB

If a **TRUMPF development manager** starts taking **selfies** on a customer's shop floor, it must be a very special company. Based in the Italian town of Numana, **Omas S.p.a.** is certainly far from a regular sheet metal fabricator. Managing Director **Marco Grilli loves change and embraces it at every opportunity** – and he is not afraid of robots.

IMAGES: Frederik Dulay-Winkler

“ I’m 60 years old and my plan is to keep running the company for another ten years. But obviously I think about the longer term future of Omas S.p.a. too, which is why I decided to **put together a team of young employees.** Drawn from different areas of the business, our goal is for them to gradually learn more about managing the company. **That’s our way of preparing for the next big change.** ”

Marco Grilli, managing director of Omas S.p.a.

Language barriers melt away when people get talking about machines. Marco Grilli, Managing Director of Omas S.p.a., only speaks Italian – not a language that he shares with Thomas Schneider, Managing Director Research & Development at TRUMPF Werkzeugmaschinen GmbH & Co. KG. Yet the two of them understand each other perfectly, even without words. Obviously it helps to have the managing director of TRUMPF Italy, Marcella Montelatici, accompanying the two of them on their tour of the production facility, stepping in as a translator where needed. Together, they form a trio that has something important in common: an interest in new technologies, and enthusiasm for innovation.

“ If you **want to change something** in your company, you need to **set an example yourself** as the managing director. Marco Grilli is the perfect embodiment of that principle. Thanks to his perseverance, Omas S.p.a. has become a genuine **beacon of digitalization in Italy.** We find that inspiring at TRUMPF – and we are proud to have played a part in his company’s success. ”

Marcella Montelatici, Managing Director of TRUMPF Italy

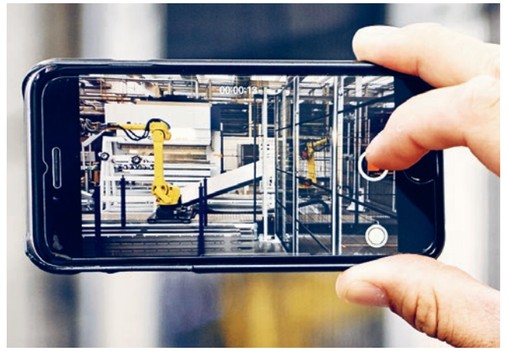
Omas S.p.a. is a company that makes a lasting impression. Not just due to the scale and sophistication of its manufacturing facilities, but also thanks to its remarkably innovative approach to doing business. Marco Grilli’s father and three other founding members established the company in 1966, initially to produce parts for accordions. But as the music industry became increasingly electronic in the early 1980s, instrument makers turned their backs on steel parts and began switching to plastic ones, putting Omas S.p.a. in something of a quandary. In 1985, after two years working in sales at a multinational glass company, Marco struck a deal with his father to try working at Omas S.p.a. for six months to see how he liked it. Fast forward 33 years, and he is still there – but now firmly established at the helm of the company. And if he were asked what led him to where he is now, he would most likely say: changes.

Communicating as equals

Marco Grilli was determined that the company should branch out into other industries instead of just focusing on musical instruments. He also began investing in new technologies and acquired the company’s first punching machine. That was a bold move for a business that, at the time, had a turnover of just 500,000 euros a year. But Grilli’s willingness to embrace change ultimately paid off. Gradually their customer base expanded to include not just local customers, but also international companies including the Fiat Group. Initially Omas S.p.a. was producing small, simple parts – and it would take another big change for the company to evolve. By investing in new systems and staff training, the company soon had the capacity to produce larger, more complex parts. From their customers’ perspective, that move transformed them into a supplier that could now be called upon to help jointly develop new products. Marco Grilli knows exactly what he wants and what his team is capable of. Today, Omas S.p.a. produces not only individual parts but also entire assemblies from sheets and tubes, all in accordance with the most rigorous standards and with a clear focus on service and quality.

Robot colleagues: Robots have long been a commonplace sight at Omas S.p.a.

IMAGES: Frederik Dulay-Wrinkler



Photogenic machines: Thomas Schneider was impressed by the TruLaser Cell 7040 – but even more so by the robots.

Robot colleagues

Omas S.p.a. has always invested an average of ten percent of its turnover in new technologies. Three years ago, the company took the plunge into Industry 4.0. Today, all its key systems are connected to each other, and the company has already made far more progress in the realm of digitalization than most of its competitors, as well as blazing a pioneering trail in robotics. Automated production robots have become a commonplace sight at Omas S.p.a. They are part of the team, just like the 120 employees. The company already has 40 robots, one for every three employees – yet the industry average is just one for every 135 people. But Grilli’s staff don’t need to worry, because their metal colleagues are not about to take away their jobs. Instead, they support their human colleagues in their day-to-day work.

Optical illusion: Omas S.p.a. is certainly a pioneer in digitalization, but TRUe may have helped out a bit with the olive tree.

Even so, the addition of robots to the shop floor was certainly another big change for the company. Grilli ensured his employees were heavily involved in the process right from the start. That eased some of their misgivings, because not everyone is as open to change as the company's managing director. Grilli himself needs variety, and he admits that things like going to the same restaurant every Friday or heading to the same football stadium every Sunday would quite simply bore him.

Finding new solutions together

Grilli is equally committed to pursuing change in the future. The 60-year-old managing director aims to take digitalization even further in his business. Logistics is where he sees some of the biggest potential, and acquiring a driverless forklift is already high on his agenda. Marcella Montelatici and Thomas Schneider from TRUMPF have been listening carefully – and they are already working with Grilli on a solution.

" With customers such as Omas S.p.a., we can drive new technologies and **face digital transformation together.** That also means changing how we do things at TRUMPF. We need to have the courage to **approach our customers with new ideas at an early stage.** Both sides benefit, because we have so much to learn from each other. "

Thomas Schneider, Managing Director R&D at TRUMPF Werkzeugmaschinen GmbH & Co. KG

IMAGES: Frederik Dulay-Winkler

02

Key facts:

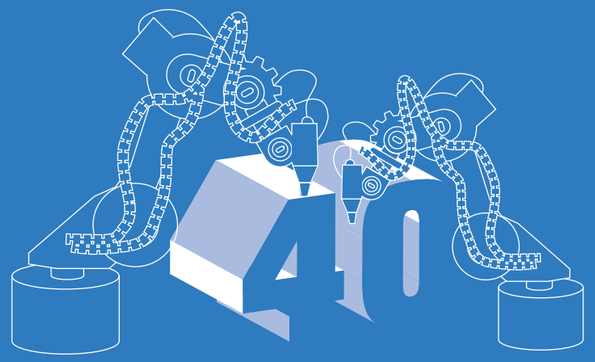
TRUMPF Financial Services

Robots, automated **machines** and large **storage systems: Omas S.p.a.** has invested in a cutting-edge manufacturing facility. It was assisted on this journey by TRUMPF and **TRUMPF Financial Services.** Here we take a brief look at what **financing options** are available.

In brief

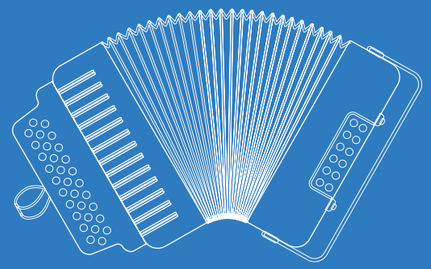
Tailored financing options

Every sheet metal fabricator eventually faces the decision of whether to modernize or expand its production facility. That's because companies can only remain competitive by staying firmly at the cutting edge of technology. TRUMPF's customers – both national and international – can choose to take advantage of a range of financing options that are tailored to their particular situation and the requirements of the market. And, thanks to TRUMPF's industry expertise, the solutions available from TRUMPF Financial Services are often more customer-oriented than those offered by conventional banks.



Ahead of the curve:

Omas S.p.a. already has 40 automated production robots working on the shop floor.



Musical roots:

The company started out making parts for accordions.

About the customer

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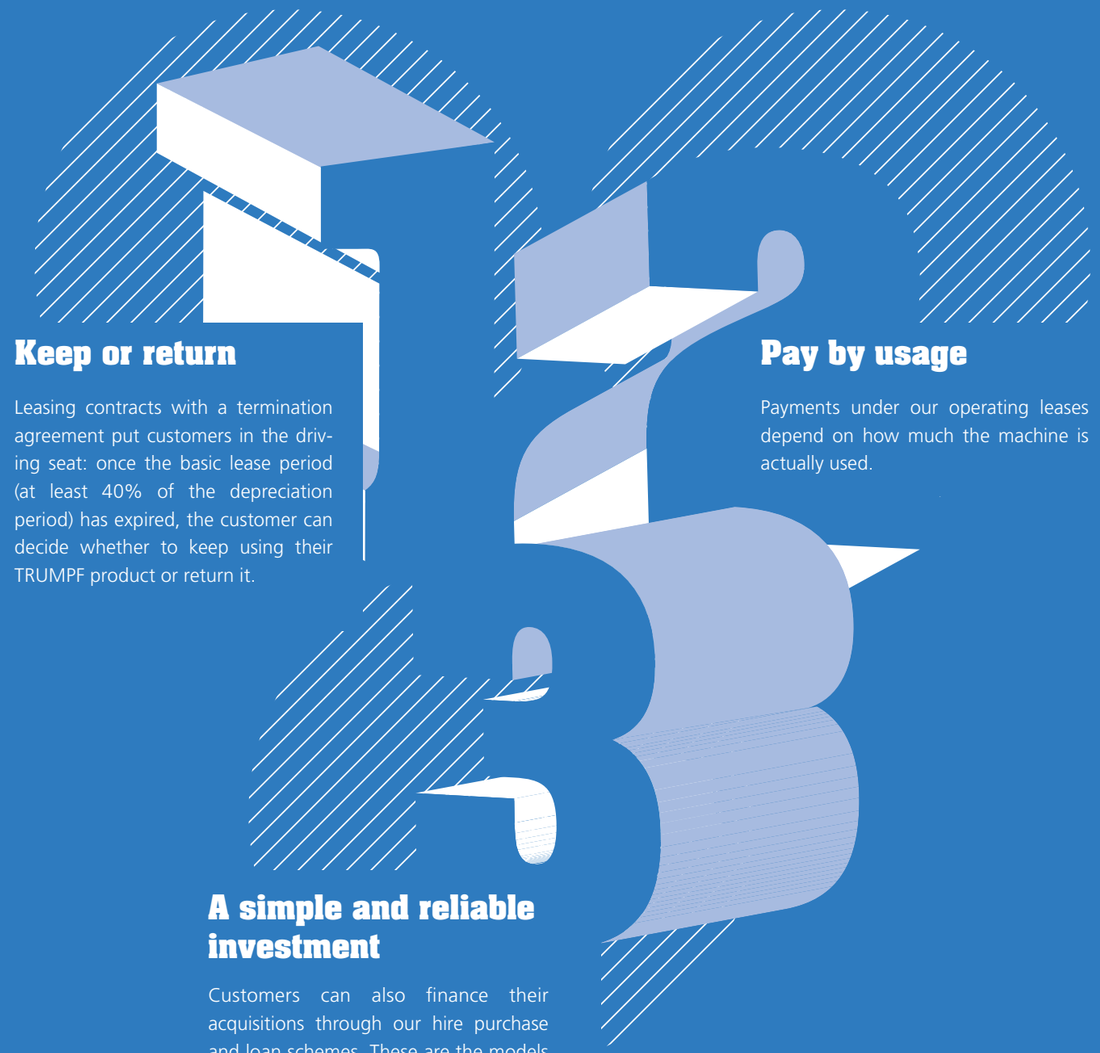
Machinery

- STOPA storage system for 1,000 pallets
- 3 x TruLaser 5030 fiber
- TruLaser 5030 CO_2
- TruPunch 3000
- TruBend 5085
- 3 x TruBend 5130
- 3 x TruBend 5170
- TruBend 7036
- 2 x TruLaser Tube 5000 fiber
- 2 x TruLaser Tube 7000
- TruLaser Cell 7040

Omas S.p.a. will be exhibiting at EuroBLECH 2018:
Hall 14, Booth J04

Three different financing options are available for TRUMPF systems and machines.



