

TRUf

THE MAGAZINE FOR SHEET METAL EXPERTS

01 Sintra

Bold and colorful:
how Apametal became one of
Portugal's most successful signmakers

02 Cikarang

Arabica from Java:
an interview about barista courses for job-shop workers
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09# 2019 CREATIVITY

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High bay racking versus old traditions:
a century of successful business
for German company Gefinal

04 Ditzingen

From spaceships to bending connections:
how a single idea can save millions





Even modest **advances** in cancer treatment require **perseverance** – and plenty of **creativity**.

The only way to find new solutions is by constantly looking at problems from **different angles**.

That's exactly what Tasuku Honjo and James Allison opted to do. They received this year's **Nobel Prize**

in Medicine for their idea of using **proteins as accelerators instead of brakes**

on the immune system in the fight against cancer. The take-home lesson for entrepreneurs is

the importance of remaining open to new, creative approaches and shifts in perspective. ■



Art installations in the Japanese teamLab museum of contemporary art are in a constant state of flux – all thanks to the use of cutting-edge software and sensor technologies. The artworks change based on visitors' movements. This means **everyone can become part of the art** and **experience** it instead of just observing it – and it's a great example of how even something as technical as digitalization can be an expression of creativity! In the business world, these two topics often go hand in hand when the time comes to rethink and reshape established ways of doing things. ■

Five minutes of **peace**. No distractions, no stimuli. Just a **blank sheet of paper**, a pen, and perhaps the first inklings of an **idea**. For business people attuned to numbers, logic and technology, it can be worth experimenting with something new by letting **creativity** take free rein. Try it – it's amazing what can happen! ■



IMAGE: Bernd Liebl

EDITORIAL



Many artists have experimented with **sheet metal**. Their **creativity** shines through not just in the **artwork** itself, but also in the **inventive** and **artistic** process that produced it.

We often think of creativity as being inextricably linked to artistic endeavors or professions. Creative minds such as British designer Tom Dixon use TRUMPF machines to create works of art. And one of our customers – the company Arnold based in the German state of Hesse – makes some of the balloon-like sculptures created by U.S. artist Jeff Koons. Yet creativity is not just the driving force behind works of art, but is also increasingly being exploited to enhance production processes in modern factories.

More than ever before, companies of all sizes are dealing with customers who are clamoring for “instant, cheap, personalized” solutions. In many cases, a company’s success or failure depends on how its production operations are organized – and how smart ideas are put into practice. The potential for optimization is no longer restricted to the hunt for ever faster machines. That’s because, on average, the actual machining work on today’s factory floors constitutes just 20 percent of the overall production process! The remaining 80 percent encompasses processes upstream and downstream from the machine itself.

This becomes a thorny problem when costs have to be allocated to ever smaller batch sizes – and it’s here that the real potential for optimization lies in the future. The capabilities of digital connectivity are opening up new horizons on this journey. By permitting greater transparency, digital connectivity lays the groundwork for process optimization and automation. To tap into these benefits, we are developing more and more solutions to facilitate digital transformation here at TRUMPF and at our customers’ sites. Our consulting teams are ready to accompany you on this journey. A good example is the team led by Jörg Heusel (p. 28) because everything starts with optimized part design.

In this issue, we aim to show you why creativity is the key to gaining a competitive edge – whether you are developing and designing innovative solutions, producing and assembling the required components, or marketing and servicing the resulting products. Our interactions with you give us the inspiration we need to find new ideas and solutions. There’s a simple guiding principle behind everything we do – putting ideas into practice that fulfill your needs. This issue contains two examples of this principle in action – but our determination to create inventive solutions on your behalf extends well beyond the covers of this magazine!

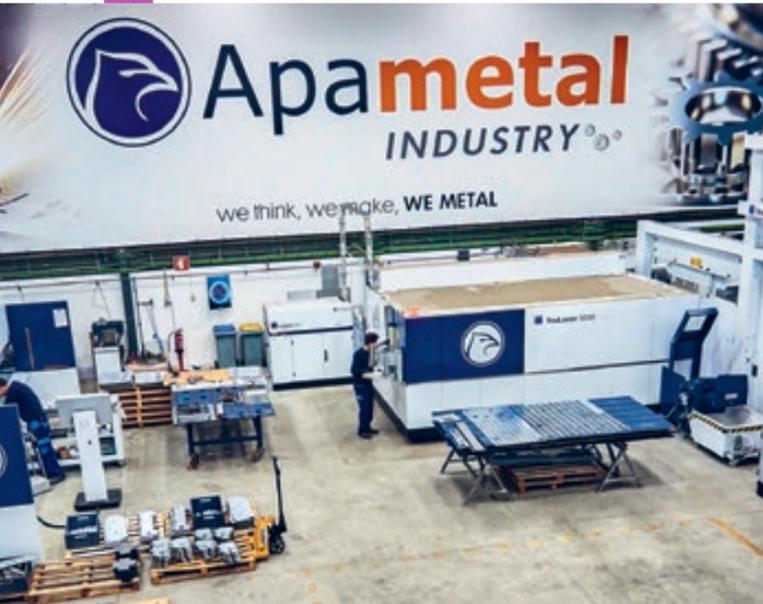
YOURS, HEINZ-JÜRGEN PROKOP
Chief Executive Officer for Machine Tools

TRU^e

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...in Cikarang

Tiwan Liutama founded his company in the midst of the Asian financial crisis. That took courage. In this interview, he explains what prompted him to take that decision – and how coffee and digitalization have contributed to his company's success.

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Happy birthday, Gefinal! How has this German company managed to stay creative and on top of its game for 100 years? We discover how a high bay racking system heralded the shape of things to come.

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...in Ditzingen

Jörg Heusel has spent 20 years showing customers how to get the best out of the parts they produce – and revealing how a single good idea can save millions. We chatted to him about untapped potential, costs and spaceships.

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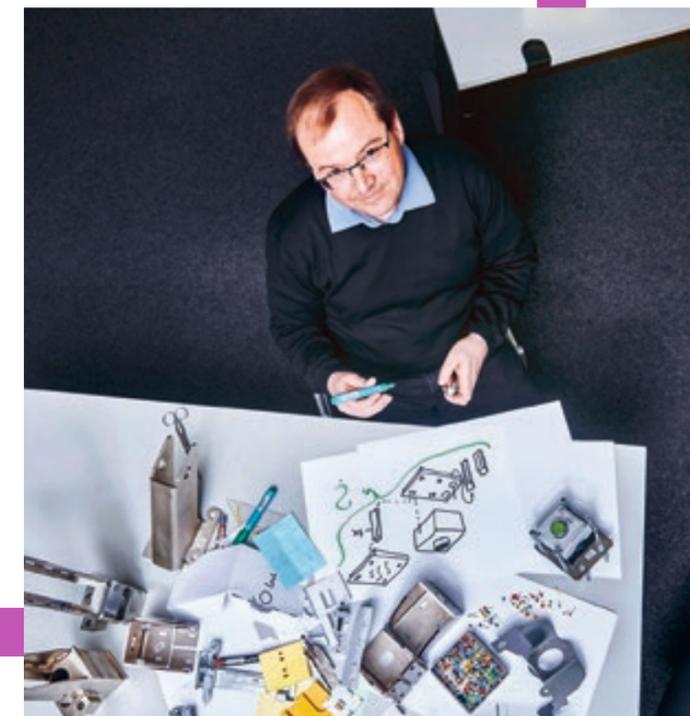
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01

PORTUGAL

Creativity in Sintra

LIGHTING UP THE WORLD

A visit to the company **Apametal** in Portugal is guaranteed to be a bright and colorful experience.

Flashing neon signs in green, yellow and red await you at every turn. As a market leader in signage and display stands, the **secret to Apametal's success** is a mix of **technology and creativity**.

We took an illuminating tour behind the scenes with managing director André Lourenço.

IMAGE: Philipp Reinhard





It's an unusually muggy and rainy day in the Portuguese town of Sintra near Lisbon. As usual, André Lourenço kicks off the day at 8:30 a.m. with his first meeting. His father Adriano, brother Alexandre and cousin Antonio Manuel have gathered for the family's morning espresso at Espaço Laser, a cafe located on the company's premises. "It's become a ritual for us," says André. He's been working at the company for the past nine years. His father founded Apametal 41 years ago and has been running it ever since. Now, however, the 70-year-old is gradually stepping back from day-to-day operations and handing over more and more responsibility to the young trio.

Recent years have seen the Lourenço family transform Apametal into a market leader for signage and displays in Portugal and Spain. "The secret to our success is our all-in package that includes development, product design, manufacturing and finishing," says André proudly. He is convinced this is what gives them a competitive edge. "One of our customers is a well-known Portuguese olive oil producer. Their display racks feature images of foods and the brand logo, a rooster, all cut into delicate patterns in metal using a laser. It was a huge challenge, but we found a creative way to put the whole concept into practice," André says. Product design is a demanding business in Portugal, he adds, particularly in the capital, Lisbon. Many of the old buildings in the narrow alleyways are home to design and art shops and trendy restaurants. "Everything has to be just right. Our customers want a tailor-made solution for every outlet and storefront. It's tremendously important to them." Determined to meet their customers' needs, the Lourenço family has invested in the most up-to-date technologies. Apametal's cutting-edge machinery includes a TruLaser 3030

and TruLaser 5030 connected to a TruStore, a TruBend 5130 and a TruBend Center 5030.

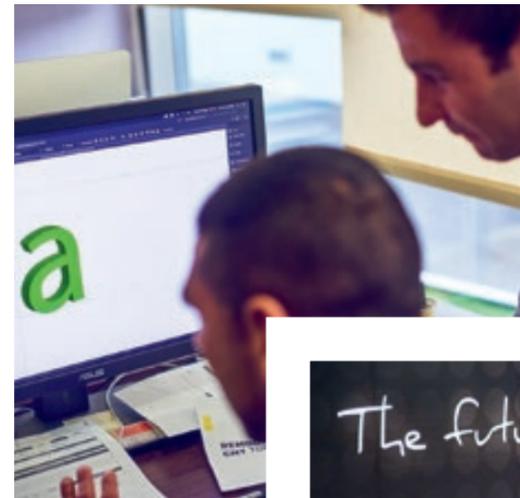
A vocation, not just a job

It's 9:30 a.m. – time to head to the second meeting of the day. It's gradually becoming clear that sheet metal fabrication is not just a job for André and his family, but a vocation. From the reception desks to waste baskets and signs, André designs and produces everything in his company himself. A few years ago, this earned him the John Jacob Astor design award for exceptional commercial real estate projects. TRUMPF machines play a big role in this strategy: "The technology helps us create products exactly how we imagined them," says André. That's a key issue for this creative entrepreneur – and it marks a big change from the situation Apametal was in just ten years ago. Back then, the team was unable to put some of its designs into practice because they didn't have the machines they needed. That was a thorn in the side of the Portuguese experts, which is why they sought TRUMPF's help.

André himself is responsible for the conceptual design and development of projects for new customers. He deals with a selection of big names including Santander and Sonae.

