Like father like son, right? The story of a family business.

Why businessman Tony spends a lot of time behind bars.

A Metro station without Ricupero is rare: On why the Paris subway system relies on this particular company.

The future is now: Why TRUMPF’s new smart factory is more than a mere demonstration center.
Keeping a healthy distance requires a good sense of judgement. It’s about striking the right balance between open-mindedness and caution in lots of different scenarios, but especially when it comes to wild animals. The only way to admire the wondrous great white shark in its full glory, for example, is to pluck up the courage to get close to one. But if you get too close, you could be putting your life at risk. On the other hand, new perspectives and opportunities await those who are brave enough to step outside their comfort zone.
At first glance, they look yellow and nothing more. But if you find the time to take a closer look at the details, you soon realize that sunflowers are so much more than just yellow. And if you get close enough, you’ll notice a vast array of colors. And the same is true of business, too. Looking at something up close often gives you completely new perspectives on the matter.
This image of the Tokyo subway, used by millions of people every day to commute, is symbolic. It shows that people come together in pursuit of a common goal. But at what point does such closeness become a restriction? It’s an important question that every company must ask itself. How close should I allow myself to get? As an executive, how much distance do I need to focus on achieving success while still showing my human side?
In the early days, there was often a frenzy of activity around my drawing board. Managers and colleagues all wanted to have their say about new draft designs. Sometimes it got a bit too much for me. All I wanted to do was get my ideas down on paper without being interrupted. Further down the line, I began using a computer for my designs. That was a private affair. Nobody came and joined me; occasions where we’d share ideas and suggestions were few and far between. Today, we have the technology to discuss draft designs online in our global development network – whenever we need to, that is. Thanks to digital connectivity, we now have the perfect balance.

In the TRUMPF product world, we call this TruConnect. Digital networking solutions enable us to be close to you, our customers, whenever you or your machines need us – essentially at the click of a button. But that’s not all. Our smart factory solutions can help you boost the efficiency of your production processes, in turn sharpening your competitive edge. You can experience all of this firsthand in our new showroom in Chicago. Here, we’re advancing the TRUMPF world of Industry 4.0 all the time, making sure it’s always state of the art. Visitors to the facility, which covers 5,500 square meters, can gain insights into scenarios in which people, machines, storage technology, automation, software and connectivity solutions interact. They can observe this from the control center, which functions in the same way as the bridge on a ship, or from the skywalk that offers a bird’s-eye view of the entire factory, or even directly from the shop floor. Find out more about our new facility on pages 30 to 33.

Being close to customers and grasping their perspectives. These are sizeable and important tasks to which we, as well as you, have to renew our commitment every single day. Tony Savage is so committed that he even goes to jail. Read all about how this experience influences the development of his products from page 20.

My focus over the past five years has been on development. In my new role as Chief Executive Officer for Machine Tools, I now hold full responsibility for our solutions and services, enabling me to provide you with even greater, more comprehensive support. I’m looking forward to doing just that and wish everyone every success for the future.
... in Auckland

Tony Savage is often behind bars, but he’s not guilty. It might sound like a horror story, but actually it’s his job. And it’s no walk in the park.

Page 20

... in Pirey

TRUMPF and Ricupero are celebrating 25 years of close collaboration this year. A valuable partnership for both parties.

Page 24

... in Kilrea

Where do you draw the line between family and business if they’re closely connected? Your perspectives on proximity and distance.

Page 12

... in Chicago

Another showroom? Not really. In the U.S., customers can now experience the latest Industry 4.0 technologies from TRUMPF firsthand.

Page 30
There are two ways to hand over a family business: either keep it in the family, or put it in the hands of an external manager. Creighton Hutchinson from Hutchinson Engineering in Kilrea, Northern Ireland, decided to do both. He told us how that worked, and how important a close working relationship is between him and his sons.
When Creighton Hutchinson drives down the streets of Kilrea, the locals give him a friendly wave. The company founder is clearly something of a celebrity in this town. Leaving Kilrea to produce goods closer to the industrial heartland of Northern Ireland was never an option, because Hutchinson believes in sticking to his roots and listening to local people. That has made him a valued member of the community, especially since it is entrepreneurs like him who have boosted Northern Ireland’s economy and emboldened it to step out of Great Britain’s shadow.

Creighton founded Hutchinson Engineering in 1971 as a one-man business producing parts for farm machinery. His company flourished, and he was soon employing 10 people. But as the years went by, his core market began to shrink. In 1996, his eldest son Mark joined the family firm and the decision was made to set out in a new direction. Today, Hutchinson Engineering employs 100 people making products for customers from a variety of sectors ranging from bus manufacturers to the aviation industry.

As the business grew, it became clear that it would need to increase its production capacity. In 2015, the company invested in a TruLaser Tube 7000 laser tube cutting machine and a TruLaser 5030 fiber automated laser cutting machine and expanded its production floor space. In 2001 company founder Creighton stepped back from the day-to-day running of the business. We talked to the key figures in the handover process to discover how things had gone.