Keep or return

Leasing contracts with a termination agreement put customers in the driving seat: once the basic lease period (at least 40% of the depreciation period) has expired, the customer can decide whether to keep using their TRUMPF product or return it.

Pay by usage

Payments under our operating leases depend on how much the machine is actually used.

A simple and reliable investment

Customers can also finance their acquisitions through our hire purchase and loan schemes. These are the models to choose to ensure eligibility for investment subsidies.

Find out more:
www.trumpf.com/s/ifmyuj

03

SWITZERLAND

Change in Trimmis

THE MOMENT EVERYTHING CHANGES

“The dream machine.” That’s how TRUMPF presented its fully automated **TruLaser Center 7030** in October 2016. It’s quite a claim – and Stefanie Schwarz-Keller from **Keller Laser AG** in the Swiss town of Trimmis admits she was initially skeptical. But everything changed when she saw the machine in action for the first time.

IMAGE: Philipp Reinhard

Training up: Four of Keller Laser AG's employees got the chance to learn about the TruLaser Center 7030 in more detail.

Stefanie Schwarz-Keller still remembers the first day they switched on the TruLaser Center 7030 in her production facility: "I watched the machine in action and I was speechless – that's something I have rarely experienced!" She got the distinct impression that the machine could tackle almost anything. It was one of those moments when something happens and you suddenly realize that everything has changed. "That was how I felt when I saw the TruLaser Center 7030."

The TRUMPF team in Grüsch had contacted Keller Laser to ask if they would be willing to act as a test customer for the newly designed machine. Not such an unusual request in the circumstances, but Stefanie and her parents – company founders Barbara and Bruno Keller – were initially skeptical when they saw the plans. "We have partnered with TRUMPF for many years and have an excellent relationship, so we were an obvious choice of test customer for the TruLaser Center 7030. But, to be honest, we initially had some misgivings as to whether the machine would even fit on our shop floor," says Schwarz-Keller. Fortunately, their doubts turned out to be unfounded. The machine is certainly large, but it offers plenty of space-saving features, including three carts that fit into the machine like drawers, for uncut sheets, scrap skeletons and cut parts. Housed beneath the machine and powered by electric motors, they are designed to slide in and out of the machine.

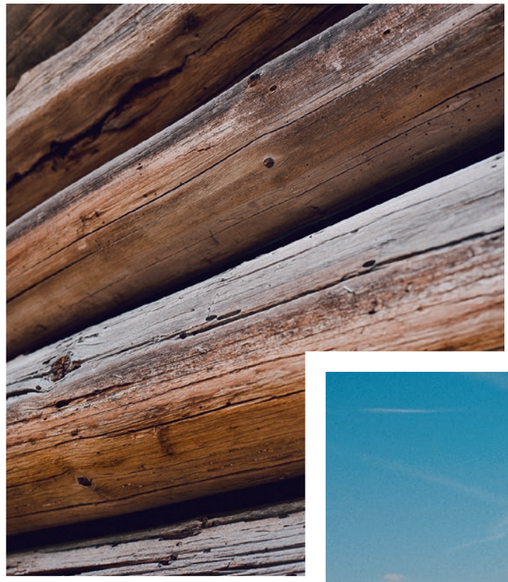
A satisfactory solution for everyone involved

Before the TruLaser Center 7030, or "L26" as it is known for short, started work on the shop floor at Keller Laser, four employees – two programmers and two machine operators – were given a step-by-step introduction into exactly how it works. Keller Laser employees spent four months taking materials to the TRUMPF site in Grüsch just 15 minutes away. The idea was that they could simply use the machine there to produce whatever parts they needed for their current jobs, says Schwarz-Keller: "The advantage was that they would learn how to use the machine so they could operate it as soon as we installed it in our facility." The four employees were amazed at what the machine could do, especially in terms of the new potential opened up by the interplay between the machine and the software.

A noticeable boost in process reliability

The TruTops Boost software makes it easy for users to import job data such as geometries, batch size, types of material and sheet thicknesses. "And then the whole process runs automatically," says Schwarz-Keller. The software handles the nesting process of laying out parts on the metal sheet. It also allocates appropriate cutting technologies and controls how parts are removed and how the cut parts are placed on the racks. After processing, the machine sorts the finished parts into the correct batches for each job and stacks them as required. This automation changes how things run on the shop floor and makes the whole process more reliable – an aspect that is very important to Stefanie Schwarz-Keller: "We produce sheet metal parts and complete assemblies for machine makers, rail car construction, and plant engineering. Reliable processes are one of our key concerns, especially when it comes to producing large batches of complex, finely cut parts in the machine." The TRUMPF developers were determined that the L26 should eliminate some of the key hurdles typically faced by users. These include shutdowns due to collisions that occur when parts tilt over, follow-up work on microjoints – the narrow tabs that connect the part to the scrap skeleton –, spatter on the underside of parts and excessive programming costs. Fortunately, the developers had some clever ideas up their sleeve.

IMAGES: Philipp Reinhard



> " I watched the machine in action and I was **speechless** – that's something I have **rarely** experienced! "
>
> Stefanie Schwarz-Keller, Strategic Managing Director of Keller Laser AG

Sheet metal fabrication in the mountains: Keller Laser AG is headquartered in the Swiss canton of Graubünden.

A change for the better: She may have been skeptical at the start, but Stefanie Schwarz-Keller was soon convinced by the benefits of the TruLaser Center 7030.

Fully automated

A push-out cylinder mounted on the cutting head ensures maximum process reliability. It prevents parts from being left hanging in the scrap skeleton by simply ejecting them downward. "It's amazing to see that in action," says Schwarz-Keller. The TruTops Boost programming system automatically calculates the ideal ejection point. Scrap and slag fall directly into the scrap cart, or are transported out of the machine on a conveyor belt. Good parts are intercepted by a retractable sorting flap, and the SortMaster Box Linear distributes them into a maximum of eight containers.

For Keller Laser AG, the TruLaser Center 7030 has become more than just a test machine. It has, quite simply, transformed the company: "The L26 has shown us what a fully automated machine is capable of and how many steps in the process you can speed up or eliminate altogether. It has inspired a radical rethink within our company. I'm confident that we will manage to make our processes even more efficient in the future," says Schwarz-Keller. In fact, the company has already take the first step down that path. "The test period inspired us to keep going and to take these changes even further. We have already booked a TRUMPF TruConnect consultation to get more information on other digital solutions and the opportunities offered by automation."

Pure precision: The new machine has helped Keller Laser make even higher-quality products.

IMAGES: Philipp Reinhard

03

Key facts:

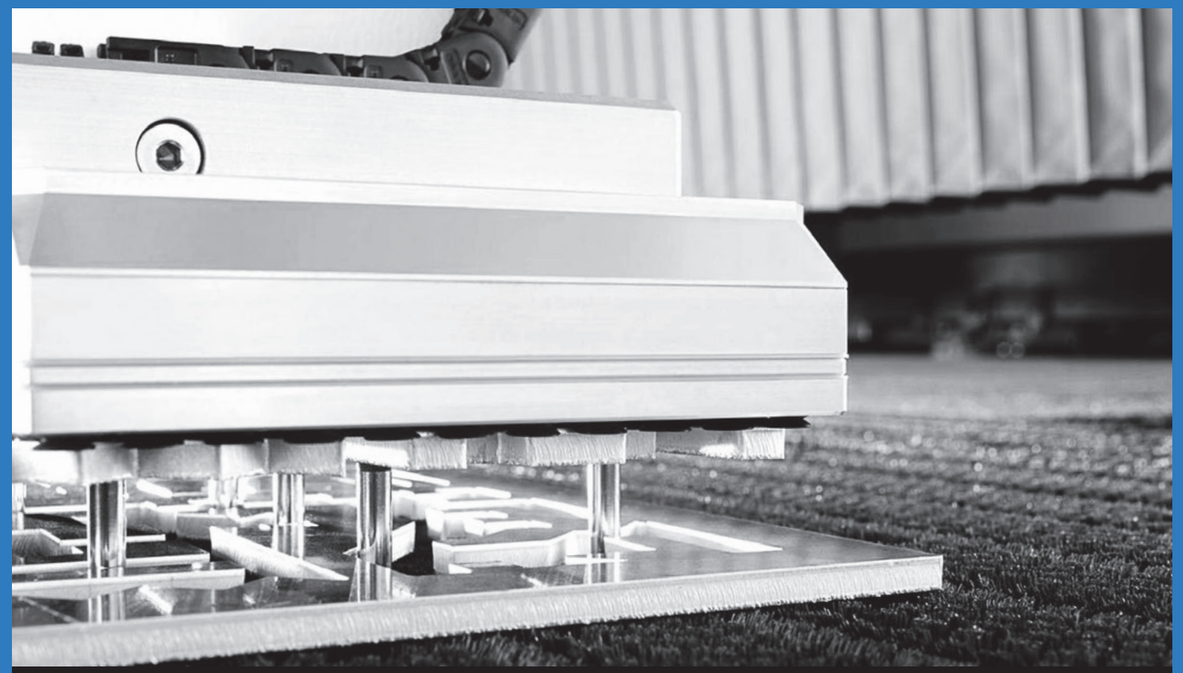
TruLaser Center 7030

The TruLaser Center 7030 marked a turning point for **Keller Laser AG**. The company was particularly impressed by the improvements in **process reliability** offered by the **fully automated laser system**.