Show, don't tell

Nowadays, customers can take a tour of three showrooms at Apametal that throw a spotlight on all the company's skills. The

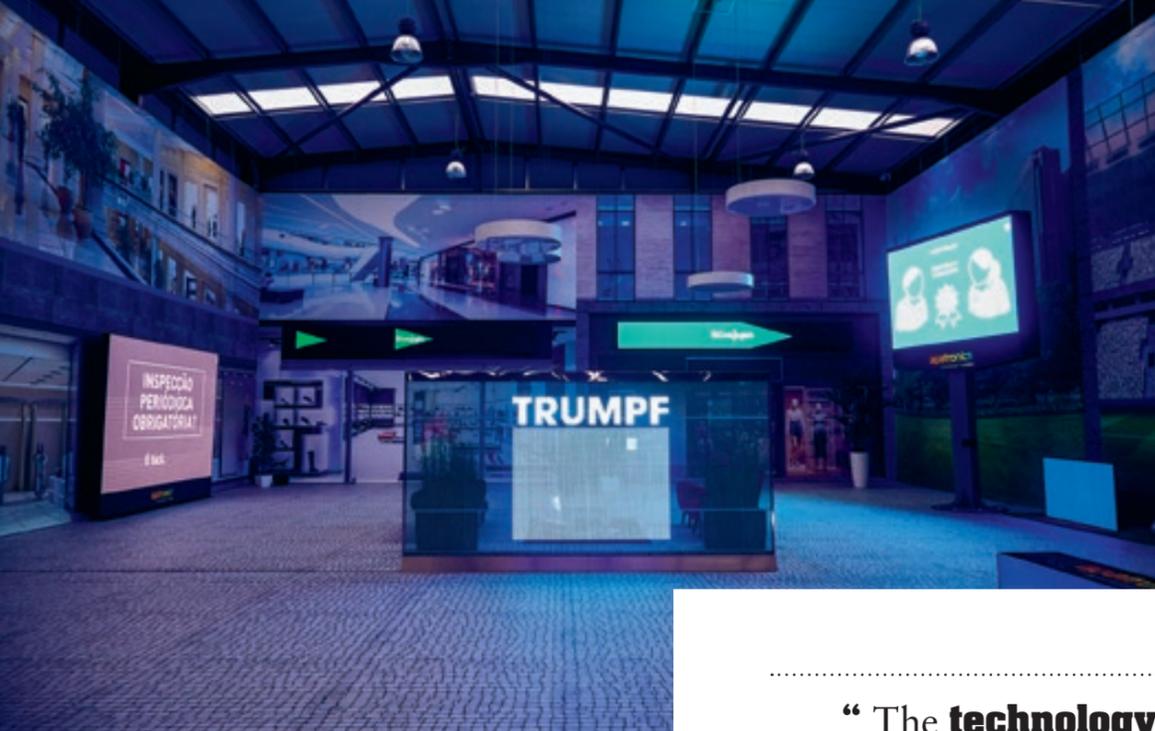


“ Everything has to be just right. Our customers want a tailor-made solution for every outlet and storefront. ”

André Lourenço, managing director Apametal



Tailor-made: Apametal develops and builds each digital sign itself.



Authentic: Cobblestones in the showroom help provide an authentic atmosphere.

“ The **technology helps** us **create products** exactly how we imagined them. ”

André Lourenço, managing director Apametal

products on show include everything from display racks to neon letters and digital billboards. It's only been six months since they opened their new showroom of digital solutions, but it's already the biggest of its kind in Europe. “The thing I need from the people who see our products is honest, constructive feedback. That's the only way I can keep improving,” he says. His telephone rings every minute of our interview, yet the Portuguese managing director seems impressively calm and relaxed.

Excellent prospects

Apametal originally expected to grow by ten percent in 2019, but their latest forecasts suggest it is now likely to be double that figure. This is largely thanks to a series of creative solutions that have impressed customers throughout the Iberian Peninsula. The company is doing very well indeed – so well, in fact, that the Lourenço family is keen to give something back. That's why it has dedicated an entire building on the factory site to young

entrepreneurs, including renting out premises to the StartUp Sintra technology incubator at a symbolic price. And André already has more plans in place for 2020. He wants to buy two new TRUMPF machines – another TruBend and a TruPunch system – and the facility to house them is already under construction.



Family business: The key figures behind Apametal's success, from left to right: André Lourenço, his brother Alexandre, his father Adriano and his cousin Antonio Manuel.

IMAGES: Philipp Reinhard

01

Key facts:

TRUBEND CENTER 7030

Apametal has several TRUMPF machines. The only one missing is the **TruBend Center 7030**. We checked out some of the **new features** that TRUMPF has added to the new model of this panel bending machine.

In brief

Fast panel bending: TruBend Center 7030

Fully automated panel bending machines such as the TruBend Center 7030 are particularly adept at fabricating complex parts with radius bends, short side lengths, and narrow profiles. When it comes to producing parts with these kinds of

specifications, this alternative bending technology is quicker than die bending. New features make the TruBend Center 7030 even faster, more flexible and more economical than ever.

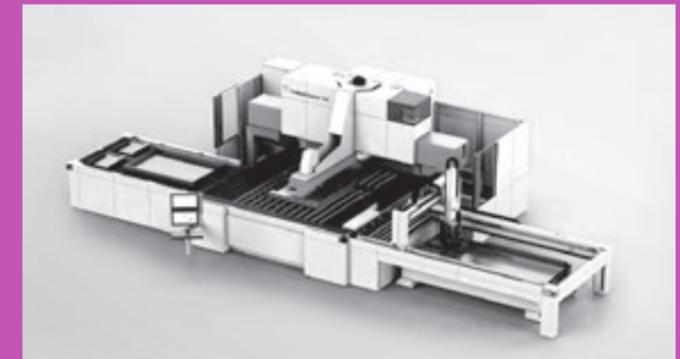


Fast and economical

TRUMPF has made the TruBend Center 7030 faster than ever. The new model bends parts up to 30 percent quicker than its predecessor. To achieve this, the engineers split the machine's drive unit into two parts. Instead of equipping the machine with just one central hydraulic cylinder, the new design features one cylinder on the left, and one on the right. This increases axis velocity, boosting the machine's productivity. The new drive also saves energy by only running the motor when the machine actually needs it.

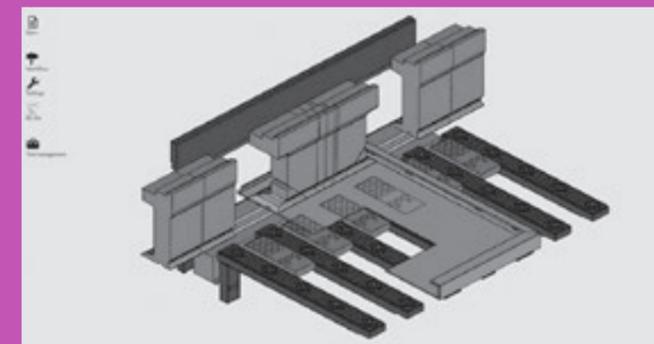
Automated loading and unloading

For the first time, TRUMPF has included the option of equipping the panel bender with a loading and unloading station. The operator can stack various piles of metal blanks on the right-hand side of the machine. A suction cup initiates the automated loading process by picking up a sheet whilst simultaneously checking that it has not taken two by mistake. This gripper device deposits the blank on a brush table, with a positioning bar ensuring it is aligned correctly. A loading carriage then moves the blank into the machining area, simultaneously removing the most recently bent part from the machining area, and transporting it to a conveyor belt. During this loading and unloading process, the TruBend Center 7030 continues to operate.



Save time switching tools

The new ToolMaster automatically switches between bending tools. It boasts higher axis velocities than its predecessor and can even change multiple small tools simultaneously, reducing machine setup time by up to 70 percent.



Programming in seconds

The new TruBend Center 7030 features the offline programming solution TecZone Fold. In many cases, this enables users to program parts in just a few clicks. TecZone Fold takes just seconds to generate the bending program and 3D simulation of the parts, including collision monitoring.

About the customer

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2635-036 Rio de Mouro, Portugal

Phone: +351 21 917 02 77
Email: info.apametal@grupometal.com
www.grupometal.com

Machinery

- TruLaser 3030
- TruLaser 5030 fiber
- TruBend 5030
- TruBend Center 5030
- TruStore 3030
- LiftMaster
- LoadMaster



02

INDONESIA

Creativity in Cikarang

Coffee and creativity

IMAGE: Philipp Reinhard

Indonesia is famous for its beautiful beaches, dense jungle, **volcanoes and coffee**. People are less likely to associate it with digitalization – but **Tiwan Liutama’s company** is hard at work challenging those preconceptions. In this interview, the 60-year-old entrepreneur explains how **TruConnect** helps him keep his competitive edge and why his employees need to unleash their **creativity**.

Digital machines aren’t necessarily the first thing that comes to mind when people think about Indonesia. What sparked your interest?

TRUMPF introduced us to the topic very early on, though I have to admit we were initially pretty skeptical! At first, we struggled to understand what benefits TruConnect could offer us. But the more we learned about it, the better we liked it. Nowadays, we even use tools such as the TruTops Monitor app, which helps us track our machines’ productivity and keep tabs on our manufacturing performance. We see Industry 4.0 as a process, and we’re gradually trying to integrate elements of it in our everyday work. For a country like Indonesia that consists of 13,000 islands, digitalization is extremely important, because our biggest competitors are thousands of miles away, on another continent.



But would it be true to say that the road to digital success wasn’t an easy one for PT Duta Laserindo Metal?

Absolutely. When we founded the company in 1997, the region was in the midst of the Asian financial crisis. It wasn’t the best time to set up a new business! The Indonesian currency was devalued by 400 percent during the economic crisis, and a lot of job shops went bankrupt. Newcomers had to have either enough capital to see them through, or a strong will to survive. Against all the odds, I took the decision to set up my company anyway. PT Duta Laserindo Metal (DLM) was the first job shop in Cikarang, West Java and something of a role model for many companies that came afterwards. Fortunately, we made it through the bad times, largely thanks to an incredible amount of hard work by our team. But also thanks to new ideas, the kind of innovations that are still helping us today in the realm of digitalization.

Fostering a team spirit: Tiwan Liutama believes in empowering and challenging his employees as equal stakeholders.

What kind of new ideas?

Whenever we were faced with difficulties or a challenging financial situation, we took the company to the next level by

The fun factor: From barista courses to trips to Germany, PT Duta Laserindo Metal encourages staff to maintain a healthy work-life balance.



“ Data may be the new oil, but **creativity** has always been the **most important currency.** ”

Tiwan Liutama,
managing director PT Duta Laserindo Metal

adopting new technologies. That helped us gain a competitive edge in the market. Things went so well that I was able to set up another company in 2003, this time in East Java, called PT Dempo Laser Metalindo. We began using CAD software for sheet metal fabrication right from the start, so in a sense we were already laying the foundations for today's process of digitalization. We soon realized that our new technologies were gradually getting us noticed by new customers who were facing new challenges. So we started offering advice to our customers on design and construction issues and helped them optimize their products.

Nowadays you even have your own in-house design team. Why do you rate that as so important?

For one simple reason: if a job shop employs creative and talented people, there is always the possibility that they will end up getting bored. They might start to feel that “just” processing orders isn't challenging enough. So I believe in giving my employees the chance to get creative and develop their own products. That process has already given rise to a coffee roaster and an industrial



Well-versed: Tiwan Liutama knows every machine inside out.

tractor. It takes our company to a new level and poses exciting new challenges for our workforce.

But what does a coffee roaster have to do with creativity?

It may not seem obvious at first glance, but a coffee roaster is a highly sophisticated product that requires some really creative thinking. It's also a great choice for our location, because the first Arabica coffee plantations were established in Java. When we were developing the roaster, we had the smell of coffee beans drifting through the factory all day long. It was great! More and more employees began taking barista courses to learn how to make the perfect cup of coffee. None of it really had a direct link to sheet metal or laser cutting, but my employees were happy! And if that's the price of keeping a spirit of innovation alive here, then I'm happy to pay it.

What else do you do to motivate your staff?

Well, I think it's very important to challenge talented people by setting them new tasks. In our case, that means getting to grips with the latest technology. We send our employees abroad to trade fairs such as TRUMPF INTECH to broaden their horizons in the field of digitalization. And obviously I encourage them to take whatever training courses they need. I believe that a company can only achieve great things if the management is prepared to support staff who wish to develop both their personal and professional skills. It makes them more motivated and, ultimately, more creative.

You help your employees find their creative side – but what about you?

I'm no Picasso, but I think he was onto something when he argued that painting should always come before coffee. Obviously in my case it is more a matter of always putting the customer before coffee! I firmly believe that giving customers what they want requires passion and creativity. That's why I often tell the young people in my company that data may be the new oil, but creativity has always been the most important currency.

PHOTOS: Chendra Cahyadi

02

Key facts:

PT Duta Laserindo

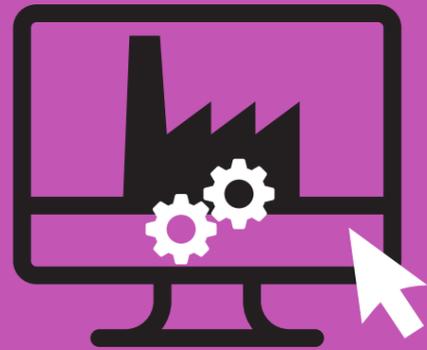
PT Duta Laserindo Metal survived the **Asian financial crisis** and has gone from **strength to strength** ever since. We took a look **behind the scenes** at the company.