Creighton Hutchinson, 70:

“When I founded my company 46 years ago, I never imagined that we would end up employing a hundred people. But the company did well and simply got bigger and bigger. That’s partly down to the fact that my sons and I made good decisions at critical moments – for example when we saw a drop in orders for agricultural machinery, and when the time came to restructure our management board. It was clear that we needed an objective viewpoint when it came to making strategic decisions, so I decided to bring in people from outside, in other words some non-family members. It’s not a good idea to just keep following the same well-trodden path.”

Creighton Hutchinson, founder of Hutchinson Engineering
Mark Hutchinson, 39, Managing Director:

I grew up with the company. It was part of our family life, and I always knew that I wanted to get involved at some point. Like father like son, they say, and I always looked up to my dad and wanted him to be proud of me, just like I’m proud of him.

We worked very closely together and I learned an awful lot from him. At the same time, I gradually had to cut the cord, as it were, in order to forge my own path in the business. I had to make my own decisions and push ahead with the expansion of our product range. We also teamed up with a new partner, TRUMPF, and I’ve certainly been impressed by their highly advanced machines. Our first TRUMPF machine was a CO₂ laser machine with automation, which enabled us to achieve even higher levels of productivity.

We see our employees as forming part of a big, extended family. We offer regular health checks, annual team-building events, a big Christmas party, and little rituals that have built up over time like our Pancake Tuesday celebrations. The people who work here appreciate all that, and many of them have been with us for years or even decades. One of them has been working here for 40 years! I always remember our dad saying that you should treat people the way you would want them to treat you, and that’s the basis on which my brother and I still run the company today.

“Treat people the way you would want them to treat you.”

Mark Hutchinson, Managing Director at Hutchinson Engineering

Richard Hutchinson, 35, IT and Marketing Director:

I joined the company in 2007. To tell you the truth, Mark pulled a bit of a clever trick, because I was only meant to be helping out for six months during a really busy period, and that was 10 years ago! So it wasn’t really what I had planned. I studied business administration in Belfast, and at that point I would never have imagined joining the family business. It’s not always easy when your dad is also your boss, and your brother your colleague, but I’m really pleased that I stayed. In a big company I might have been just another cog in the wheel, but here I’ve had so many opportunities to develop myself.

We also installed TruTops Monitor which enables us to monitor our production processes with tremendous precision. That’s an area that really interests me.

Sadly our dad has been suffering from Parkinson’s disease for the last few years, but he has still kept his enthusiasm for hard work. When he was no longer able to work here, he looked for a new project, and now he’s renovating our family’s old cottage on the company premises.
If, like Hutchinson Engineering, you are striving to be a reliable partner to customers in multiple industries, you also need partners of your own that you can trust. TRUMPF experts provide support to users throughout the entire life cycle of their production machinery. Find out more about our service agreements.

In brief:

TRUMPF service agreements

“...They wanted me to bring a new perspective into the family business.”

Jason McCullagh, 41, Director of Manufacturing:

I may not be a Hutchinson, but I have very close ties to the business nevertheless. I joined the company as Director of Manufacturing two years ago and I’m one of only two directors who are not part of the family. That was actually one of the reasons why Mark and Richard took me on. They wanted me to bring a new perspective into the family business. It didn’t take long for me to feel like part of the family, because the Hutchinson brothers are tremendously welcoming. In fact, I think that’s what distinguishes us from other companies. We make a big effort to create a great working environment, and in return we get deeper commitment from our employees.

Obviously it was challenging for me to join such a close-knit family environment. Mark and Richard already have such a positive, close relationship. But it quickly became clear that our collaboration would pan out, and now Mark and Richard really value my opinions and experience. We’re really the perfect team. Mark tends to make gut decisions on a very intuitive basis, whereas I’m far more analytical. That creates a good balance, and we all respect the expertise each person brings to the table. My specialty is production, Richard’s is IT, and Mark has the management skills.
Our support doesn’t stop when you purchase a machine. TRUMPF is always by your side, supporting customers with a range of service agreements and specialist knowledge. Our hotline and teleservice offerings are a great example of how we can help, with qualified and experienced technicians quickly helping to pinpoint and eliminate configuration and user errors. The numbers speak for themselves: our experts solve more than two-thirds of incidents without having to send out a technician to the customer’s site – and that saves time and money. TRUMPF also offers the option of regular, scheduled servicing and maintenance, with specialist technicians using original parts to keep your machines running smoothly. It’s easy to stay within budget thanks to our package prices and flat-rate costs, and every service is carried out according to the manufacturer’s specifications and documented using checklists and maintenance stickers. TRUMPF handles maintenance scheduling and makes sure each service is carried out at the proper time.

TRUMPF also offers service agreements that include repairs and spare parts. A fixed annual fee makes it easier for customers to budget and control their costs. Regular servicing keeps machines in the best possible state of repair, increasing their service life and resale value. Please get in touch with your TRUMPF representative to find out which service agreements are available in your area.