In brief

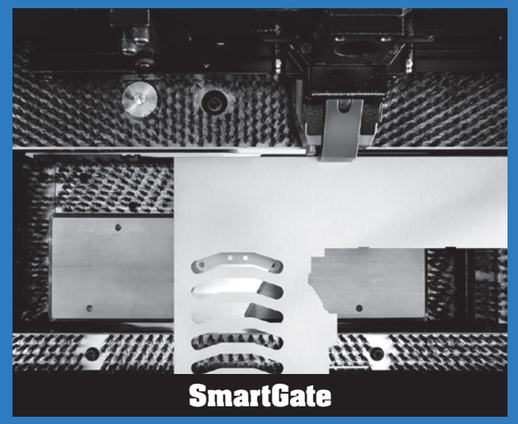
Reliable processes

One of the key goals of the developers behind the TruLaser Center 7030 was to overcome some of the key problems that typically affect 2D laser cutting processes. These include shutdowns due to collisions with tilting parts, follow-up work on microjoints, and spatter on the underside of parts. The following components are designed to ensure the part manufacturing process runs smoothly:



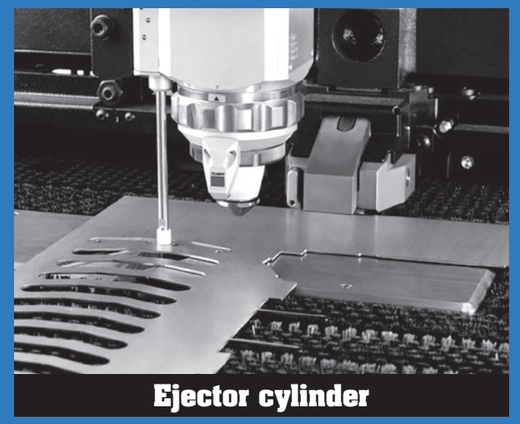
SortMaster Speed and SmartLift

TRUMPF developed SmartLift and SortMaster Speed as a reliable means of helping to automatically remove larger parts from scrap skeletons. Equipped with suction plates, the SortMaster Speed can position and stack parts on up to eight Euro pallets covering a total area of 1.6 by 4.8 meters. SmartLift ensures that parts are not left hanging in the sheet skeleton during the removal process. It features a total of 180 freely positionable pins that push the cut parts out of the scrap skeleton from below. Each individual pin can support a weight of up to ten kilograms. As the pins push the part upward, the SortMaster Speed presses down from above with its suction plates, ensuring precise linear guidance during lifting. TruTops Boost calculates the optimal position of the pins and suction plates automatically.



SmartGate

SmartGate consists of two slides that move synchronously with the cutting head. The distance between them can be adjusted to create different-sized gaps. Benefits include secure support for the sheet during the cutting process, plus the ability to eject small parts – measuring up to 160 x 160 mm – downward at the same time.



Ejector cylinder

The ejector cylinder works in tandem with the SmartGate to ensure parts are ejected smoothly from the machine into the container. Attached to the cutting head, the cylinder pushes the metal parts downward. The TruTops Boost programming system automatically calculates the ideal ejection point.

TruTops Boost

Fortunately, there is no need to carry out separate programming of the ejector cylinder, pins, SortMaster Speed and the SmartGate position and gap. Simulations running in the background take into consideration the component geometry and material properties, ensuring optimal calculations. Support for the simulations is also provided by the user-friendly job management system in the TruTops Boost programming software. Programming takes place in just one step and is largely automated, though the programmer can adjust any of the suggested processes as and when required.

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Machinery

- TruLaser 3030 Rotolas
- TruLaser 3030
- TruLaser 5040
- TruMatic 7000 with SheetMaster
- TruMark Station 7000
- TruBend Cell 5130
- TrumaBend V3200
- TrumaBend V500
- TruBend 5085
- TruBend 5050
- TruBend 7036

04

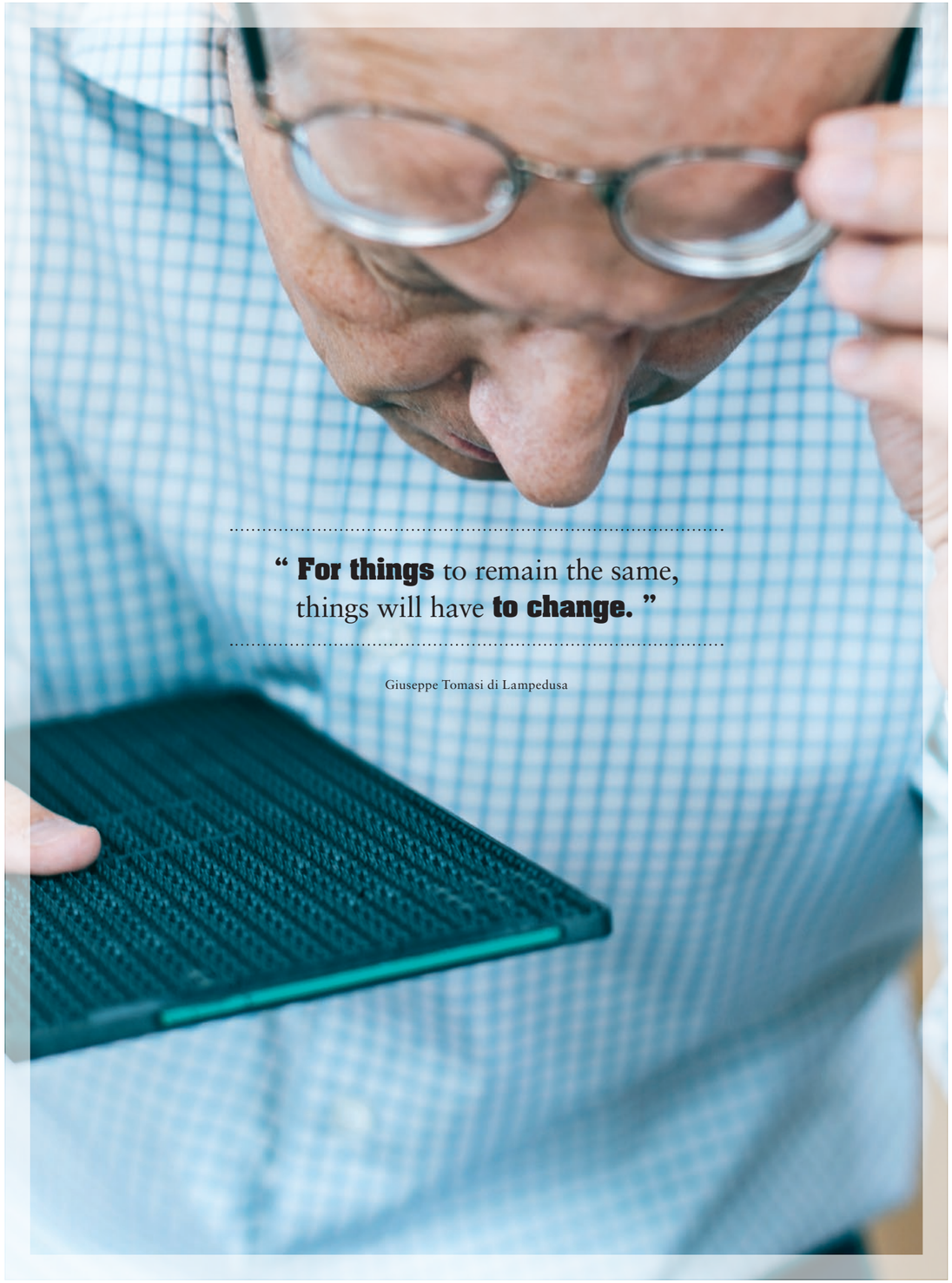
FRANCE

Change in Le Bourget du Lac

007 IN SHEET METAL FABRICATION

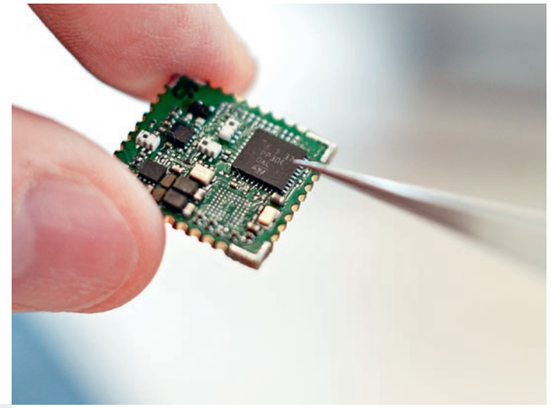
James Bond always makes it look so easy. As soon as he enters a building, the secret agent only needs to glance at his **smartwatch** to check out the position of everyone and everything in his vicinity. Unfortunately that's a lot harder to do in real life – or at least it was. **BeSpoon** has come up with a way of bringing that **Hollywood magic** one step closer to the world of **sheet metal fabrication**.

IMAGES: Niels Schubert



" **For things** to remain the same, things will have **to change.** "

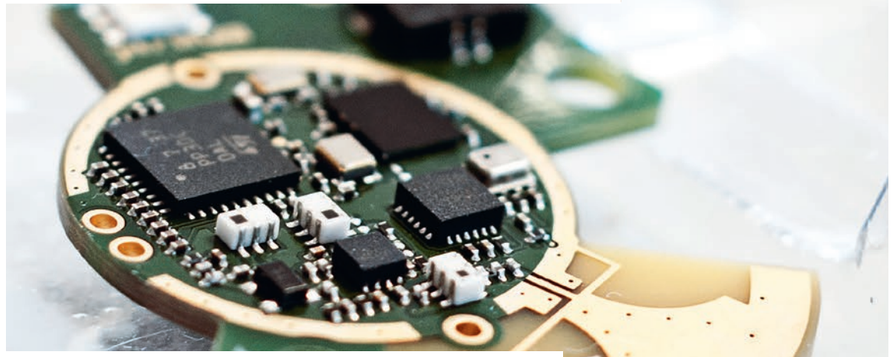
Giuseppe Tomasi di Lampedusa



"For things to remain the same, things will have to change." Jean-Marie André's favorite quote from Giuseppe Tomasi di Lampedusa's novel "The Leopard" reveals a lot about BeSpoon's CEO. "Change is the key to staying ahead of the curve. As an engineer and innovator, I see progress as my closest ally." Headquartered in Le Bourget du Lac, the French start-up BeSpoon has set itself the task of simplifying production processes using innovative solutions. One of its most inventive solutions is a form of "indoor GPS". Using GPS in enclosed spaces has never been a realistic option because satellite signals struggle to pass through thick materials such as walls – but now BeSpoon has found a way around that problem. The company's locating devices, known as satellites, can locate products down to a few centimeters. That is a groundbreaking development, and it confirms BeSpoon's status as a pioneer in efforts to determine the location of objects inside buildings and production environments.

Positioning made easy

The French research lab CEA LETI had already been working on the concept of indoor GPS for ten years when the researchers decided to approach BeSpoon's founders to suggest embarking on a collaborative project in the year 2010. The basic idea was to make a novel use of radio waves to measure distances accurately in enclosed spaces. "We published our research results in a study, and when somebody at TRUMPF read it, we were suddenly on their radar," says André. In 2017, TRUMPF acquired a 60-percent stake in BeSpoon. Prior to that, Jean-Marie André hadn't even heard of the Ditzingen-based machine maker. He and his colleagues had been busy focusing on applications such as tracking athletes on court, for example during basketball games. Back then the French company had no idea that their indoor tracking system had the potential to eliminate a major time-waster from many sheet metal fabricator's shop floors – the tricky task of locating parts.



No more hide-and-seek

Low-volume jobs make up an increasing proportion of the sheet metal fabrication business. Many job shops are finding it harder than ever to keep track of which stage each job has currently reached and where the parts are stored between stages. Yet transparency is essential to keeping things running smoothly, especially when dealing with urgent orders that have tight deadlines. "Metal and radio waves are not a great mix. That's why indoor positioning in the sheet metal fabrication business has never really been an option. But our product changes that. By using high-precision yet robust ultra-wideband radio technology, or UWB, we can track objects even when they are surrounded by lots of metal."

IMAGES: Niels Schubert

Ever smaller chips: A crucial part of the process.