In brief

Background on PT Duta Laserindo Metal

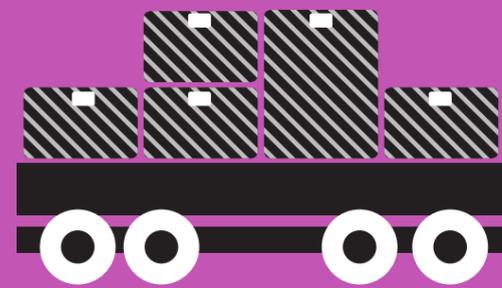
PT Duta Laserindo has a lot of machinery – and that makes it even more important to keep a careful eye on each and every job. Each module of TRUMPF's TruTops Fab software offers solutions designed

to optimize manufacturing. Managing director Tiwan Liutama told us about his favorite software and gave some fascinating insights into his business.



En route to the smart factory:

PT Duta Laserindo is committed to digitalization and hopes to enter the realm of the smart factory with TRUMPF's help. The company is particularly enthusiastic about TruTops Monitor, one of the modules included in the TruTops Fab production software. TruTops Monitor records and visualizes machine data such as downtime, error messages, causes of malfunctions, interruptions and idle time, helping users to identify and rectify problems quickly and easily.



More than just a job shop:

The company has developed two of its own products: a coffee roaster and an industrial heavy-duty tractor.

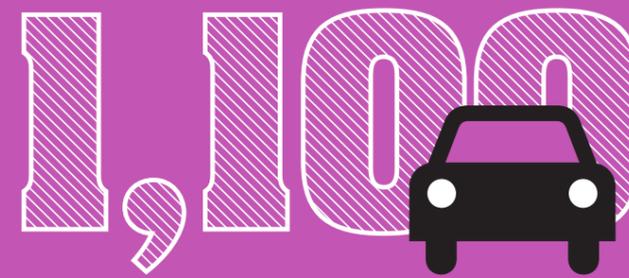


About the customer

PT Duta Laserindo Metal
Managing director: Tiwan Liutama
Delta Silicon Industrial Park
Lippo Cikarang, Lemah Abang
17550 Bekasi, Indonesia

Machinery

- TruLaser Tube 5000
- TruBend 5050
- TruBend 5085
- TruBend 5130
- TruLaser 3030 fiber
- TruMatic 1000 fiber
- TruDisk 3001
- TruBend 3120
- 2x TruLaser 3030
- TruFlow
- TruDisk 4001
- TruPunch 5000
- TruLaser 5030 fiber
- TruMark Station 1000
- TruMark Station 5000



East meets West:

Tiwan Liutama runs two companies. One is in West Java and the other in East Java – separated by a distance of 1,100 kilometers. It takes about ten hours to drive from one to the other.



Big and small:

Most of PT Duta Laserindo's customers are local businesses, but the company also manufactures products for international concerns such as Hitachi and Caterpillar.



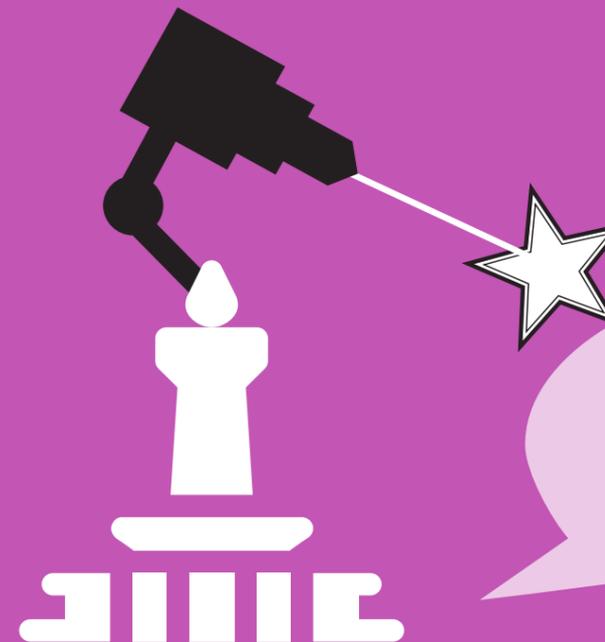
Meet the team:

Tiwan Liutama employs a total of 290 people.



Swabian for beginners:

Tiwan Liutama is a big fan of Swabian cuisine. He even has his own German-made Spätzle maker.



What's in a name?

The company's name, PT Duta, stands for "laser ambassador in Indonesia".



03

GERMANY

Creativity in Mainhausen

CHANGE AND CONTINUITY

The world was a very different place **100 years** ago – but the Gefinal company founded by Ernst Hildebrandt was already up and running. Today, his grandson Ingo is the **third generation** of the family to head up the business. **Many things have remained the same**, but he has also had to **make some changes** to remain competitive. Read on to find out how a high bay racking system **heralded the shape of things to come** – and how **success is linked to creativity**.



In good times and in bad: A couple who have accomplished a great deal together: Redwana Hildebrandt is Ingo's most trusted adviser.

“ My **fascination with sheet metal** began during my apprenticeship. ”

Ingo Hildebrandt, managing director
Gefinal Blech- und Stahlbau GmbH

At the end of June, Ingo Hildebrandt celebrated his company's 100th anniversary not just once, but twice. His enthusiasm was understandable, because Gefinal is in fine shape, and has been ever since it was founded by his grandfather a century ago. Since 44-year-old Ingo took over the reins, he has demonstrated an impressive ability to find creative ways of tackling new challenges and keeping pace with new technologies, especially when it comes to developing tailor-made solutions for his customers.

It all began in conventional enough circumstances. Gefinal had established a business making products for the mechanical engineering sector with a particular focus on stainless steel. “But we broke out of that mold, and now we also work with brass, copper and titanium. A significant number of our customers now come from the medical and food industries.” Gefinal's products now include everything from sausage portioners to palladium-coated titanium expanded metals for smartphone displays, with batch sizes ranging from 1 to 100,000. This is a company that seems to offer something new around every corner. One example is the caravan pop top roofs made in Gefinal's inimitable style: “We've developed a knack for those that no one else has mastered. It's one of our unique selling points!” says Hildebrandt. Though unwilling to reveal the secret behind that particular product, he acknowledges that it put their abilities to the test: “It was incredibly tricky getting it right. We had to start from scratch and get really creative!” So what spurs on this ambitious Hessian businessman? Essentially, the urge to create things that other people regard as impossible. Hildebrandt and his team simply refuse to be

intimidated. “If a customer's needs change, we simply switch to a different manufacturing technology.” The company packages itself as a one-stop provider and doesn't shy away from even the most challenging assignments. From shop fittings to designer lamps, Gefinal's portfolio covers just about everything, even stretching to unusual services such as cleaning sheet metal parts.

Fascination with sheet metal - and close family ties

Ingo Hildebrandt's success speaks for itself, but things haven't always been easy. After completing his apprenticeship as a manufacturing engineer, Hildebrandt worked in the family business for a year before joining the management board in 2001. His switch to an executive role was unexpected, but unavoidable: “My dad was very ill, so I suddenly found myself taking over the business in my mid-20s. It wasn't easy, and I certainly had to earn my spurs.” The experience he gained in that first year at the helm strengthened his resolution to take the company to the next level. He was determined that Gefinal should make more products in more creative ways, moving away from traditional sheet metal fabrication and adopting the role of a systems provider. “My fascination with sheet metal began during my apprenticeship,” says Hildebrandt.

And his enthusiasm hasn't wavered over the past eight years. In fact, nowadays this father of three has an even clearer idea of what he wants to achieve. He is supported by his family, with both his wife Redwana and his sister Ines working alongside him.

IMAGES: Christian Mader



Old and new: The company's logo has changed over the past 100 years, but the name remains the same. The word Gefinal is an acronym of a German phrase for a company that makes industrial equipment.





Then and now: The company's oldest TRUMPF machine is 16 years old and is still in use on a daily basis. The TruPunch 5000 is the newest member of the family.



IMAGES: Christian Mader

“ Our job is not to simply reacts to developments, but to **make things better.** ”

Ingo Hildebrandt, managing director
Gefinal Blech- und Stahlbau GmbH



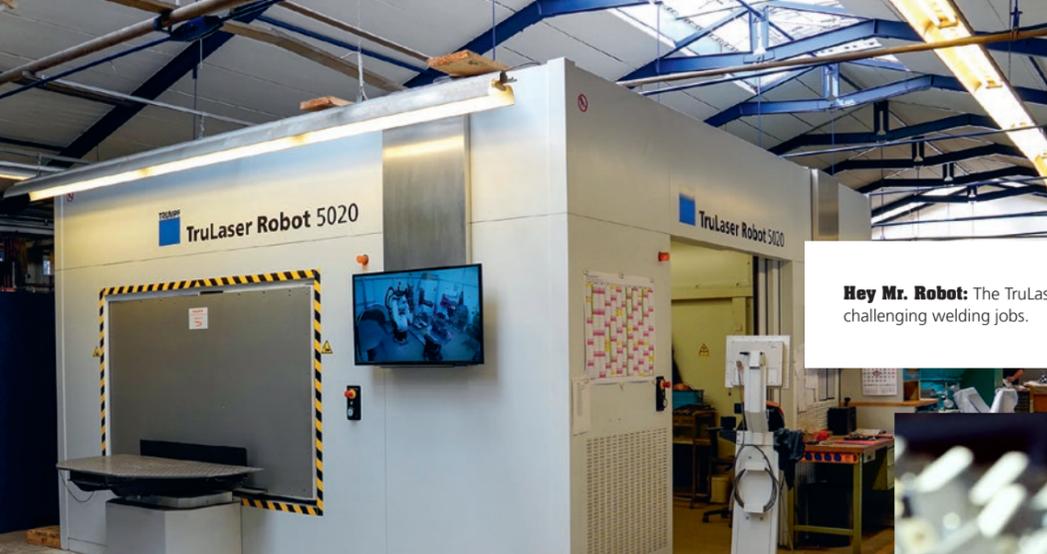
The next generation: Ingo Hildebrandt's nephew Andy is already on board. The two have similar hobbies and are great friends.

“We have a very close, trusting relationship. That gives me the freedom to sometimes take unusual steps and add products to our portfolio that other people wouldn't even consider.” His wife is far more than the perfect helpmate to her husband. Her business administration qualifications make her the perfect choice to take on responsibility for areas such as HR. And the next generation is waiting in the wings, with their 26-year-old nephew Andy already on board. He joined Gefinal after graduating from university, making his uncle Ingo very proud in the process.

Embracing progress

Back when Ingo Hildebrandt took over from his father, he and his team were still carrying out job costing with a pen and paper. But he quickly saw the need to switch to digitalized processes. Gefinal's workforce has now grown to 100 employees, up from just 23 in 2001. “We've been growing fast in recent years, but now we're keen to take our foot off the pedal and focus on offering our customers an even broader range of products. Specifically, products that call for our special blend of creativity and expertise,” says the managing director. He feels it is important to get to know his employees personally and support them where possible, arguing that this is the only surefire way to keep Gefinal's competitive edge and provide customers with single-source solutions. That's something that Hildebrandt believes in passionately.

There is a story he likes to tell that illustrates this enthusiasm perfectly: “Last year, Samsung launched the German version of their virtual assistant Bixby. The South Korean company presented it in a soundproof enclosure at their booth at the IFA trade fair. Developers and design engineers from Gefinal and Samsung spent weeks working together to achieve the optimum results. One of the standout features of the sheet steel column was a special acoustic insulation material, which Gefinal applied after painting. “The project really showed what my employees are capable of. They are workaholics, but in the most positive sense imaginable! Whenever they're confronted with something new or particularly challenging, they pull out all the stops because they want to demonstrate what they can do.” Robot welding was another good example of the team taking the ball and running: “People had barely heard of the technology back then, but we didn't let that intimidate us.” Hildebrandt's team even took on the incredibly challenging task of making their own fixtures for parts that have zero tolerances. Laser welding continues to be a rarity in the job shop business. But Gefinal already has the next ace up its sleeve: handheld laser welding with a point laser. The operation is carried out manually instead of by a robot. “It supplements our robot welding services by allowing us to make exciting products without requiring any fixtures. That makes us even more flexible.”



Hey Mr. Robot: The TruLaser Robot 5020 helps Gefinal perform challenging welding jobs.



Tapping into creativity

It takes more than just good ideas to inject creativity into the manufacturing business. The machines also play a critical role, and Gefinal has placed its bets on automation. The TruMatic 7000 features a brush table and automatic tool changer. It is connected to the STOPA storage system, as are the new TruPunch 5000 and the company's oldest TRUMPF machine – a 16-year-old TruLaser L3050. The high bay racking system heralded the start of Ingo Hildebrandt's own career in the company – although it did generate a fair amount of debate at the time! "My father didn't want such a big racking system. He didn't think it was necessary. I felt differently and fought for it from the start. Today, our business is even more productive and we can take on more exciting projects, so I'm glad that I got my way!" That's the kind of attitude that has helped Ingo Hildebrandt build a successful future for this long-established company – and he's always thinking ahead: "Our job is not to simply react to developments, but to make things better and use our creativity to suggest better solutions to our customers. That will keep us going for another 100 years!"



IMAGES: Christian Mader



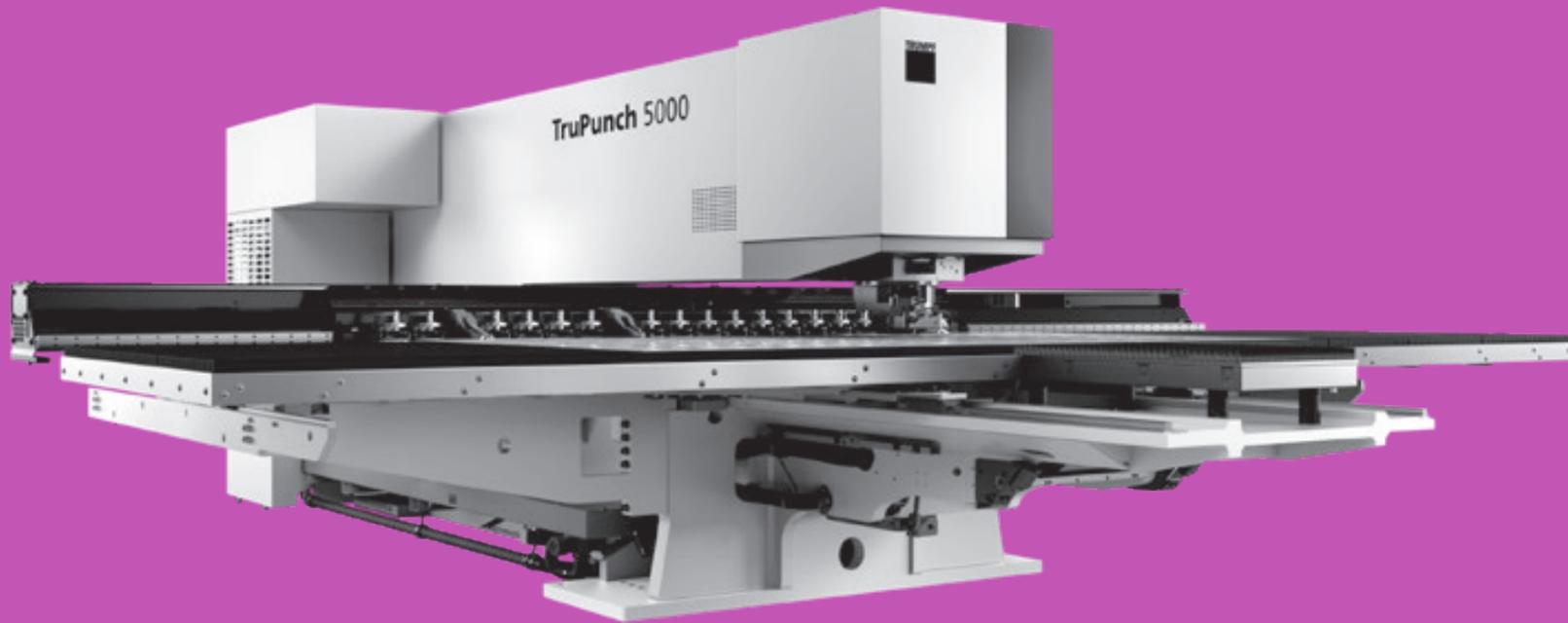
Key facts:

TruPunch 5000

A year has passed since **Ingo Hildebrandt** took the decision to purchase a **TruPunch 5000**. He was particularly impressed by its **productivity** – but this machine offers more than just high-speed punching. Over the next few pages, we highlight its key benefits.

In brief

Record holder TruPunch 5000



Punching involves a whole lot more than just making holes in sheet metal parts. The technology has come on in leaps and bounds in recent years. The latest machines enable users to create parts from start to finish, offering features that include bending, marking and

much more besides. The TruPunch 5000 punching machine is a great example – and Ingo Hildebrandt from Gefinal was impressed enough to put in an order.

High-speed punching:

Operating at 1,600 strokes a minute, the TruPunch 5000 is one of the fastest punching machines in the world.

Scratch-free:

The punching head includes an active die that can be retracted to prevent it coming into contact with the sheet, eliminating the risk of scratches and creating higher-quality surfaces. This feature is particularly useful for fragile parts.

Minimizing waste:

The TruPunch helps keep the metal left behind in the scrap skeleton to a minimum. As well as saving on material, this increases efficiency and makes the process more reliable. The machine automatically ejects finished parts through the large parts flap.

Fully automated:

The TruPunch offers a comprehensive range of automation options. These include solutions for loading and unloading, sorting and automated tool changing. The TruPunch 5000 can also be connected to a storage system. Once it has been programmed and equipped with tools, it can operate fully automatically.

About the customer

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www.gefinal.de

Machinery

- TRB V85
- TruBend 7036
- TruBend 5230
- TruBend V320
- TruLaser Robot 5020
- TruMatic L3050
- TruMatic 7000L
- TruPunch 5000



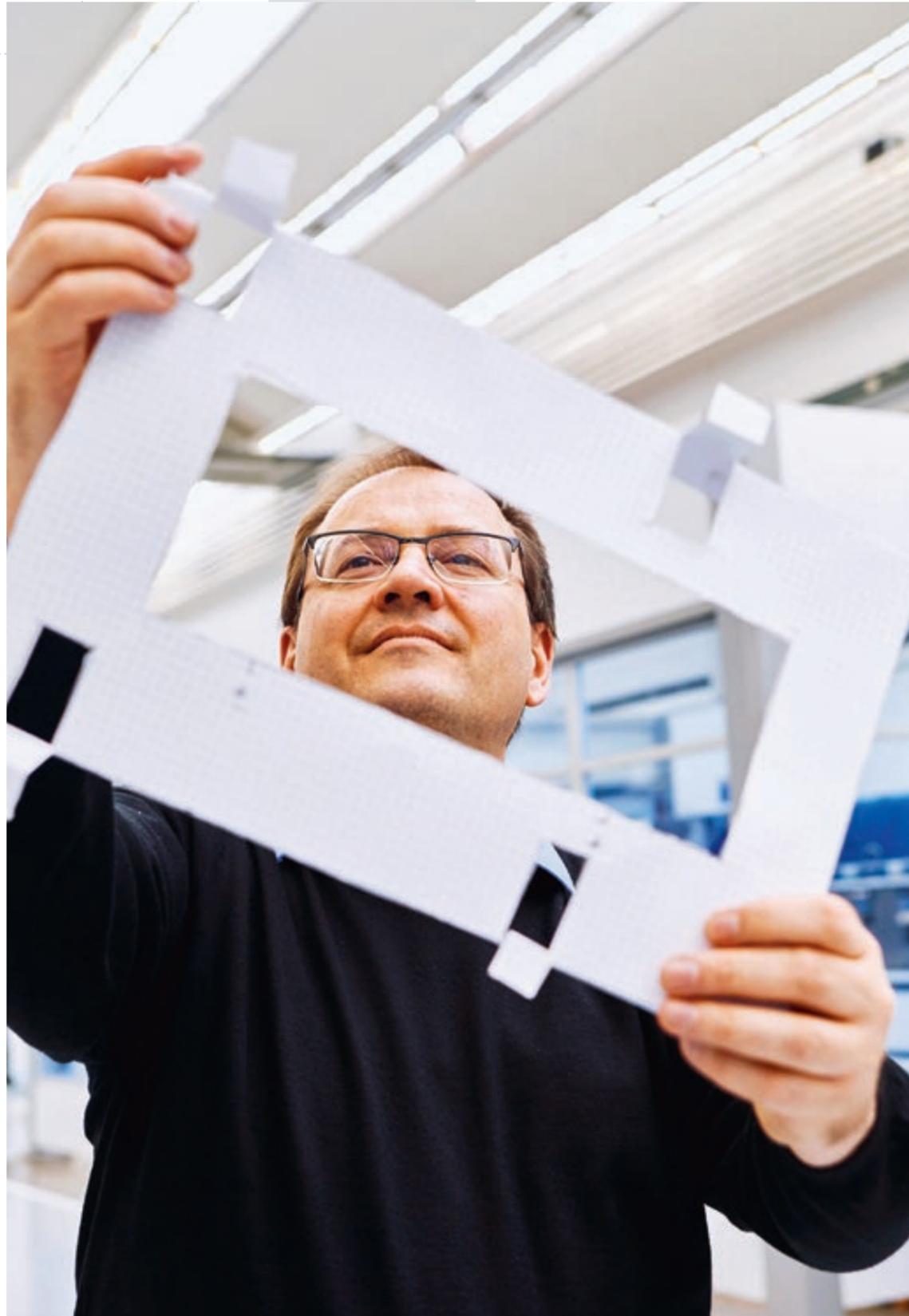
The company Gefinal has had just three managing directors over the past 100 years.



In his spare time, Ingo Hildebrandt makes valiant attempts to beat his wife at strategy board games, but he rarely succeeds!



Ernst Hildebrandt founded Gefinal in Berlin in 1919. His son Gert Hildebrandt established the company's current site in Mainhausen around the time of the construction of the Berlin Wall.



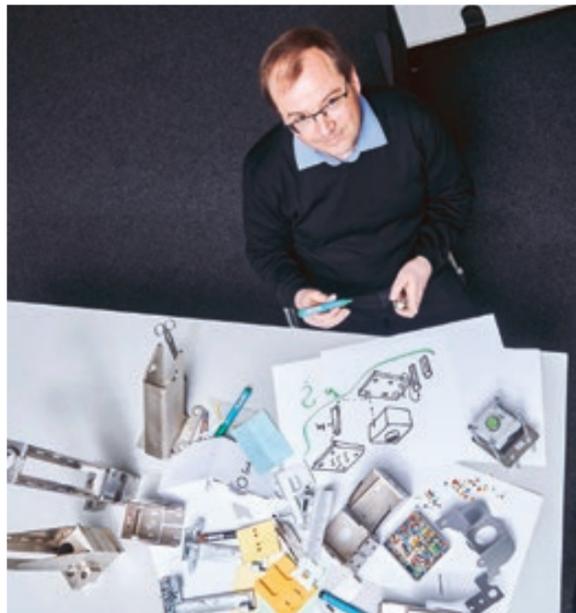
IMAGES: Frederik Dulay-Winkler



Creativity in Ditzingen

SPACESHIPS AND BENDING MACHINES

Jörg Heusel loved drawing spaceships when he was a kid. His career propelled him to Ditzingen, where he became an expert in sheet metal design. TRUMPF's **part optimization** service is his **pride and joy**. The 50-year-old design engineer has spent the **past 20 years** showing customers how to unlock hidden **potential** by applying a mix of engineering skills and **creativity**.



Our conversation begins across an empty white table. But that neat, uncluttered look doesn't last very long! Five minutes into our chat, Jörg Heusel has already grabbed three different parts from a cabinet – plus a thick stack of drawing paper and two pairs of scissors – and the table is now littered with numerous pens and markers. He has loved drawing ever since he was a teenager – but back then his passion was spaceships rather than sheet metal assemblies: “Sketching helped me get my thoughts straight and express my creativity. And I'm proud to say that a couple of my spaceships are still online today!” Heusel isn't one to stay sitting still for long. He is constantly leaping out of his chair to draw things on the flipchart, making 3D sketches of parts and highlighting or circling corners or other areas that could be improved.