Simple, yet groundbreaking

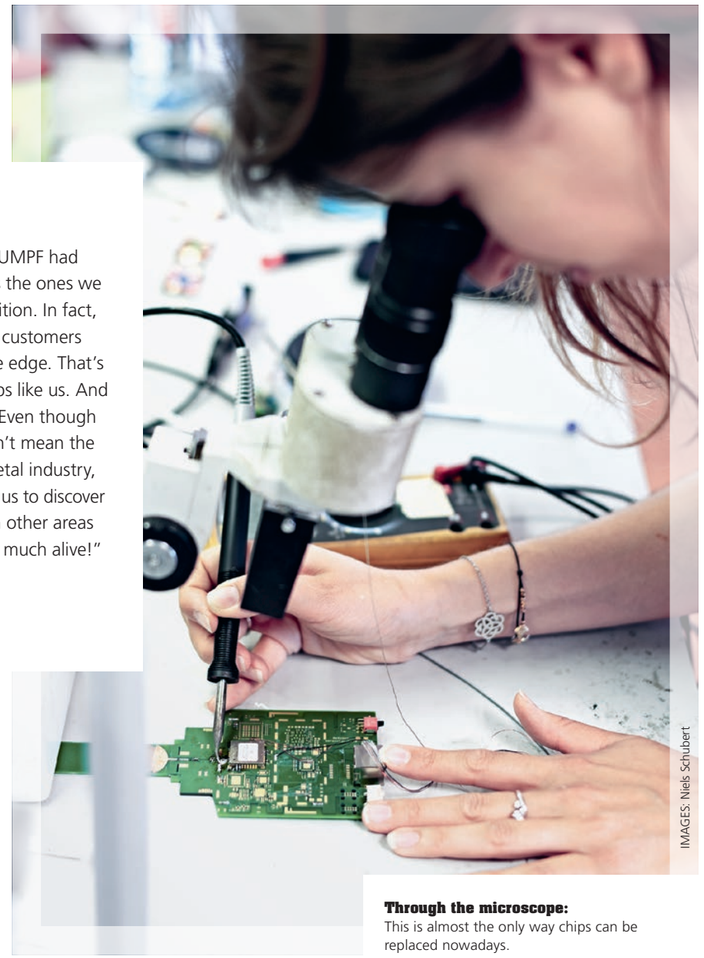
The way in which their indoor positioning software works is fairly simple to explain. First, the company installs several of its satellites in the production facility in order to provide a means of determining each part's precise location. Little boxes containing transmitter chips – also known as markers – can then simply be attached to whatever object needs to be tracked, a cut metal part for example. The tiny chip in the magnetic marker box communicates with the satellites in the facility, allowing them to determine its position. Users can simply place a marker on, or next to, the parts they wish to track. "Sheet metal fabricators have to label parts with a data sheet or job sheet anyhow, so they can simply use a marker to hold the sheet in place," says André.

At EuroBLECH, TRUMPF will make its first ever large-scale presentation of the localization solution it developed with the support of BeSpoon. Tests have been underway for the past few months at TRUMPF's smart factory in Chicago. BeSpoon sees one of its key tasks as building bridges between the digital and analog worlds. The fact is that machines are steadily becoming faster and more efficient – and the staff can't always keep pace. That's why this new positioning technique represents a particularly big step in non-automated production environments, says André: "We give people the tools they need to be as efficient as robots."

BeSpoon employs 15 people, almost all of whom are engineers. TRUMPF's decision to invest in the start-up ushered in several changes for the better: "This collaboration has changed the way we think, and the way we work. Obviously we are focusing more on sheet metal fabrication, but at the same time TRUMPF has opened up a wealth of opportunities we simply didn't have before. For example, now we can work with suppliers who would previously have regarded us rather skeptically due to our diminutive size," says André.

Prototype: What the markers looked like during the test phase.

> **“ We** give **people** the tools they need to be as efficient as **robots**. **”**
>
> Jean-Marie André, CEO BeSpoon



Through the microscope: This is almost the only way chips can be replaced nowadays.

IMAGES: Niels Schubert

Forging links through change

TRUMPF has also shown the courage to change. “TRUMPF had virtually no experience working with chips as small as the ones we use. But they didn’t shy away from making that transition. In fact, they embrace change as an opportunity to help their customers push ahead with digitalization and gain a competitive edge. That’s why the company is so open to working with start-ups like us. And that’s an attitude I find very refreshing,” says André. Even though TRUMPF is so heavily invested in BeSpoon, that doesn’t mean the start-up will be working exclusively with the sheet metal industry, says André: “Our partners are constantly encouraging us to discover new things. And that includes conducting research in other areas and keeping our creativity and sense of curiosity very much alive!”

04

Key facts:

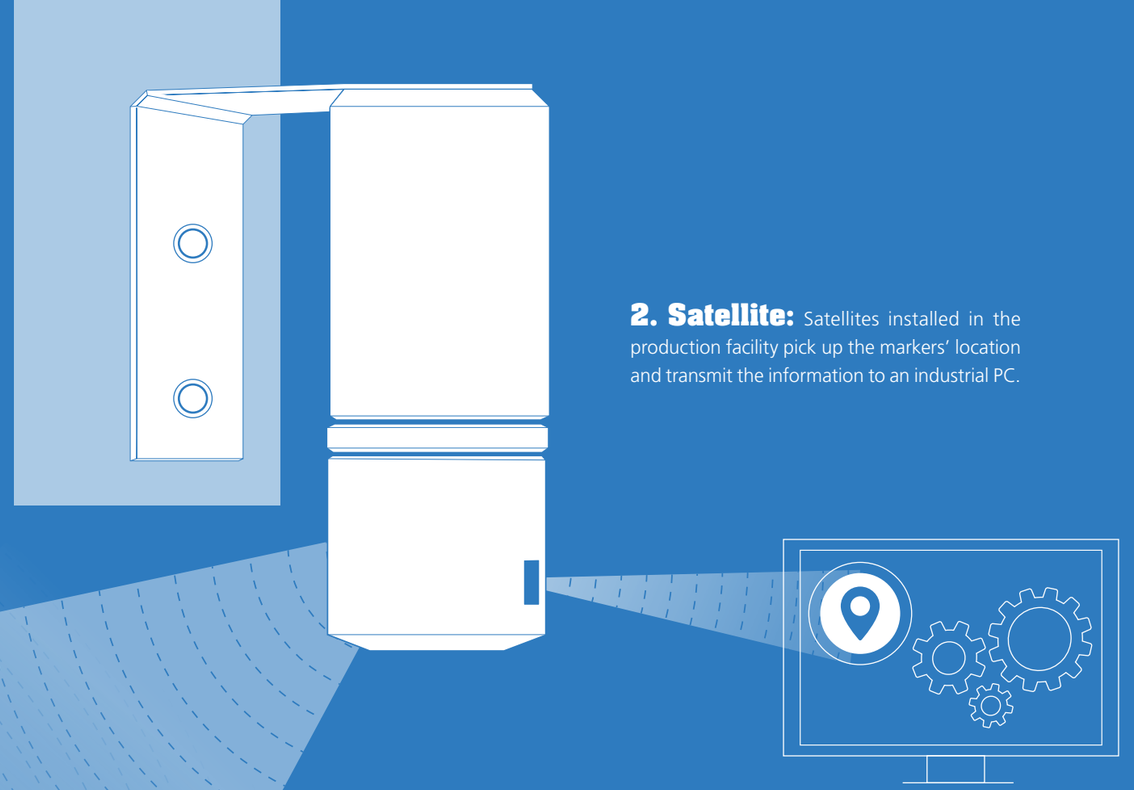
Indoor localization system

I can’t find my parts! Sheet metal fabricators will soon have a simple way to solve that problem. **“Track&Trace”** helps them determine the precise location of their products.

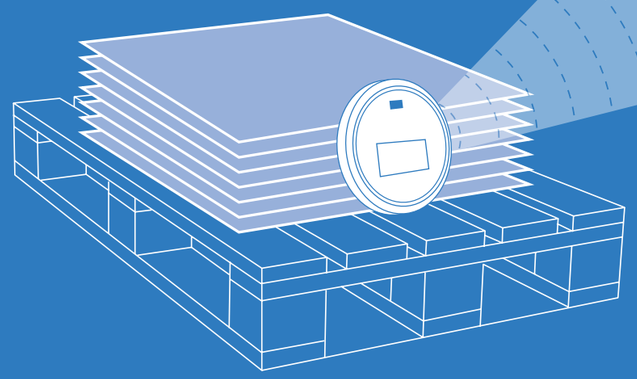
In brief

Track&Trace

In collaboration with the French company BeSpoon, TRUMPF has come up with a solution for locating objects inside buildings. Thanks to ultra-wideband (UWB) technology, the new system can accurately determine an object's position even when it is surrounded by large amounts of metal. That gives sheet metal fabricators the perfect tool to optimize how they track their jobs, load carriers and transportation equipment. Satellites mounted on the ceilings and walls detect markers on batches of parts in the production facility and transmit their location to an industrial PC.



1. Marker: Users can transfer the order number and other information digitally onto the e-ink display of the marker. They can then simply place them on or beside the parts of the order.



2. Satellite: Satellites installed in the production facility pick up the markers' location and transmit the information to an industrial PC.

3. Industrial PC: The industrial PC receives the data and then processes and visualizes it to enable accurate indoor positioning.

Key benefits of Track&Trace:

Plug & play:
Track&Trace simply slots into existing manufacturing processes and provides user-friendly assistance in everyday tasks.

Easy to use:
The system is intuitive and fun to use.

Boosts transparency:
Track&Trace helps visualize the flow of materials.

About the company

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BIZ+

SHORT CUTS

Fascinating facts and exciting innovations.

TRUMPF and Teufel

TRUMPF's acquisition of Teufel Solutions AG in August 2018 is part of its ongoing mission to strengthen its portfolio in all areas of digitally connected manufacturing. Founded in 2002 as a SAP systems integrator and based in the Swiss town of Bottighofen, Teufel Solutions AG is a development partner for TRUMPF's TruTops Fab software. Designed as a modular production control system, TruTops Fab allows users to manage the entire sheet metal fabrication process and to control and keep track of all the jobs performed by each machine. TRUMPF Chief Digital Officer Mathias Kammüller is delighted with this acquisition: "Teufel Solutions AG's expertise in TruTops Fab and TruConnect is the perfect complement to TRUMPF's Industry 4.0 activities."

¡Viva España!

"Seguimos innovando juntos", or "Developing innovations together", is the motto TRUMPF Spain lives by – and it has proved to be a resounding success. The Spanish subsidiary, which is nicknamed "La Maquinaria", or "The Machinery", reported a record turnover for its most recent fiscal year, and this calendar year marks the company's 30th anniversary. To celebrate these achievements, the German ambassador invited TRUMPF employees, customers and business partners to a special event at his offices in Madrid. TRUMPF CEO Nicola Leibinger-Kammüller and her husband Mathias Kammüller were on hand to show their appreciation for this great honor and to thank the entire team for their outstanding efforts.