No one-size-fits-all solution

Heusel clearly knows exactly what he's doing. He's good at his job, and he enjoys it. “Otherwise I wouldn't have been doing it for the past 20 years!” Heusel, who is originally from Swabia, shows his customers how to design and optimize their parts and how to produce them more cost-effectively. To do that, he and his team offer a range of training courses, workshops and consulting sessions on all TRUMPF technologies, from bending and punching to laser welding and tube cutting. Heusel and his 12 colleagues demonstrate what is possible and frequently unlock hidden potential in a part, undaunted by the enormous variety of products they work with: “We are genuine all-rounders,” he says, explaining how they tackle everything from parts that weigh just a few grams right through to bridge piers weighing tons. Sometimes even the tiniest changes can have a big impact: “I remember one part that we optimized for a customer from the auto supply industry. The solution was actually pretty simple, but it allowed them to

cut their production costs by several million euros.” Heusel and his team advise customers from many different industries, including mechanical and plant engineering, medical devices, automotive, contract manufacturing and other sectors. Most of them – some 70 percent – are looking for ways to cut their costs. That means looking at things from a new angle and branching out in new directions; in other words, getting creative! “Our job is to work with the customer to find ways of making their part even better.”

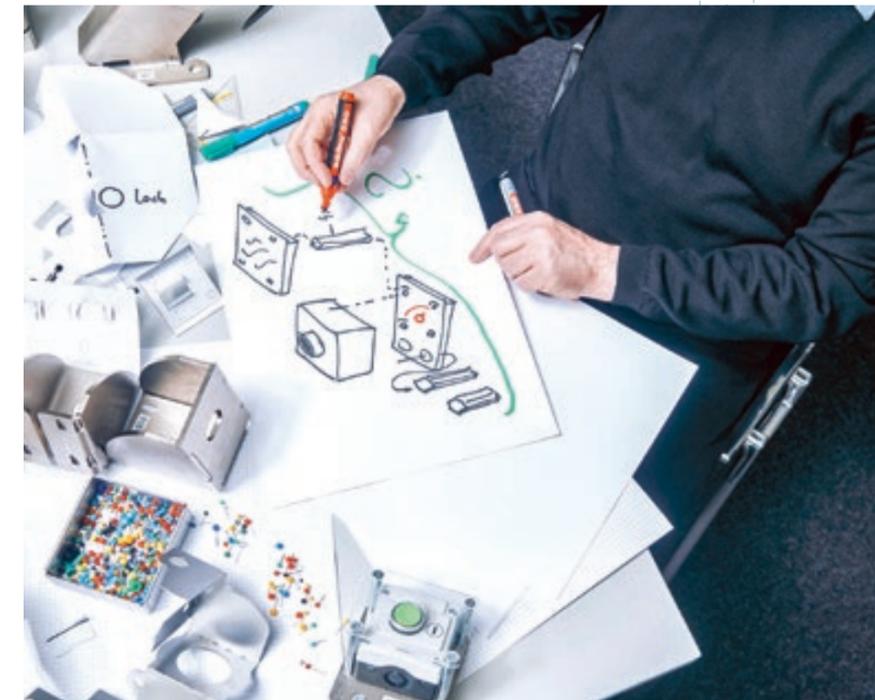
Heusel and his part optimization team adapt their skills to each customer's individual needs. There is no such thing as a one-size-fits-all solution, so they have become adept at employing a range of strategies. “For example, there are many situations where a weld can be replaced with a bending operation to save time and money. Many companies mill parts from solid blocks of material, even though they could actually produce them from sheet metal. Making the switch can cut production costs by an average of up to 46 percent. That's a huge difference, especially if you're producing in bulk!”

But the part design business is not just about optimizing existing parts, but also about designing new parts. And that's something Heusel finds particularly exciting: “That challenge of assessing all the functional and creative aspects of a part in order to make it better is something that has always fascinated me.” The key, he says, is to highlight new manufacturing options and clarify their limits. “Creativity has no boundaries, but technology sometimes does. That's why it's so important to think outside the box.” One example that course participants always find illuminating is the use of bending: “For example, instead of bending a bracket and then welding it, you can actually get the shape you want without using any welding at all. The result not only looks nicer, but also slashes manufacturing time by 50 percent,” Heusel explains.

IMAGES: Frederik Dulay-Winkler

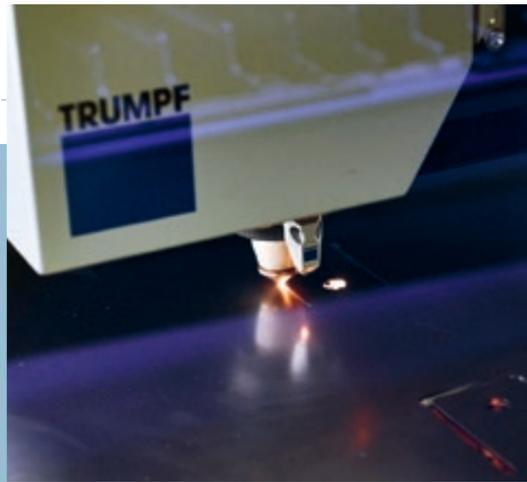


The part optimization team organizes between **120** and **140** consulting sessions, seminars and workshops a year – **worldwide**.



From the preliminary sketch to paper models, CAD drawings and finally the metal part itself: part optimization takes into account the entire process. That helps customers **save time and cut production costs**.





Replacing milling with cutting:

Many parts can be manufactured from sheet metal instead of milling them from a block of material.

Ground control to Major Tom

His team includes trainers, design engineers, academic advisers, process experts and specialist sales representatives. These latter members of the team are particularly important in the part optimization business: "Our customers tend to be developers and design engineers rather than production managers or managing directors. It's essential for us to communicate on their level and talk directly to the decision-makers." The part optimization team also collaborates with universities to boost the next generation's interest in sheet metal fabrication: "One of my colleagues gives lectures to show students just how many opportunities there are in sheet metal fabrication."

Heusel has seen and experienced a lot over the past 20 years. But there is still one dream this spaceship fan would love to fulfil: "If they ever manage to build a base on the moon, I would love to design a piece there!"



The genuine article: Jörg Heusel insists on the importance of not just drawing a part, but actually constructing it.



IMAGES: Frederik DuJay-Winkler

Key facts:

Part optimization

Jörg Heusel and his team help customers produce parts more **economically and efficiently**. Here we take a look at TRUMPF's **part optimization** services.

In brief

Unleashing potential: part optimization

It's amazing how much time and money can be saved by replacing a production process with a more efficient one. Jörg Heusel and his team help TRUMPF customers optimize the design of their parts to

unleash the full potential of their machines. Here we take a look at the four key areas of part optimization.

Contact

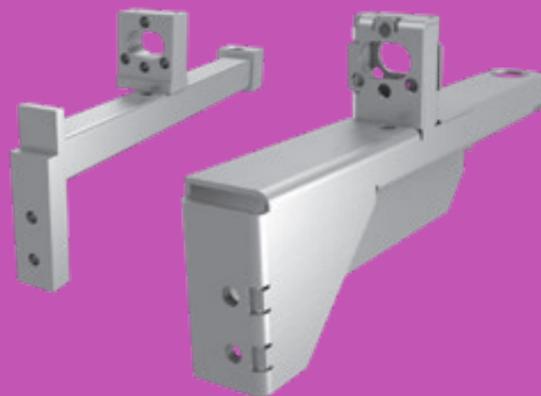
teilegestaltung@trumpf.com
partdesign@trumpf.com

Find out more:

https://www.trumpf.com/en_INT/products/services/services-machines-systems-and-laser/process-optimization/part-optimization/

Part design for sheet metal

This service involves developers optimizing the design of sheet metal parts to enable customers to fully exploit the capabilities of their laser cutting, punching and bending machines. Their goal is to reduce the number of individual parts and steps in the process in order to save on materials and cut costs.



Example: optimized axle bump stop

Axle bump stops are typically produced as a welded assembly in a lengthy series of costly, time-consuming steps. The new design consists of just two sheet metal parts. As well as using fewer parts, the new process involves fewer joining processes and uses less material.

46%

Cost savings

Part design for laser welding

Laser welding often works out cheaper than conventional joining methods. That's because welding parts with a laser saves time and minimizes the need for rework. TRUMPF experts offer a dedicated part optimization service to determine whether specific parts produced by a customer are suitable for laser welding. The experts can also tailor suitable parts to meet the new requirements.



Example: optimized cover panel

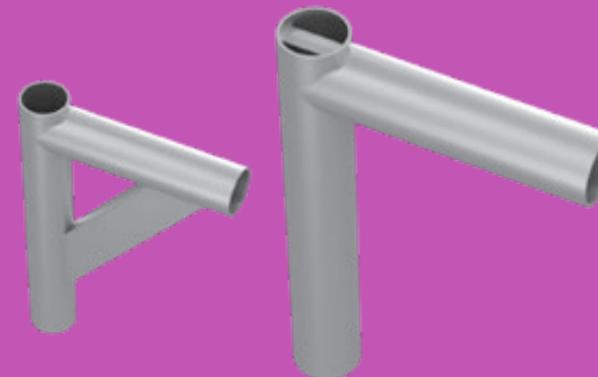
Cover panels for electronic components such as electrical cabinets must form a tight seal with no warping. In many cases, conventional welding processes cause warping that must subsequently be corrected. Laser welding eliminates many of the steps in the cover panel production process – and low heat input keeps warping to a minimum.

30%

Cost savings

Part design for tubes

Using a laser to cut tubes makes the manufacturing process simpler and quicker. Laser tube cutting replaces multiple steps in the production process such as sawing, milling and grinding.



Example: optimized cantilever arm

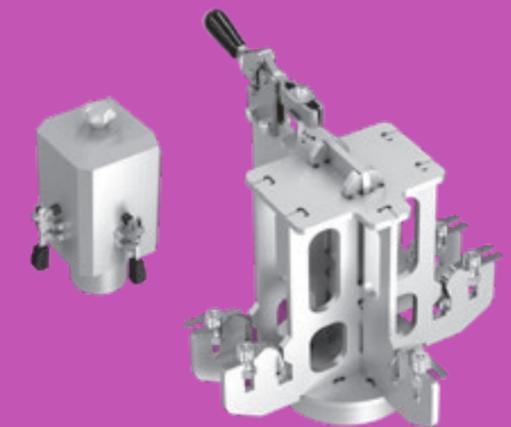
Conventional methods run through a time-consuming and logistically complex series of steps to align three separate parts. Yet cantilever arms can also be made from two tubes of identical shape and size. The two parts are correctly aligned on the laser tube cutting machine and then fitted together.

83%

Cost savings

Fixture design for sheet metal

Fixtures reduce production tolerances for welding and make processes more reliable. Companies can cut the cost of producing these fixtures by making them in-house out of sheet metal parts or tubes. The results are generally more flexible, economical and lightweight.



Example: optimized sheet metal fixture for laser welding

Most sheet metal fabricators produce laser welding fixtures from a solid milling block. Clamping fixtures made from sheet metal are not only cheaper to produce, but also lighter. They can also incorporate additional features as well as improving heat dissipation.

17%

Cost savings



Fascinating facts and exciting innovations.



Happy Birthday, TRUMPF USA!

TRUMPF Inc. is celebrating its 50th anniversary this year. As well as organizing events for customers and employees to mark the occasion, the US subsidiary will also be creating an anniversary book of stories and images spanning the past five decades.

On July 14, 1969, Hugo Schwarz and Berthold Leibinger laid the foundation stone in Farmington for the first TRUMPF facility outside Europe. Today, the U.S. is TRUMPF's third biggest market in terms of sales revenue. Over 1,200 employees produce machines and tools at five locations and showcase the capabilities of Industry 4.0 at the Smart Factory in Chicago.

The Leibinger family has personal ties to the U.S.: Berthold Leibinger spent time living in Ohio in the late 1950s, an experience that ultimately led to the creation

of machines such as the TRUMATIC 20. Launched in 1967, this was the first sheet metal fabrication machine with numerical control that could punch and nibble cutouts and contours using a single tool.



“Be self-disruptive!”

Visitors flocked to TRUMPF in Ditzingen to take part in the first Agile Days event on April 8 and 9, 2019. The conference was attended by a total of 200 employees, managers and executives from a range of companies. They came together to share their ideas and experiences under the motto of “be self-disruptive!” The event examined the latest trends and challenges in agile methods through a series of keynote speeches, panel discussions, workshops and other activities. The speakers included experts from the research community and various companies – among them TRUMPF Chief Technology Officer Peter Leibinger. One of the highlights was the film evening and subsequent discussion with movie director Kristian Gröndling. His film *The Silent Revolution* deals with the changing world of work.



Archive

A visit to TRUMPF

TRUMPF hosted the recruiting and networking fair “Family Business Career Day” for the first time this year. Held on July 5, the fair gave visitors a chance to find out more about leading German family-owned companies such as the Würth Group, Kärcher, Haribo, Kaufland and, of course, TRUMPF. A unique feature of this fair is the opportunity to talk directly to business owners about specific job offers. It is run as a joint initiative by leading family-run businesses, the Entrepreneurs Club and the Stiftung Familienunternehmen foundation for family businesses. Peter Altmaier, the German Federal Minister for Economic Affairs and Energy, is the event's patron. The job fair has been held at a different company each year since 2006. A total of 650 people attended this year's event in Ditzingen.

IMAGES: TRUMPF, Content with eyes, Karrieretag Familienunternehmen GbR



Child's play

In May 2019, TRUMPF opened its own daycare center on the company's premises. Spread over 1,200 square meters, the facility offers space for up to 70 children to play, learn and have fun. “The idea behind the new daycare center is to boost our attractiveness as an employer, promote a positive work-life balance and meet our responsibilities to society as a whole,” says Nicola Leibinger-Kammüller, chairwoman of the group management board. The building includes a crafts room, an art studio, a space to play and build things, and a gym. The children also have plenty of room to let off steam in the 850-square-meter outdoor area. “We hope the TRUMPF daycare center will help take the strain off working parents,” said Renate Luksa, senior chairwoman of the TRUMPF works council, speaking at the inauguration: “Having

this kind of facility on site makes life easier for parents by providing direct access to childcare.” The building is based on a modern, eco-friendly design, including a timber frame and partition walls made from natural wood. It was designed by the Berlin-based architects' firm Barkow-Leibinger.



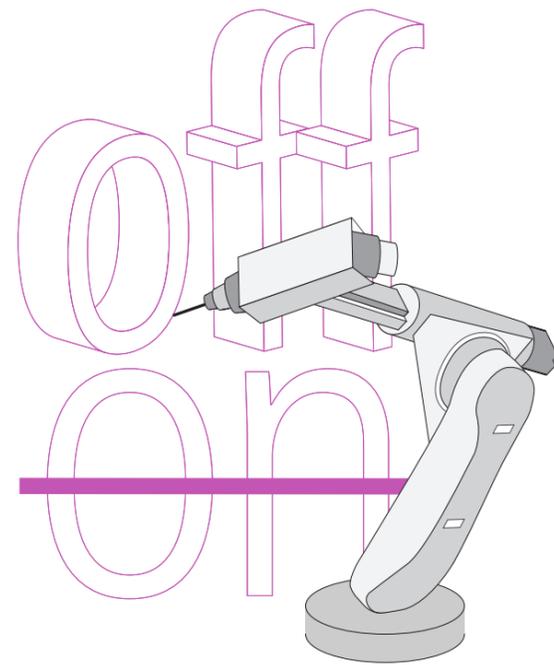
Faster than anyone

TRUMPF employee Yassin Osman won the half marathon in the 26th edition of the Stuttgart-Lauf running event on May 26. He covered the 21 kilometers in a time of just 1:07:42. The Stuttgart-Lauf is one of Germany's premier fun runs. Some 17,000 people took part in the event this year, following a route that took them along the Neckar river all the way to the finish line in the Mercedes-Benz Arena.

TRUMPF was represented by a total of around 130 employees and customers. Sporting their distinctive blue and white kit, the TRUMPF team took first place in the team classification for the second year in a row, adding even more sparkle to Yassin Osman's victory. Everyone is looking forward to taking part in next year's event – and training for 2020 has already begun!

Offline is the new online

TRUMPF has developed a new dedicated software program for the TruLaser Weld 5000 laser welding cell. TruTops Weld enables users to create a welding program offline on a computer while the machine gets on with the current job.



Maximizing the productivity of laser welding cells just got a whole lot easier thanks to the new TruTops Weld software, which allows users to create programs offline on a computer. The developer's primary goal was to make life easier for users. Currently, most welding programs are created using the "teach-in" method, in which the programmer works directly on the machine itself to define a series of points to be welded. This method is time-consuming, and the machine is effectively out of action until the teach-in process is complete. In contrast, TruTops Weld allows users to create welding programs offline and then simply send them to the machine. This approach divides up the workload more efficiently between machine operators and programmers.

Tobias Otterpohl from the Bavarian company LMT Leuchten + Metall Technik has already tried out all the features of TruTops Weld – and he is impressed by the results: "The software is easy to use. Transferring the program to the machine is simple, and you can quickly see exactly where each weld will be applied." TruTops Weld is particularly suitable for small batches, Otterpohl says: "We're not a high-volume fabricator, so sometimes we might process up to five different jobs on our laser welding cell within the course of a single day. That makes flexibility extremely important. For me, the biggest advantage of TruTops Weld is the ability to view everything on the computer without having to stop the machine. I can test the weld seams, set up the program and see exactly where collisions might occur – and the whole time the TruLaser Weld 5000 can simply carry on with its work!"

A welding program in four steps

- 1.** The programmer defines the points to be welded by clicking the corresponding part edges on the screen.
- 2.** The welding parameters can then be selected from a comprehensive database. Alternatively, users can opt to use parameters they have calculated themselves.
- 3.** The software carries out virtual positioning of the part on the positioner inside the laser welding cell. TruTops Weld then automatically calculates which points the welding robot will travel to during processing and creates a preliminary program. The software detects any potential collisions and helps the programmer to find a position and path of motion that the robot can follow without meeting any obstructions. This simulation is particularly useful for complex parts.
- 4.** Finally, the programmer transfers the program to the welding cell. The TeachLine sensor system then checks the exact position of the part. If TeachLine identifies any discrepancies from the position simulated offline, it adjusts the program accordingly. Users still have the option of carrying out a conventional teach-in process.

NO SQUABBLING OVER THE BEST SPOT

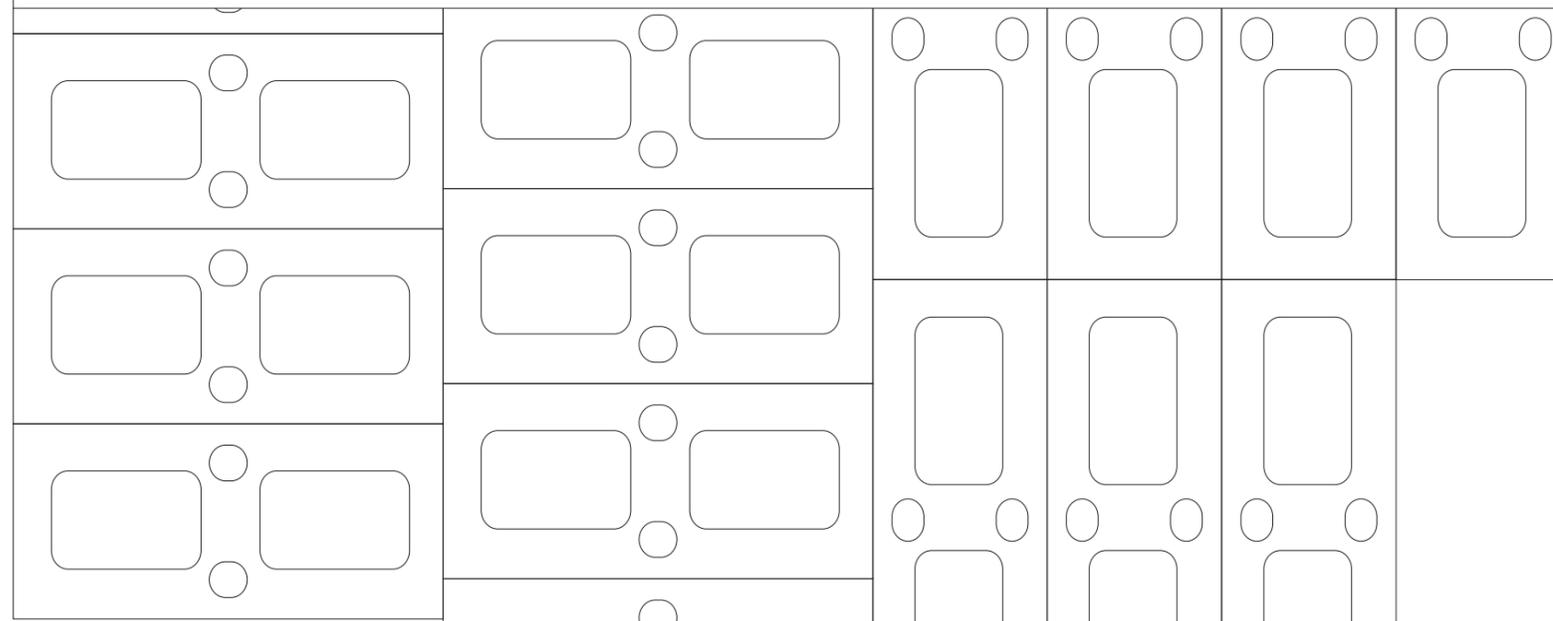
Nesting refers to the process of fitting as many parts as possible into a metal sheet. The new Lean Nest nesting processor offers a quick and easy way for users to get the most out of their material. This minimizes raw material waste and cuts costs.

"Metal sheets form the basis of all the products our customers make. Their goal is obviously to produce as many parts as possible from the available material in order to minimize the amount of scrap produced during cutting," says Gerd Brenner, product manager for TruConnect. "That's the idea behind what we call "nesting", where the software lays out optimum cutting patterns. This is particularly important for expensive materials such as stainless steel." The new Lean Nest nesting processor from TRUMPF makes it quicker and easier for customers to achieve the best part layout.

Lean Nest takes into account the key parameters that affect how parts are arranged on the metal sheet. These include the starting position of the processing head as well as the distances between parts and between the outermost parts and the edge of the sheet. The layouts generated by the processor are more consistently spaced than conventional nesting profiles, with noticeable reductions in the amount of wasted material.

By default, the program automatically calculates different ways of laying out the parts for each job before calculating the best option and displaying it on screen. The user can then adjust the suggested layout as required and modify settings such as the parameters and the duration of the calculation stage. "We've already received feedback from some of our test customers confirming that Lean Nest has speeded up the nesting process while minimizing raw material waste. It's a win-win situation," says Brenner.

Lean Nest is activated in TruTops Boost by default, along with all the other nesting profiles. Lean Nest is available for free to customers who have a service agreement with TRUMPF.



Good by design.

Who decides what TRUMPF products should look like? In most cases this task falls to the head of the design management team, Dina Gallo. In this interview, she explains why her job is never routine, recalls which machine posed the biggest challenge, and reveals her favorite product.



All a matter of taste: Dina Gallo had free rein when it came to designing the Track&Trace marker. The round design was the shape she ultimately found most appealing.

What is a typical day for a machine designer, Ms. Gallo?

Every single day is different. That's what I love about my job! We support a wide range of projects and get input from numerous different parts of the company. I spend much of my time talking to colleagues to share ideas and get feedback, so you might say that the only aspect of my work that happens on a routine basis is communication!

Do you get involved in the development of new machines right from the start?

Yes. In most cases, I join groups that are set up to create new products right from the beginning, when they are still bouncing around ideas. It's good to start thinking about the design early on.

Which recent product would you say was your favorite?

I took a real shine to the Track&Trace markers, the saucer-sized transmitters that help customers keep track of parts on the factory floor. It was the first time we had faced this kind of assignment. And because this was a completely new product in the TRUMPF portfolio, we were able to forge new paths in the design process.

They certainly look good! In fact, you even won the Red Dot Design Award 2019 for your efforts.

Yes, I was absolutely delighted. The Red Dot Jury singled us out for the Best of the Best distinction.

And that's not the first time you have won a prize for your designs. Juries are clearly impressed by your work. What is it that makes TRUMPF machines stand out?

That's a good question! I would say we take a very consistent approach to our designs, thinking carefully about the details and how we can perfect each and every product. The TRUMPF style of design is high-quality, well-conceived and understated. A classic combination!

You joined TRUMPF seven years ago. How did you learn about the machines? Did you actually do some punching, bending and laser machining yourself?