Post-reunification success story

In mid August, German Chancellor Angela Merkel and Michael Kretschmer, prime minister of the German state of Saxony, visited TRUMPF Saxony in Neukirch. One of their top priorities was to spend time talking to the site's employees. The history of TRUMPF Saxony mirrors that of the rapprochement between East and West Germany. Even before the fall of the Berlin Wall, TRUMPF was already supplying lasers to the Fortschritt combine, a publicly owned industrial enterprise in the former East Germany. Following reunification, this combine gave rise to the company Sächsische Werkzeug- und Sondermaschinen GmbH in 1992, which became part of the TRUMPF Group. Nicola Leibinger-Kammüller: "After German reunification we were determined to establish ourselves here for the long term. We will be underlining that commitment in the future through new investments and jobs."

TRUMPF Vietnam on growth course

Good Morning Vietnam: With its new headquarters in Ho Chi Minh City – the country's economic powerhouse – plus an additional branch office in the capital Hanoi, TRUMPF is forging ever closer ties to its Southeast Asian customers in Vietnam. "It all comes down to having a local presence," says Patrick Kemnitz, General Director TRUMPF Vietnam. Some 40 people work at the two locations. Their goal is not just to serve the local market, but also to promote digitalization. At this year's MTA Vietnam metalworking and machine tool exhibition, the team impressed the crowds with a virtual reality presentation of a selection of TRUMPF machines.

IMAGES: TRUMPF, Torsten Kellermann

TRUMPF takes Innovationskaiser award

At an exciting gala evening hosted by an avatar, the TRUMPF team from Pasching picked up silver at the Pegasus business awards in the "Innovationskaiser" category, which rewards outstanding innovations. The 25th edition of the award ceremony was dedicated to digital transformation. TRUMPF Austria impressed the judges with its "Bending Technology" e-learning project. The Pegasus business awards are an opportunity for the Chamber of Commerce, the state of Upper Austria, and various other protagonists to honor the region's robust economic health and diversity. Christa Furtmüller was delighted to receive the prize: "The Pegasus award shows once again that we are on the right track with our online training programs and are offering our customers genuine added value. People like how we present complex technical materials in a fun, interactive way that is appropriate to specific target groups."

Award for record-breaking nanoparticle production

A team of researchers at the University of Duisburg-Essen has succeeded in producing several grams of nanoparticles in just one hour with the TRUMPF AMPHOS 500flex laser system. The scientists received the Fojtik-Henglein Prize for their proof of concept in Lyon, France. The Fojtik-Henglein Prize recognizes groundbreaking published research into laser and nanoparticle colloids. Nanoparticles have truly extraordinary properties. They make eyeglass lenses more scratch-resistant and prostheses and implants more biocompatible with the human body. A nanoparticle measures just eight nanometers, which is a thousand times smaller than a bacterium. To produce nanoparticles, a laser beam must be fired several billion times at the surface of a metal plate made of platinum, gold or silver – a method that has proven to be far too time-consuming and expensive for industrial applications. Bilal Gökce's team of researchers carried out the nanoparticle production process with a very powerful 500flex ultrashort pulse laser (USP) made by the TRUMPF subsidiary Amphos. Gökce and his team were able to show that this approach produces up to four grams of nanoparticles per hour. A yield as high as this makes it feasible to use this process for industrial applications.

Growth in the Black Forest

TRUMPF is investing 43 million euros in its Schramberg production site. In October 2018, work started on a new building that will expand the campus area. TRUMPF is planning to bring together several departments of the Group's second largest site in the new 14,000 m² space, says Dr. Christian Schmitz, CEO Laser Technology: "This impressive new building is the perfect response to the growth that we have enjoyed at TRUMPF Laser over recent years, and it also offers solid foundations for our innovation and growth strategy." One of the biggest highlights for the 1,300 employees is the new company restaurant, which will offer views of the Black Forest.

EVERYBODY'S DARLING: TRUMATIC 1000 FIBER

Two years ago, TRUMPF's range of punch laser systems received a major boost with the addition of the TruMatic 1000 fiber. The TruMatic 1000 fiber opens the door to a combination of punching and laser technology that completes all these operations on just one machine.

Ebubekir Güneş works as a CNC programmer and process manager at HA-BE Gehäusebau GmbH in the Bavarian town of Altheim. Earlier this year, the company took the decision to purchase a TruMatic 1000 fiber system: "We've spent years working with a wide range of TRUMPF machines," says Güneş. "One of the biggest advantages of the TruMatic 1000 fiber is the other options it offers us in addition to the laser – options you normally only find on high-end machines. For example, it comes with a built-in sorting feature that automatically ejects small parts into up to four different boxes. You also get a parts flap that uses a conveyor belt to remove large parts measuring up to 400 x 600 millimeters," Güneş says. "The machine makes our business even more flexible by allowing us to produce such a broad range of parts: the punching head is perfect for creating standard contours and formed sections, while more complex contours are handled by the laser."

A KEY PIECE IN THE INDUSTRY 4.0 PUZZLE: TRACK&TRACE

The indoor positioning software Track&Trace is designed to help sheet metal fabricators spend less time searching for parts. Based in Friedrichsdorf near Frankfurt, Germany, the company Arnold AG specializes in high-quality metal products, fabricating everything from small bending parts to complex assemblies for industrial applications. The company has been trying out the Track&Trace system since late 2017. Production director Christoph Ebert describes their experiences so far with Track&Trace.

How long have you been testing Track&Trace? And how did you get involved in the first place?
When TRUMPF invested in BeSpoon and their indoor positioning system in August 2017, we were immediately keen to get involved. The system is exactly what we need on our shop floor. We often have several hundred jobs running at the same time, so we were trying to find the best way to maintain a clear overview. We installed numerous indoor satellites and some 100 markers for the test period. That doesn't cover our entire production facility, but it's enough to get some initial experience using the system and give TRUMPF feedback.

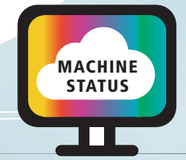
In which situations is Track&Trace particularly helpful?
Track&Trace gives us a level of transparency that eliminates much of the searching we used to do. With the new system, we simply program each of our markers with the number of the job it will be "accompanying" through the production process. So if a customer calls us to ask how their job is going, or whether we can prioritize their order, we can give them an immediate answer at the touch of a button. That's particularly useful when you're dealing with small batches. In the future, Track&Trace can also help us map out, analyze and improve processes on our shop floor.

Can you sum up the results so far?
Well, the test phase isn't over yet, but it's already clear that the system provides major benefits to our daily work. It's a key piece of the digitalization puzzle.

THE MACHINE IS ONLY THE START

Digitalization and big data often go hand in hand. But how do you maintain an overview when you are faced with thousands of pieces of data? And what's the best way to present data clearly and concisely? TRUMPF offers five apps designed to tackle those challenges.

Machines produce parts – but they also supply a steady stream of valuable data. By studying this digital extension of a system, we can learn how to increase transparency and optimize processes. The problem is that someone has to collect and analyze the data – and that's exactly what TRUMPF's five new apps are designed to do. They analyze machine data and present the operator with the results. Responsibility for providing the cloud platform on which the data is processed lies with AXOOM, a TRUMPF subsidiary. Its servers are located in Germany and Europe to ensure adherence with strict data protection legislation.



Live Status
This app promotes mobility by allowing users to check the current status of their machines even when they are not on the shop floor. All the information is made available on a browser page that can be accessed from anywhere. This includes details of when each machine is scheduled to complete its program. The app notifies the user of any machine stoppages.

Machine Analytics
Machine Analytics are used to evaluate the machine data and status updates from the past few days. This gives users the information they need to improve machine utilization and optimize machine hour rates. Equipped with this transparent overview of capacity utilization, users are also in a better position to make upcoming investment decisions.

Material Analytics
Evaluations of material consumption provide a good basis for analyzing requirements. They make it easier to draw up forecasts of future purchase orders and to plan the scope of framework agreements more accurately.

Punching Tool Analytics
This app identifies which tools are used most frequently and gives users suggestions on which ones to convert into standard tools. The number of strokes per tool class indicates when the time has come to regrind or order a new tool.

Program Analytics
Operators can use this app to see which programs have encountered problems. This kind of information can be helpful when it comes to selecting programs for certain shifts, for example those that run at night.

FASTER, FURTHER, AUTONOMOUS

What do laser cutting and driving a car have in common? Both are set to be automated in the near future. At least that's the vision pursued by the auto industry – and by TRUMPF. At the EuroBLECH fair, TRUMPF will be presenting another of its high-tech milestones on the path toward autonomous machines: Active Speed Control.

Imagine a system that recognizes and avoids potential problems on its own; and can even rectify them if necessary. That may sound far-fetched, but the vision of autonomous laser cutting is no longer merely a dream. It is the next logical step in technological progress. TRUMPF already offers functions and machines that operate partially autonomously. Examples include Smart Nozzle Automation, the TruLaser Center 7030 and, in particular, the new cutting sensor system for solid-state laser machines: Active Speed Control.

Active Speed Control looks straight through the nozzle at the laser cut, monitoring it in real time and automatically regulating the feed rate of the solid-state laser machine. The sensors enable the machine to work as quickly as possible and extremely reliably, even when the quality of the material varies. The intelligent sensor technology reduces scrap and rework in both flame and fusion cutting and takes the strain off the machine operator.

WHAT DOES ACTIVE SPEED CONTROL DO?

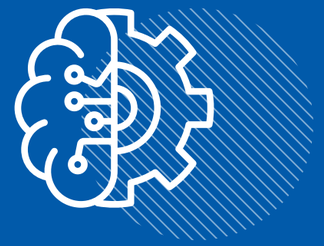
With mild steel and stainless steel sheets that are at least four millimeters thick, the sensor system looks straight through the nozzle and monitors the radiation emitted as the material melts. It checks whether the molten material is being ejected as planned, calculates the fastest possible feed rate and regulates it as required – up to several hundred times every second.

ENSURING RELIABLE CUTTING – EVEN WITH VARYING MATERIAL QUALITY

Active Speed Control ensures optimal feed rates even when the thickness of a sheet varies or there is rust or paint on its surface. In conventional systems, these kinds of variations in material would typically lead to slag formation or interruptions in the cutting process.

FAST, FASTER, ACTIVE SPEED CONTROL

Cutting data generally includes a buffer to compensate for factors such as varying material quality – but Active Speed Control needs no such buffer. In fact, it often achieves faster speeds than the standard values stored in the cutting data.



SMART SENSORS DO AWAY WITH STRESS

Operators frequently reduce the feed rate to allow for variations in the material. That makes for greater reliability in many cases, but it often has a negative impact on the cutting process and the quality of the cut. That's because the build-up of heat can cause the material to melt in an uncontrolled fashion. By automatically controlling the feed rate, Active Speed Control prevents heat building up in the first place.

LIVE AND UP CLOSE

The operator can view a live image of the cutting zone as seen through the nozzle, and can browse key process parameters at any time, either on the machine's control panel or on a tablet. That makes it easier to control the machine during production. Previously, operators had to manually create what is known in the industry as a tapeshot to ensure that the parameters were set to their optimum values – and that took time.

HIGHER PART QUALITY, LOWER PART COSTS

In the event of a miscut, Active Speed Control brings the machine to a halt and the TruTops Monitor software immediately informs the operator. Active Speed Control also reduces the formation of burrs and slag.