No, but I got a lot of training in all the products. And, of course, I have always had the good fortune to be surrounded by so many highly skilled colleagues who I can turn to at any time. That was particularly important early on, because however exciting the products are, they can be very challenging in design terms.

How important is machine design in the general scheme of things? Isn't it more important how they work rather than how they look?

TRUMPF has a long tradition of focusing on design. The company has always believed that its machines should not just feature state-of-the-art technology, but also attractive designs. What was



missing was a design concept that spanned all the company's technologies. That's what I brought in. The appearance of the product emphasizes its solidity, and this sense of robustness is visually enhanced by the nicely balanced surface ratios of the sheet metal elements. We don't always need to have squared edges, as demonstrated by the Track&Trace marker. What matters is getting the details exactly right. Of course, we're always working on making the TRUMPF product design even better. Despite having clear and consistent rules, our design language is very versatile, so I would say we're well equipped to meet future challenges.

What feedback have you received from customers?

Many of them set great store by how their products look. They like their machines to not only work perfectly, but also to have a high-quality appearance. We often hear that kind of feedback.

Digitalization is a major topic at TRUMPF and throughout the industry. Does it influence your work?

Absolutely. Nowadays we're not just designing hardware, but also software. We're working on app design and identifying what users want from their touchscreen displays. When it comes to design, it's important to follow the same approach for digital components as we do for machines and tools. That's part of my job as a designer.

What's the toughest project you have been confronted with?

The TruLaser Center 7030 project was particularly challenging. It's a very large machine with lots of surfaces and complex features. I was involved in the development process right from the start. There were numerous changes over the course of the project so we had to adapt our design accordingly. I can't tell you how good it felt to finally see and touch the result of so many years of work!

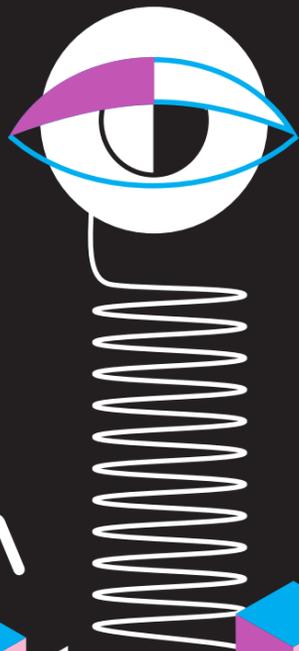
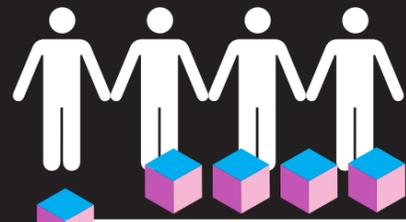
Check it out!

AROUND THE WORLD WITH TRUMPF LOGISTICS

From Europe to America and Asia, TRUMPF supplies its products to customers all over the world. The logistics involved are truly remarkable. So how many employees devote their time to ensuring on-time delivery? Where do they send parts? And what does cotton have to do with sheet metal fabrication?

130

employees process orders in the logistics center.

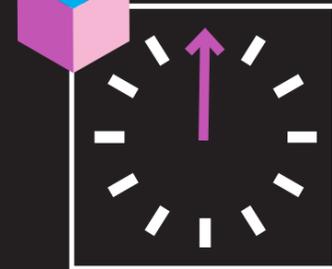


From Ditzingen to everywhere: the logistics center dispatches parts to some 87 countries.

87

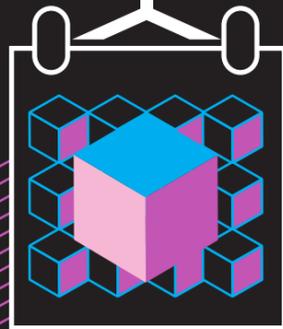
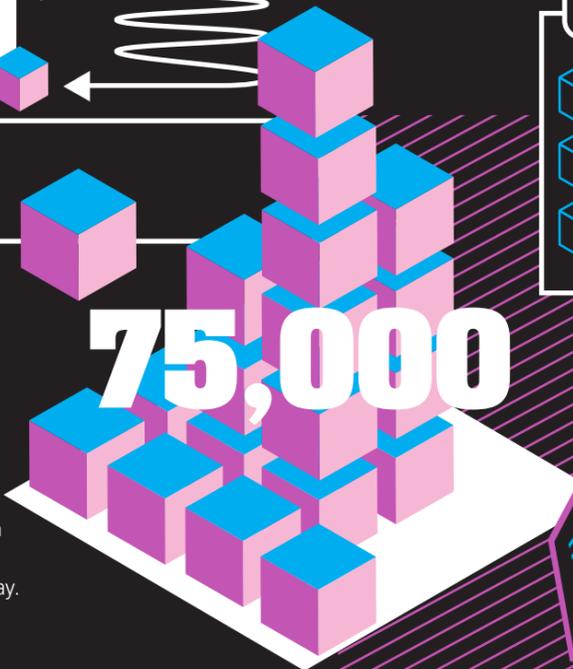


2,500



The logistics center workers dispatch over 75,000 items a month. That's equivalent to almost 2,500 items a day.

75,000

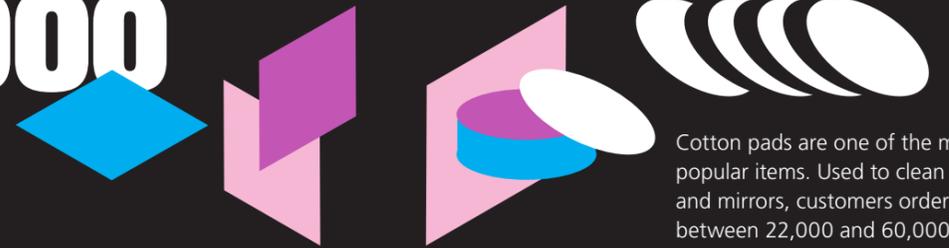


340,000

shipments – each containing multiple items – leave the logistics center each year. That's equivalent to one package for each and every inhabitant of the U.S. city of New Orleans.

35,000

The logistics center permanently maintains a stock of 35,000 spare parts.



Cotton pads are one of the most popular items. Used to clean lenses and mirrors, customers order between 22,000 and 60,000 of these pads a month.

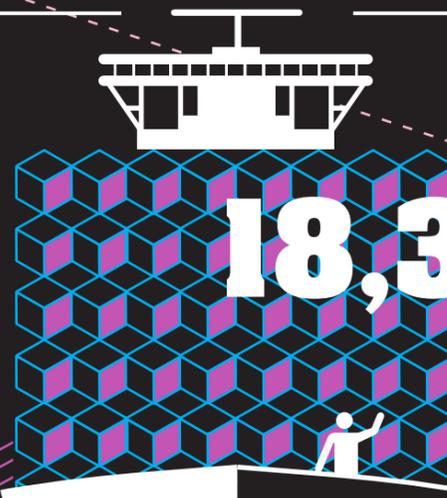
85%



TRUMPF has long boasted a level of efficiency typically associated with big online retailers: the logistics specialists deliver over 85 percent of items on the same day they are ordered.

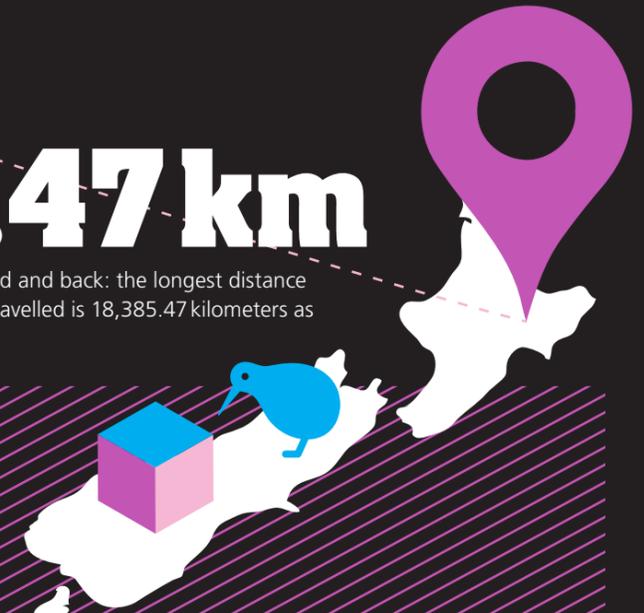
A year's worth of shipments would fill some 10,000 trucks. Half of this goes to recipients outside Europe.

10,000



18,385.47 km

To New Zealand and back: the longest distance any item has travelled is 18,385.47 kilometers as the crow flies.





IMAGES: Sebastian Berger

05

THE FUTURE

WORK. LIVE. BALANCE.

Nowadays, the terms **digitalization** and **artificial intelligence** seem to crop up in news stories on an almost daily basis. Both will change the way we live and work in the future. During a press conference in Ditzingen on the theme of “Work 4.0”, the TRUMPF Group’s head of HR **Oliver Maassen** met with **Professor Wilhelm Bauer**, director of the Fraunhofer Institute for Industrial Engineering IAO.

They both agreed that **the future of work is already here**. This prompted a debate on what role humans now play – and why being allowed to make mistakes is so important.

The Fraunhofer Institute for Industrial Engineering IAO in Stuttgart has been studying the impact of digitalization on the labor market for a number of years. The institute's executive director Prof. Wilhelm Bauer – an expert on this subject and technology commissioner to the state of Baden-Württemberg – sums up the current situation: “Almost 80 percent of the working population in Baden-Württemberg is employed by SMEs. Yet these are precisely the companies whose employees and managers tend to be behind the times when it comes to the digital transformation.” Bauer cites three prerequisites for improving this situation: “Firstly, companies need to understand that digitalization represents a significant transformation of the economy. Secondly, they need to develop their skills base – and the third point is having the courage to take the bull by the horns.” TRUMPF has long since recognized the importance of this issue.



Teamwork from day one: In the TRUMPF Cube initiative, students from many different disciplines learn to work together.

The company's sites around the globe are currently organizing training courses for over 1,300 managers to equip them for the challenges ahead. As Maassen explains, the aim is to help managers provide more support to employees whose work responsibilities have changed as a result of the digital transformation. In other words, their role is to serve as digital ambassadors.

Flexible and agile

TRUMPF was an early adopter of flexible working policies, allowing employees to spend 20 percent of their contractual hours working from home. The company also introduced family-time and continuing-education accounts to enable employees to adapt their working hours to different stages in their lives. Their contracts allow them to decide how many hours they wish to work per week in the coming year. Another option used by many employees is the agile working-time account. This departure from a standard 9-to-5

job enables TRUMPF employees to spread their working hours over the entire year. In this way, TRUMPF can adapt its capacity to peak periods of demand and allow employees to take more time off in quieter periods. “Our aim is to create a work environment which combines the greatest possible flexibility for the company with a system that best serves the personal interests of our employees,” says Maassen. These new working time models are also a way of combatting the shortage of skilled workers. Competition for top candidates has intensified, and high salaries are no longer the only deciding factor.

Combined efforts

Agility will not only have consequences on working hours. According to a study by the XING professional network on the subject of “new work”, agile working methods will replace traditional top-down organizational structures within the next 15 years. The need for autonomous working practices will increase in line with the growing complexity of the connected work environment. In TRUMPF's development department, where Juliane Pilster holds the post of agile manager, this vision is already a reality. All positions are agile and there are no longer any team leaders to take responsibility for everything. Depending on their specific skillset, managers focus either on products or HR. “Agile also means that we take more decisions as a team,” says Juliane Pilster. “Each member can contribute their stone to the edifice – that gives them greater confidence in their own abilities and leads to better results.” In April 2019, Pilster and her colleagues organized an Agile Days event in Ditzingen. This conference enabled employees from various companies and agility thought leaders to share their ideas and experience. “Agile working is based on an approach that emphasizes action, experimentation, being allowed to make mistakes, and actively shaping change,” says Professor Bauer of Fraunhofer IAO. But it isn't necessarily easy for companies and employees to bring about this cultural change, as Maassen explains: “If we don't start making changes in our management style, we won't be able to deal with the big picture.” Cross-departmental collaboration is another aspect of agility. One successful example is the TRUMPF Cube. In this project, students work together in interdisciplinary teams, representing every subject area from computer science to engineering. They are supervised by a coach whose sole responsibility is to familiarize the students with digitalization and Industry 4.0, helping prepare them for the challenges they will face in tomorrow's world of work. “TRUMPF is the first company in Germany to have created the post of digital coach. We want to open the way for change,” says Maassen.