ALWAYS UP TO DATE

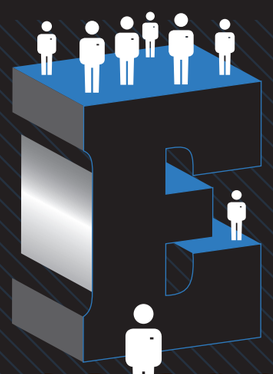
The software update feature means additional functions for automated laser cutting can easily be added to the system in the future.

Check it out!

BEHIND THE SCENES AT EUROBLECH

Every two years, the EuroBLECH fair in Hanover, Germany, plays host to the metal processing industry. Now it's EuroBLECH time again, and the international trade show's slogan for 2018 is: "At the forefront of digitalization." With exhibitors from 15 different fields of technology, EuroBLECH covers the industry's entire process chain.

TRUMPF will be exhibiting once again with one of the largest booths, presenting not just machines, but also solutions for digital transformation. This infographic provides some interesting and curious facts about EuroBLECH. How many machines does TRUMPF typically showcase at its booth? And how many cups of coffee do employees and visitors to the fair drink? We take a peek behind the scenes of the most recent editions of EuroBLECH.

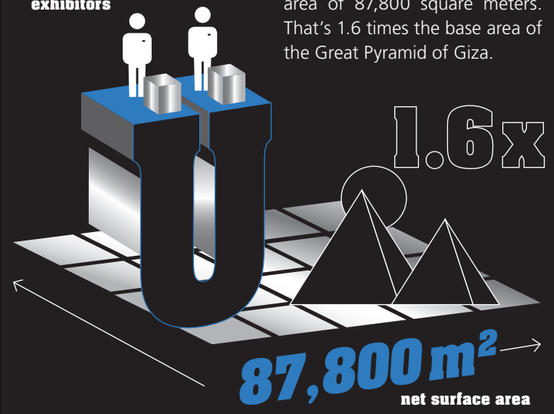


60,636
trade show visitors

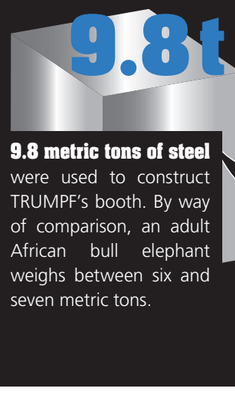
2.5x
the population of Ditzingen

A total of 60,636 industry insiders attended EuroBLECH 2016. That's 2.5 times the population of Ditzingen, the town in which TRUMPF has its headquarters.

1,500
exhibitors

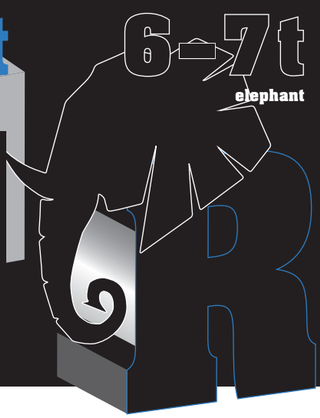


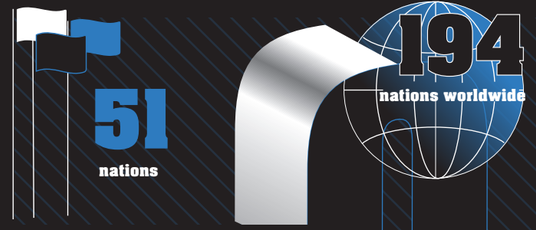
Two years ago, **over** 1,500 exhibitors occupied a net surface area of 87,800 square meters. That's 1.6 times the base area of the Great Pyramid of Giza.



9.8t

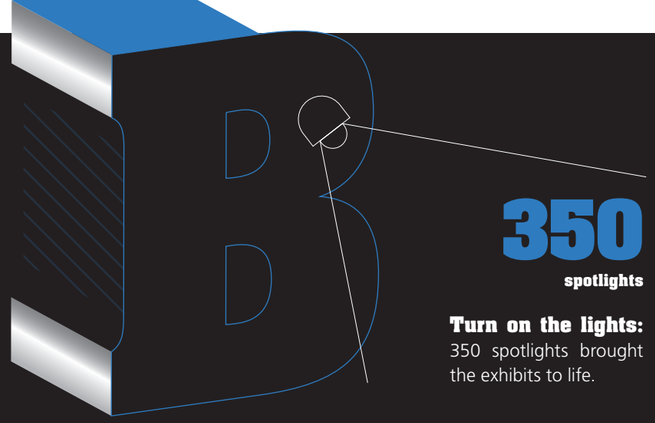
9.8 metric tons of steel were used to construct TRUMPF's booth. By way of comparison, an adult African bull elephant weighs between six and seven metric tons.





People from 51 nations visited the TRUMPF booth – that's one-quarter of the total of 194 nations worldwide.

ILLUSTRATION: Vera Uchytil

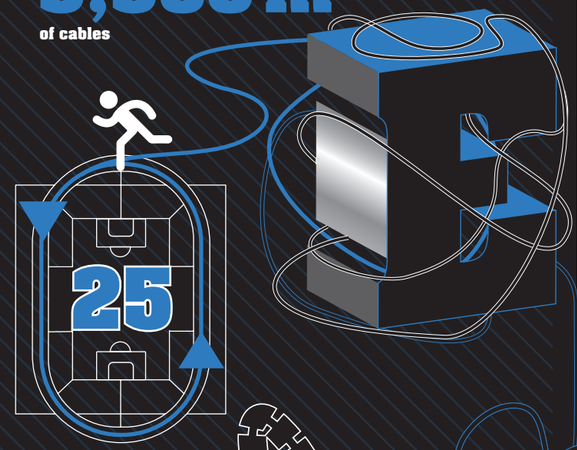


350
spotlights

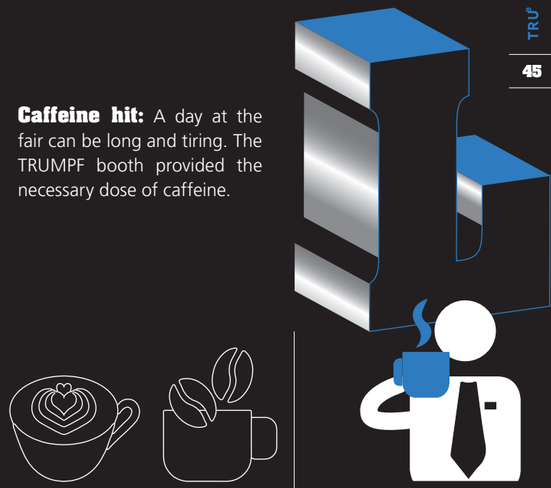
Turn on the lights: 350 spotlights brought the exhibits to life.

No tangled cables to be seen at the TRUMPF booth – but the exhibitors did need to lay a lot of data cables. To be precise, 9,960 meters of them. Enough for 25 laps of a sports stadium.

9,960 m
of cables



Caffeine hit: A day at the fair can be long and tiring. The TRUMPF booth provided the necessary dose of caffeine.

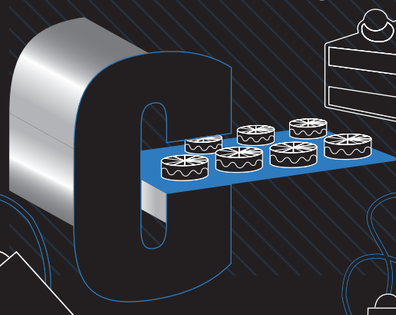


4,140
Trade show visitors consumed 4,140 cups of coffee and cappuccino

3,269
cups of coffee were consumed by booth staff

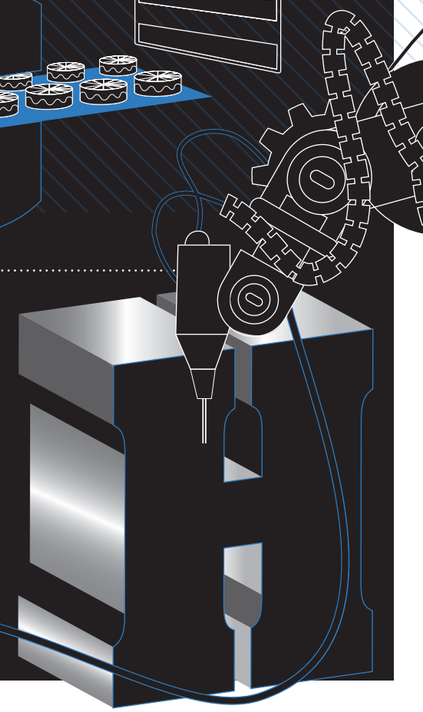
350
cakes

4,218
pieces of cake



Not just for show: At the TRUMPF booth, visitors could experience a total of 15 machines in actual production.

15
machines



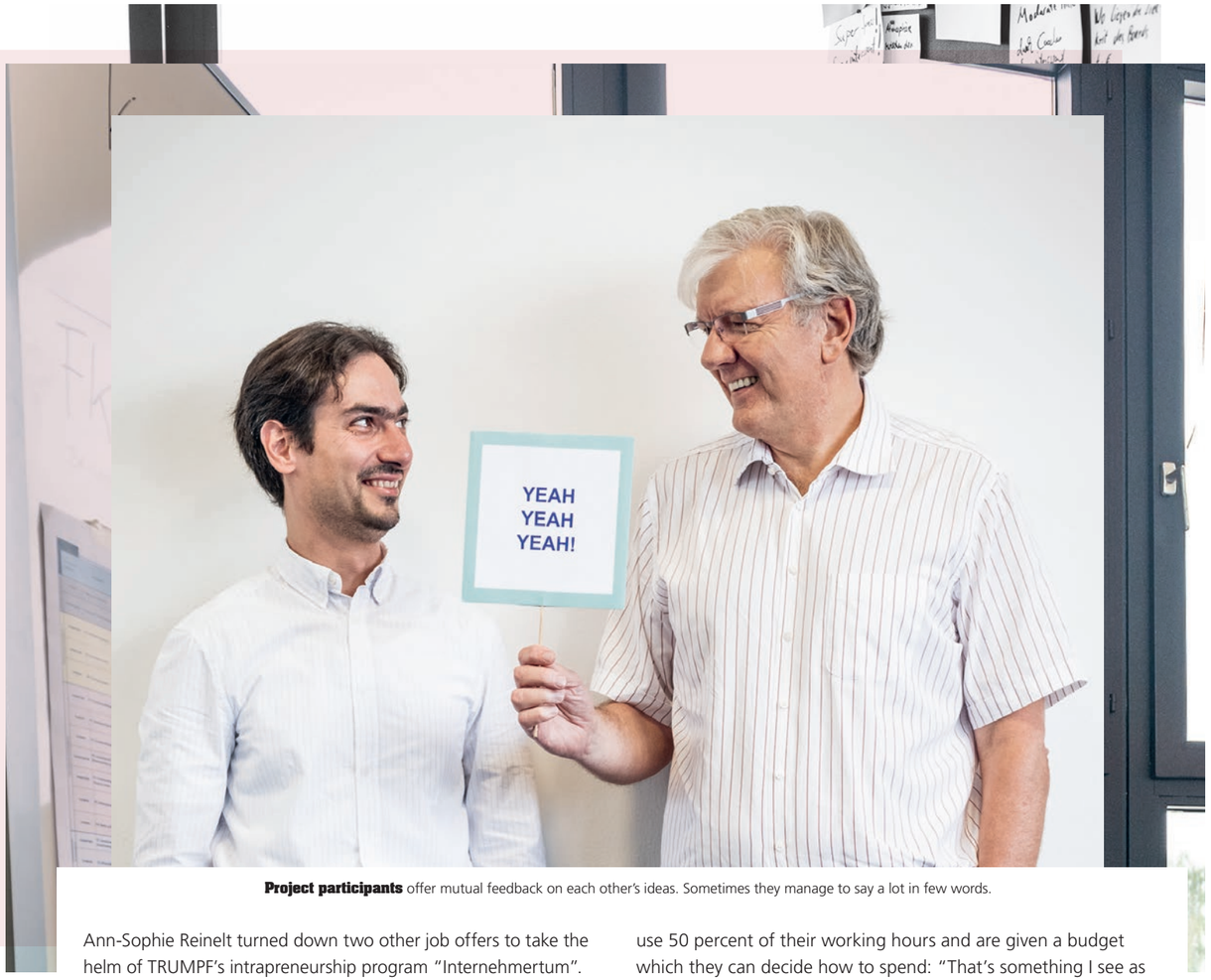
05

THE FUTURE

THE TRUMPF IDEAS FACTORY

The concept of start-ups battling for investors' money has long been an integral part of TV programs in various countries, including **"Lions' Den"** in Germany, **"Shark Tank"** in the US, and **"Dragons' Den"** in Japan. But the idea of pitching for capital, time and support is now even emerging at more traditional companies – and TRUMPF is no exception. Ann-Sophie Reinelt has been running the **Internehmertum** initiative for the past 12 months, helping her colleagues put their innovative ideas into practice.