IMAGES: Sebastian Berger, Andreas Weise

“ **Agile working** is based on an approach that emphasizes action, **experimentation**, being allowed to make mistakes, and actively shaping **change**. ”

Professor Wilhelm Bauer, director of the Fraunhofer Institute for Industrial Engineering IAO



Left to right: Professor Wilhelm Bauer, director of the Fraunhofer Institute for Industrial Engineering IAO and Oliver Maassen, head of Group Human Resources and Social Affairs at TRUMPF.

“ Our aim is to create a work environment which combines the **greatest possible flexibility** for the company with a system that **best serves the personal interests** of our employees. ”

Oliver Maassen, head of Group Human Resources and Social Affairs at TRUMPF



Walk the talk

But what jobs will there be left for people to do in the future? How will job descriptions change as the digital transformation advances? And why shouldn't we be afraid of the consequences of connected working? "Inevitably, some jobs will be lost," says Professor Bauer. "But at the same time new jobs will be created, requiring specialists with a new set of skills. This affects the younger generation, but it has even more of an impact on the existing workforce, who will have to retrain." Maassen's point of view is similar: "We are doing everything we can to augment our employees' skills: continuing education, experience-based learning plus more unconventional methods such as role-playing games based on the topic of digitalization." Bauer agrees this is the right approach: "When it comes to transforming the world of work, the important thing is to walk the talk."

Closer collaboration, team-based decision making:

For Juliane Pilster, agile manager in the development department, the future of work has already arrived.

What does agile working actually mean?

Agility describes the ability of a company or division of a company to respond flexibly and on the fly to changes in the operating environment. The key aspects of agility are self-governing teams, flat hierarchies and organizational structures that give employees more personal responsibility and decision-making freedom. The concept of agile working was originally developed by the software industry. It dates back to the Manifesto for Agile Software Development published by 17 American software companies in 2001. Agile working methods have since been adopted by companies and organizations outside the software industry.

IMAGES: Andreas Weise



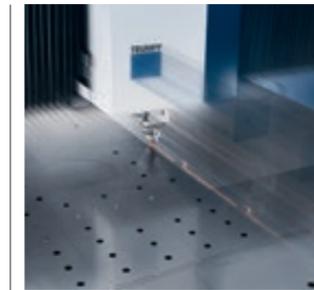
Innovations, technologies and future trends.



Aiming high with the TKF 1500

The new TruTool TKF 1500 beveler is a versatile, easy-to-use tool for preparing sheet metal edges prior to welding. Its impressive features attracted the attention of the metal fabrication company Huhle Stahl- und Metallbau GmbH, which is based in Wiesbaden, Germany. Huhle purchased the tool in mid-2016 and now uses it to prepare around 90 percent of its weld seams. The TKF 1500 came in particularly useful during work on the Kion Tower. Located within sight of Frankfurt airport, the 25-meter-high glass tower showcases products from forklift manufacturer Kion, offering space for a total of eight forklift trucks. Planning and constructing the tower was no easy task for the team from Huhle, as

project manager Markus Dann explains: "The design of the tower is both beautiful and complex at the same time. We faced challenges in everything from the foundations to the crane system." The TruTool TKF 1500 was a huge help in the project. It does a significantly better job of preparing sheet metal edges for welding than conventional angle grinders and cutting torches, eliminating the need for rework. This was a key advantage in this project because the team often had to work in awkward positions. The tool enabled them to create geometrically even, polished metal edges that were quick and easy to weld.



Highspeed Eco in 60 minutes

The new Highspeed Eco feature can be retrofitted to many laser machines with output powers of four kilowatts and up. Highspeed Eco makes nitrogen cutting with solid-state lasers considerably faster. It enables users to achieve increases of up to 100 percent in the feed rate and throughput of medium and thick sheets made of mild or stainless steel. Highspeed Eco also reduces cutting gas consumption by up to 70 percent. The new method produces impressively smooth and homogeneous cut edges while minimizing burr formation. All it takes to retrofit this feature to an existing machine is for a TRUMPF engineer to install the patented Highspeed Eco nozzle and provide the machine with new cutting data.



LASER and AI

In June this year, TRUMPF showcased a laser system with artificial intelligence at the Laser World of Photonics fair in Munich. The system can be operated with an intuitive series of voice commands, much like the speech recognition feature in smartphones and other devices. Equipped with a marking laser, the TRUMPF system provided the first demonstration of AI's potential in the field of laser material processing. Other highlights included the TruDisk 1020, a disk laser in the green spectrum. Specially designed to weld copper, this machine won the Innovation Award at the fair. Laser World of Photonics is a leading international laser trade fair that was first held in 1973.

IMAGES: TRUMPF, Torsten Kellemann, Huhle

Helping others to help themselves

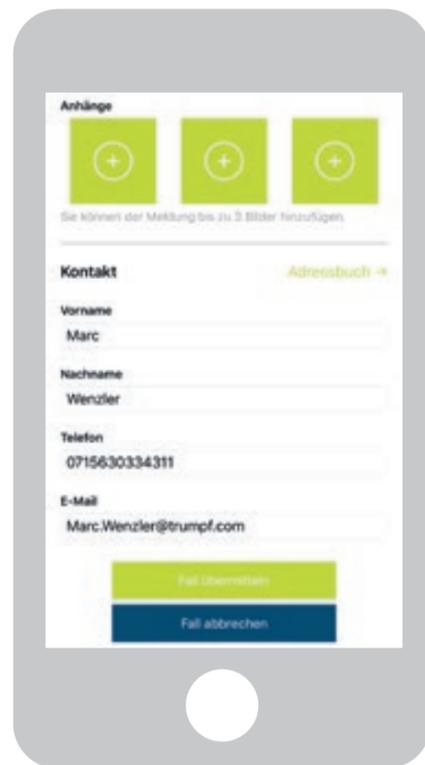


The TRUMPF Service team has developed a new feature to help users deal with minor malfunctions themselves. The “Technical Guide” forms part of the TRUMPF Service app, which allows MyTRUMPF users to send messages to the technical support team at any time of the day or night.

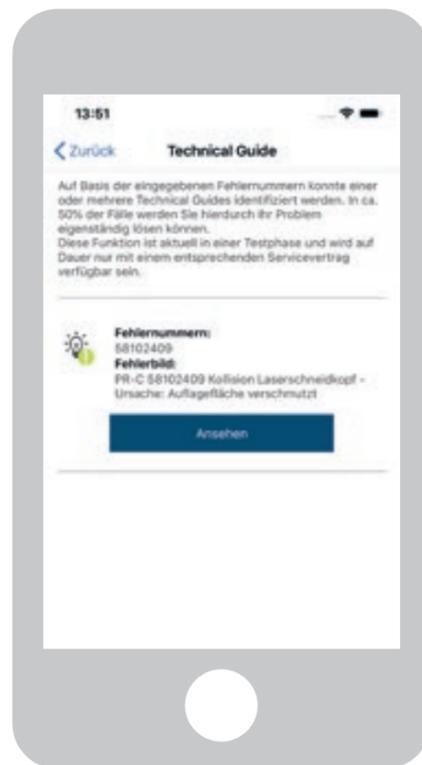
In the future, users confronted with a machine malfunction will be able to check the error code displayed on the control panel and enter it in the TRUMPF Service app. The Technical Guide provides instant advice on many of the most common error codes. It provides tips on how users can solve the problem themselves

without having to wait for outside assistance. This means some incidents can now be solved quickly and easily without calling a service technician. The Guide can help get machines back in action sooner – especially outside customer support hours. It also helps users learn more about their products and improve their skills.

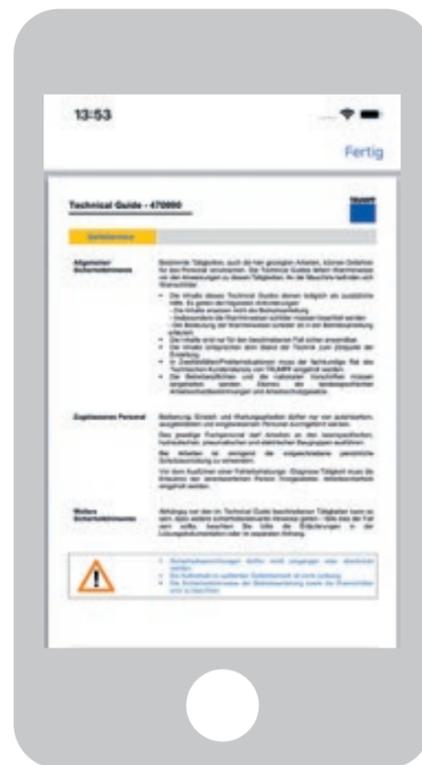
So how does it work?



Users can enter error codes directly in the TRUMPF Service app.



If the Technical Guide has an entry for that code, the app automatically notifies the user. The user can then decide whether to click on the entry.



The Technical Guide offers simple, clear solutions, including photos and step-by-step instructions.

#09

pARTgallery



Technology transformed into art. Presenting parts in a new light is something we do in every issue of TRUe. This time we take a fresh look at cutting lenses. Photographer Bertram Schäde took this TRUMPF spare part out of its familiar environment and placed it in an entirely different setting.

Guide to being creative

Imagine coming up with an idea that revolutionized the world! Or – perhaps on a slightly less grand scale – an idea that safeguarded a company’s future for generations to come. It’s not as difficult as you might think, at least according to a study by TU Dortmund University that suggests you simply close the curtains, shut the door, turn out the lights – and say hello to flashes of inspiration! The Dortmund researchers found that we are 30 percent more creative in the dark because we can focus on ourselves and forget the world around us.

Still struggling to come up with a bright idea? Don’t despair! Even the most agile minds start by groping around in the dark, oblivious to the possibly radical changes brought about by their ideas. Take Nicolaus Copernicus, for example. Back in the 15th century, he tinkered around with a bunch of hand-made instruments to prove an idea that he simply couldn’t get out of his head, namely that the Earth rotates not only around its own axis, but also around the Sun. Right up until his death, most scholars regarded his theories as fantastical delusions – which is why he was unwilling to publish them. Yet Copernicus’s ideas eventually went on to transform our view of the world. Another good example is Gottlieb Daimler, who fitted an internal combustion engine to a four-wheeler some 130 years ago to show what it could do. The idea of mass-producing them probably seemed ridiculous to him. After all, where would you get all the chauffeurs? Yet, today, motorized vehicles form the very core of our economy.

The secret, then, is to stay calm, maintain your composure and don’t be afraid to pursue your ideas, however ludicrous they may seem. Flashes of inspiration don’t make you rich overnight, as Apple founder Steve Jobs knew all too well. He once gave an address to Stanford University graduates

Creativity seasons

in which he said: “It was beautiful, historical, artistically subtle in a way that science can’t capture, and I found it fascinating.” Jobs was referring to a calligraphy class he attended at college after dropping out of his degree course. “None of this had even a hope of any practical application in my life,” he recalled, looking back on the course content. Yet when he started designing the first Mac computer, the calligraphy course finally paid off, triggering a burst of typographical creativity. In 1984, Apple launched the first computer with a graphical user interface, setting a benchmark for many other computers and safeguarding the company’s future for decades to come.

Talking of computers, London auction house Christies sold a portrait of a gentleman dressed in black last fall. Edmond de Belamy exchanged hands for 432,500 dollars – 40 times its estimated value. The reason I mention this is because the painting was signed with a math equation instead of an artist’s signature. Edmond the Belamy was not the work of a flesh-and-blood human. It was generated by a computer with artificial intelligence after analyzing 15,000 classic portraits.

What I can’t tell you is whether the AI brooded in the dark to achieve this feat, wrestling with its thoughts and drawing on tremendous reserves of perseverance. And I also have no idea if the AI attended a calligraphy course beforehand. But if AIs are already capable of passing as genuine artists, then it clearly won’t be much longer before they start building machines. Before the doomsayers start prophesying the end of mankind as we know it – or at least the demise of engineering – let’s keep our cool and remember one key thing: whether we have machines working with people, people with machines, or machines with machines, these collaborations will give rise to the kind of ideas that could secure the success of just about any company for generations to come!

Yours, Karl Thomas



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