IMAGO / Karl R. Joachim



Project participants offer mutual feedback on each other's ideas. Sometimes they manage to say a lot in few words.

Ann-Sophie Reinelt turned down two other job offers to take the helm of TRUMPF's intrapreneurship program "Internehmertum". "The idea struck me as exciting and interesting right from the start," says the 30-year-old innovation manager. Today, one year after the project started, she is more convinced than ever of its merits, and she clearly enjoys her benevolent role heading up the initiative. The TRUMPF intrapreneurship program helps employees develop their own ideas into business models. "The basic goal is to give employees the time and space they need to pursue and validate new ideas that have real potential. What matters to TRUMPF is that they look at the big picture and take a holistic, entrepreneurial approach that goes well beyond their normal job," says Ann-Sophie Reinelt. The first round kicked off in October 2017. Reinelt is now getting ready for the third phase of the project, which begins this October.

The Internehmertum initiative is open to all TRUMPF employees. It starts with a call for proposals on the intranet, which is when potential candidates are free to submit their ideas. An interdisciplinary committee then selects the teams that will form part of the next round of Internehmertum. "Each round involves approximately three to five teams each comprising at least two members. They are given 30 days within an overall period of three months to get their project off the ground," says Reinelt. The innovators are allowed to use 50 percent of their working hours and are given a budget which they can decide how to spend: "That's something I see as very important. I argued from the start that every participant should be able to make their own decisions on how to invest their budget. The only approval they need is from the other members of the team – so that means they can act like a real start-up," says Reinelt. The "intrepreneurs" can basically buy whatever they want and need: from a TV set for a presentation to tools, market studies and indeed anything else that makes their work easier.

Loosen your tie and get creative

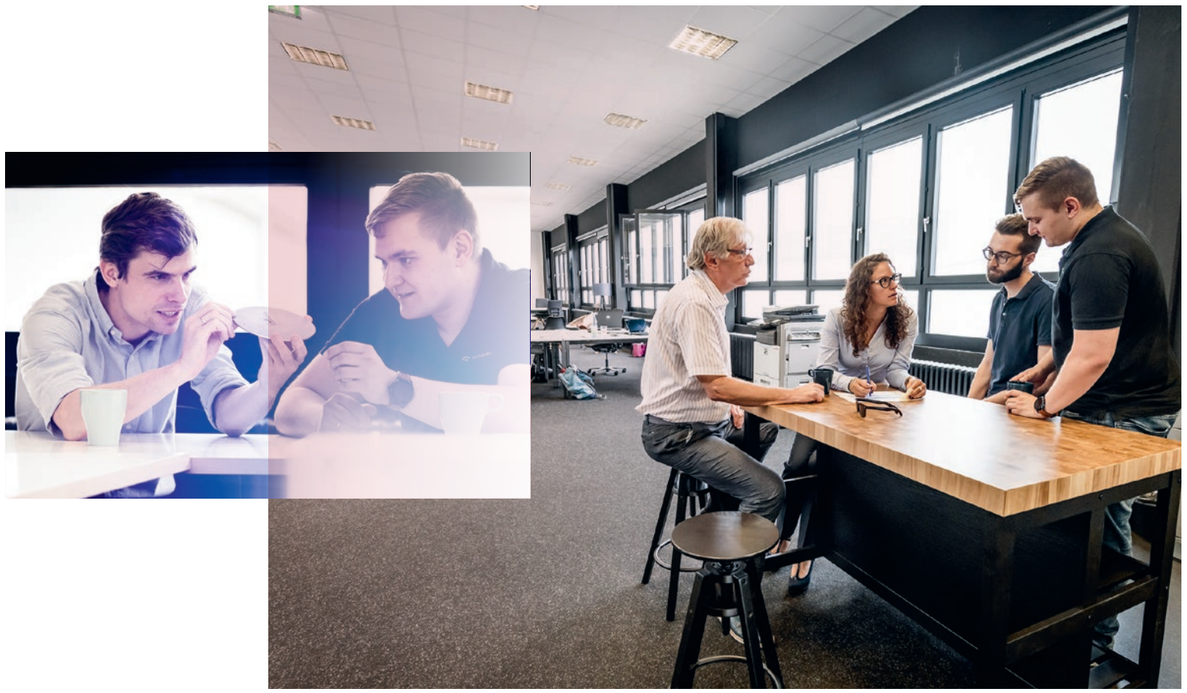
Every project is different, but the underlying structure of the individual project cycles remains the same. Ann-Sophie Reinelt explains how it works: "We kick off with an intensive week that is designed to help the participants engage with the project. That's important, because the Internehmertum initiative is quite different from other types of work at TRUMPF. To really get into that start-up mood, you often get people switching from a shirt to a T-shirt," says Reinelt with a smile. The teams attend additional one-week intensive stages before their interim and final presentations, says Reinelt: "And for the rest of the time the participants spend two days a week with me in Ludwigsburg. Those are the days on which we run coaching sessions and offer the participants whatever support they need. We made a conscious decision to rent offices at the urbanharbor facility to give people the distance they need from their normal jobs in Ditzingen. The participants can use the spaces at urbanharbor any time they want. I make sure they can focus entirely on their project by shielding them from red tape and any other hassles."

IMAGES: Kai R. Joachim

> " The basic goal is to give employees the **time and space** they need to pursue and validate **new ideas** that have **real potential**. "
>
> Ann-Sophie Reinelt, TRUMPF innovation manager

Succeeding by taking risks

The projects up to now have been highly diverse, ranging from digitalization and services to Industry 4.0. One successful spin-off has already emerged from the first round of Internehmertum, says Reinelt: "It's a start-up based around quantum technology. The employees are now the managing directors, so they can keep pursuing their original idea. TRUMPF is also in the process of examining an additional project from the second round to see if it, too, merits a spin-off." Just like any other start-up, there is no guarantee of success in an Internehmertum project. "Obviously things can go wrong. But it's a risk worth taking. It's fantastic to see TRUMPF becoming more and more courageous, because that inspires the participants all the more!"



TEC+

SHORT CUTS

Innovations, technologies and future trends.

Powerful lasers

The new TruLaser Series 5000 is now available with a 10 kW laser, the TruDisk 10001. This laser increases sheet throughput significantly in fusion cutting of medium thickness sheets, and it also works extremely fast with flame cutting thanks to BrightLine fiber. The new generation of Series 5000 machines offers a considerably more dynamic experience than previous models and TruLaser Series 3000 machines, especially when it comes to complex contours and thin sheets. It also offers a wealth of new features that make the machine even easier to use. These include an automatic nozzle changer which the operator can set up while the machine is in operation. This solid-state laser machine also comes with a six-meter long working area for the very first time.

Programming and production

The new TruTops Weld programming software allows users to create a program offline on a computer while the TruLaser Weld 5000 laser welding machine gets on with the current job. Once they have created the program, they can simply transfer it to the machine and let the TeachLine sensor system adjust it automatically to match the actual position of the part. TruTops Weld also makes programming significantly faster: teach-in programming requires machine operators to individually program every point the robot will travel to during processing, while TruTops Weld simply calculates these points on the robot's path automatically.

Next step in the TruBend Series 7000

TRUMPF will be presenting its new TruBend Series 7000 at EuroBLECH in Hanover. Just like their predecessors, these user-friendly bending machines can bend small and medium-sized parts extremely fast. For the first time, the Series 7000 will be available with a press force of 50 tons as well as a press force of 36 tons. The TruBend 7050 offers a bending length of 1,530 millimeters and a usable open height of 385 millimeters. The new generation of machines comes with the ACB Wireless angle measuring system. It also features a new, user-friendly control panel, the Touchpoint TruBend, which makes programming on the shop floor far simpler. The various views show the most relevant information in each case, helping users to quickly find the data input screen they need. The user interface can be operated without a mouse or keyboard, even if the operator is wearing work gloves. And just like the previous generation of the TruBend Series 7000, these new machines come with ergonomic features such as a support table.

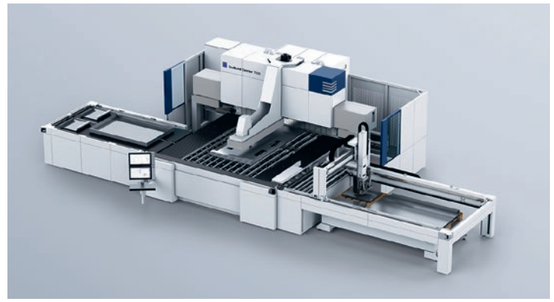
IMAGES: TRUMPF

Upgrade for bending tools

The ToolMaster boosts productivity by automatically switching between bending tools. Now TRUMPF has created a new generation of the ToolMaster just in time for EuroBLECH. The new ToolMaster offers up to three times as many slots as the previous model. Users can insert both standard tools as well as ACB sensor tools and customer-specific special tools. What's more, tool changes are even faster with the new ToolMaster thanks to a 50 percent boost in speed over the previous model. Inserting new tools in the ToolMaster couldn't be simpler: with its built-in scanner, the system simply reads each tool's data matrix code and automatically inserts it in the correct slot.

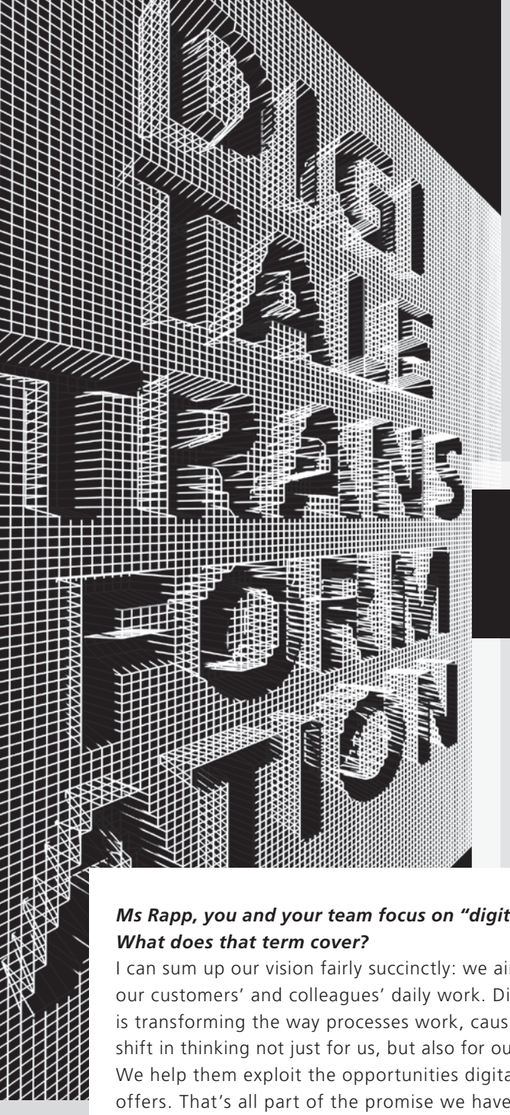
Best edge forward

The new TruTool TKA 1500 edge trimmer allows users to create large chamfers up to 15 millimeters long with a radius of 2, 3 or 4 millimeters. The scaling feature makes it quick and easy to set the desired chamfer height without using any tools. The TruTool TKA 1500 creates consistently high-quality surfaces without the need for rework. It is also a great choice for deburring, rounding and chamfering terminal edges, as well as for weld preparation. The ergonomic, vibration-absorbing handle ensures safe and stable tool operation. TRUMPF edge trimmers are used in machine and railroad car manufacturing, in shipbuilding, as well as in sheet metal processing.



The new generation: TruBend Center 7030

TRUMPF is also set to present another innovation from its bending portfolio: the new generation of the TruBend Center 7030 panel bender. Developers at TRUMPF have updated the machine design and added a new hydraulic solution. This has resulted in faster-moving axes, boosting the machine's productivity by 25 percent. A new on-demand servo drive saves energy by only running the motor when the machine actually needs it. The ToolMaster has also been thoroughly optimized to coincide with TRUMPF's new generation of machines, paving the way for reductions in set-up time of up to 70 percent. Improvements have also been made to the ACB laser. The new TruBend Center 7030 comes with an automatic loading and unloading unit. This boosts productivity even further by allowing parts to be loaded and unloaded while the TruBend Center 7030 is in operation.



FUTURE SERVICES

Kathrin Rapp has headed up “New and Digital Business Services” for the past 18 months. Together with her team, she helps customers make the most of the opportunities offered by digitalization. She told the TRUe editorial team how the process works.

Ms Rapp, you and your team focus on “digital services”. What does that term cover?
I can sum up our vision fairly succinctly: we aim to simplify our customers’ and colleagues’ daily work. Digitalization is transforming the way processes work, causing a radical shift in thinking not just for us, but also for our customers. We help them exploit the opportunities digitalization offers. That’s all part of the promise we have made to be a “partner in performance”.

What kind of support does a “partner in performance” provide?
In many cases it starts from an early stage, for example assisting new customers with their financing needs. Then we continue providing support after they have purchased the machine. In this phase – and indeed throughout the system’s entire life cycle – we try to create the right conditions to enable the customer to focus all their attention on their production process.

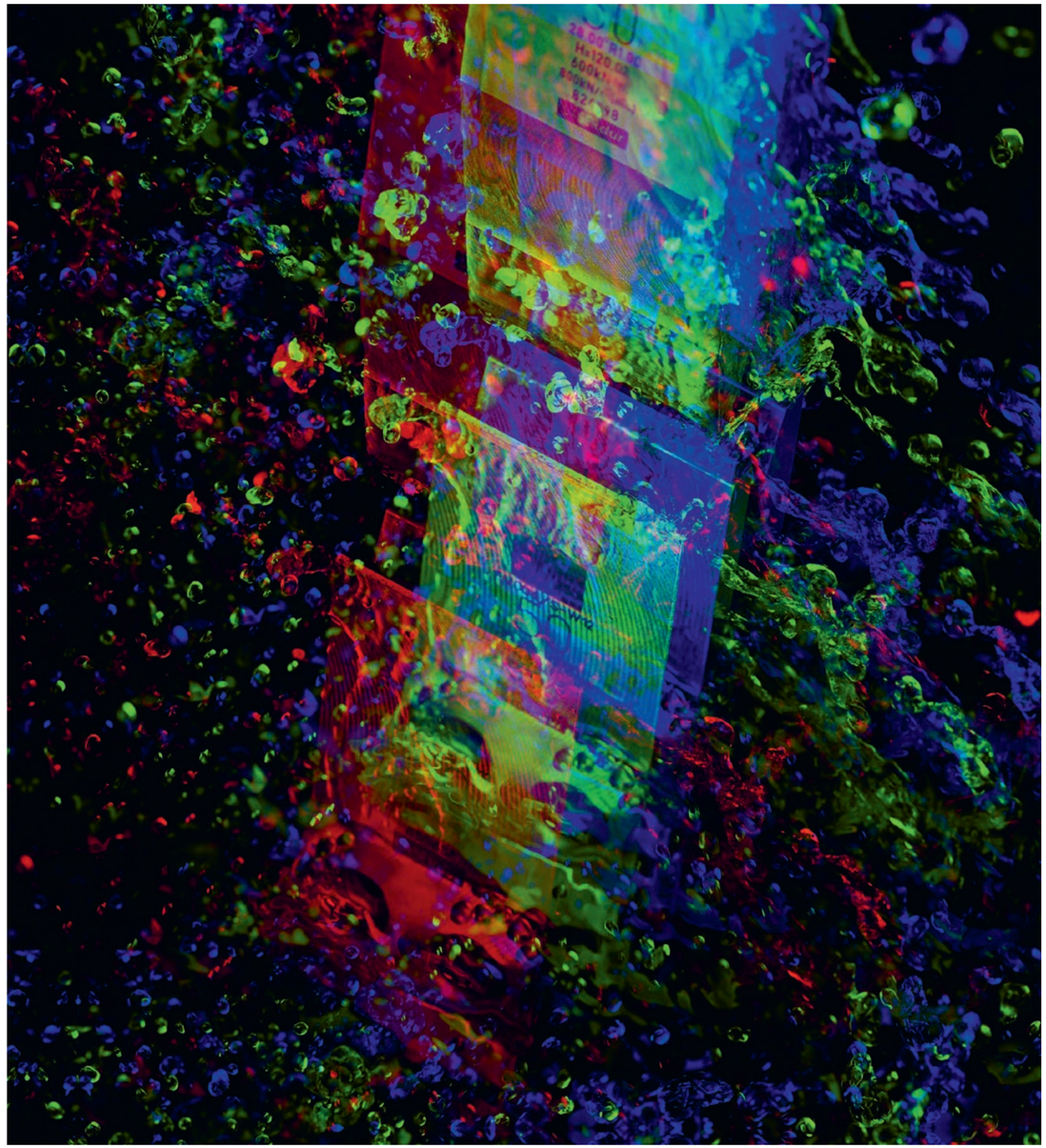
What are the right conditions?
Providing lean processes for ordering consumables and tools would be one example. With Easy Order, customers can submit orders at the touch of a button, either using the Easy Order app or our dedicated Easy Order button. Another example is our Service app which enables customers to submit queries to our technical customer support team in five easy steps.

Does that mean customers will only communicate via a PC in the future instead of talking to a service engineer?
Absolutely not! The Service app is just an example of how digitalization can simplify things, in this case by making it easier to contact our team. It means customers don’t have to worry about opening times. They can simply report the problem as soon as it actually occurs on the shop floor – day or night, and on any day of the week. It also means every colleague is kept informed, even after a shift change. Our service engineers can respond faster and are better prepared to deal with the problem.

So what’s next? What goals are you and your team pursuing?
We’re working on two key areas: digitizing existing processes and developing entirely new services. I can’t reveal too much at the moment but, to give just one example, MyTRUMPF users will soon be able to download the latest programming software with just one click. We’re also working on ways to make it faster for sheet metal fabricators to identify and re-order the consumables they need, so they can focus on their core processes. All these things involve close collaboration between TRUMPF and its customers. Mutual feedback is a key source of new ideas.

#07

pARTgallery



Technology transformed into art. Presenting parts in a new light is something we do in every issue of TRUe. This picture shows **upper and lower tools for shaping sheet metal** as you’ve never seen them before. Photographer Victor Jon Goicoechea Dacal has taken these TRUMPF bending tools out of their familiar environment and given them a whole new context.

CHANGE | TRUST

The fax generation

It had a slot where you inserted the paper and another where the printed paper appeared with a buzzing sound. It was a plastic cube and, for me, about as difficult to operate as a Mars lander! After a patient secretary had talked me through the basics, the moment of truth arrived: I proudly sent off my very first fax.

That was in the late 1980s, and fax machines were the latest craze in offices across Germany. In the meantime, the vast majority of them have been scrapped and there is about as much demand for my fax expertise as there is for VHS cassettes. If I wanted to ride the communication wave today, I would probably have to snapchat till my thumbs ached. And I haven't even really warmed to Instagram yet!

That's just the way it is: nothing stays the same. The height of fashion yesterday is "so last season" today – and hopelessly old-fashioned tomorrow. But it's inconvenient when – like me and the rest of the fax generation – you have to face the fact that the knowledge and skills you acquired are no longer of any use. That's why we often find ourselves defending what we know, trust and are familiar with.

The rule of thumb for our approach to everything new was formulated by the author Douglas Adams. It goes like this: Anything that is in the world when you're born is normal and ordinary and is just a natural part of the way the world works. Anything that's invented between when you're fifteen and thirty-five is new and exciting and revolutionary and you can probably get a career in it. Anything invented after you're thirty-five is against the natural order of things.

"People are very open-minded about new things – as long as they're exactly like the old ones," as Charles Kettering, a legendary development engineer at General Motors, once put it. After all, having to rethink things all the time and abandon all your certainties is hard work – and uncomfortable. That's why we avoid doing it until we have absolutely no other alternative.

At the same time, we mustn't forget that not everything sold to us as new and innovative is automatically something positive. For instance, in the city where I was born, students in the 1960s occupied a number of run-down art nouveau buildings. The buildings were earmarked for demolition to make way for a project then considered to be the height of modernity: a multi-lane highway lined with skyscraper-like blocks. The students who occupied the houses prevented them from being torn down at the last minute – and are celebrated as heroes today. The art nouveau buildings have long since been beautifully renovated and everyone in the city is delighted that they weren't sacrificed for some obsession with modernization.

What can we learn from this story? That change is something that, ideally, needs to be negotiated sensibly between those who want to innovate and those who want to preserve. This requires, for one thing, trust in the judgment of others (after all, they could be right); for another, absolute openness to new ideas. It's easy to maintain that openness: just remember that almost all of the knowledge we possess will become obsolete faster than it takes, say, to use up the thermal paper roll in a busy fax machine.

Oskar Simon

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