You can find more about TRUMPF service agreements here: www.trumpf.com/s/c52l3j

Hutchinson Engineering is actively involved in the local community. The company sponsors a number of sports teams, including the junior rugby team, the junior soccer team, and the local weightlifter. The Northern Irish company has 80,000 square feet (7,430 square meters) of production floor space. By comparison, a soccer field is about 7,140 square meters.
Whether it’s facades for parking facilities in Australia or window screens for the University of Auckland: Metal Concepts is active all over the world, always able to offer a tailored solution for any situation. TRUMPF machines and tools are part of making that happen. We interviewed Tony Savage, the owner of Metal Concepts, about how his company came to manufacture furniture for prisons.

Your company specializes in facades for buildings. Now you spend much of your day thinking about prisons – how did that come about?

Several years ago, the New Zealand Department of Corrections came to us to ask if we could build them a piece of furniture. We received the briefing on a Thursday morning. The team then immediately gathered in front of a whiteboard to work up a solution that we thought would solve all known problems. The customer visited us the following Monday, when we presented not only our pitch, but also a prototype. Except for some minor modifications, that proved to be the final version.

And what do you manufacture for prisons?

We ended up specializing in the fixtures and fittings for cells. That includes the sleeping areas, desks and swivel chairs, but also dining tables, TV housings, bedside lights and call points.

What was it like visiting prisons and spending so much time in them?

Personally, I found it very interesting. Like most people, I’d never had anything to do with prisons. I knew of course that they exist, but had never given any thought to what they are like inside. Prisons are something the vast majority of us see only from far away; hardly anyone thinks at all about what they could or should look like on the inside.

Over time, I came to appreciate the special requirements of this particular environment. I’m fascinated by the challenge of designing a safe and secure environment while also accommodating the needs of both staff and inmates.

Durable and safe: Products made by Metal Concepts are custom-designed to meet the demands of life in prison.

What has to be considered when designing such an environment?

All kinds of things! Our furniture is designed to be especially durable because it must withstand quite a lot – deliberate damage, for instance. Safety is also a top priority. Our job is to ensure that nothing in a cell can be damaged or used as a weapon. This is why we make the lion’s share of our products out of mild steel and add the toughest topcoat we have, or stainless steel. Nevertheless, coming up with products that have to fulfill so many different requirements is a constant challenge.
Tony Savage relies on the TruPunch 3000 to manufacture his products. This punching machine helps Tony’s company to manufacture furniture for prison cells and produce facades for buildings. Using a variety of tools, Tony and his team can use their machine to carry out several processing steps. This saves Tony both time and money.

In brief:

Do you ever get feedback from inmates?
No, but we do work very closely with the staff at each prison we supply. This is a great help in understanding what the day-to-day challenges are in everything from low- to maximum-security prisons.

How closely must you work with the Departments of Corrections?
In this game, working closely with customers is essential. The more we know about each prison as well as the challenges and aims of the Department of Corrections, the more suitable our products will be for their intended application.

What you do does seem to have its share of challenges. What are your plans for the future? Do you intend to carry on manufacturing fixtures and fittings for prisons?
Absolutely! We’ve had requests from other countries, from people who have seen some of what we do. Thanks to the automation provided by our TruPunch, we’ve been able to raise our capacity considerably. I see this as a major opportunity. What’s more, I have fantastic and very talented staff. We all share the same vision and the need for the work we do to constantly evolve.

“Thanks to the automation provided by our TruPunch, we’ve been able to raise our capacity considerably.”

Tony Savage, Managing Director of Metal Concepts
Integrating processes

Advances in punching technology means operators can process parts from start to finish on a single machine. Thanks to flexible tools, TruPunch machines can even directly handle forming and marking processes. This translates into significant reductions in throughput times and makes it economically viable to manufacture a wide range of parts. Customers wanting to test a range of punching applications have the option of trial production. Here, new applications can be put through their paces over a two-week period.

To find out which punching tools are compatible with your machine and to discover more about suitable additional functions, visit www.trumpf.com/?648

Tap forming is possible for a range of thread sizes. Strain hardening the material provides for high rigidity.

This application supports bends of up to 90 degrees, with machines and tools accommodating link widths of up to 90 millimeters. The use of a bending roller means imprint-free bends.

With the right tool, punching machines can deburr metal. This minimizes the risk of injury and provides for excellent edge quality.

Tools for engraving, marking and embossing offer customers all kinds of options, including adding serial numbers, the year of manufacture, batch number, symbols or their company logo.

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Tools for engraving, marking and embossing offer customers all kinds of options, including adding serial numbers, the year of manufacture, batch number, symbols or their company logo.

Saving time

Processing procedure is distributed on multiple machines.

Complete processing on one punching machine.

About the customer

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www.metalconcepts.co.nz

Machinery

• TruPunch 3000
• TruBend 5170

Managing Director Tony Savage spends some 20 percent of his time behind bars so that he can keep improving his products and innovations.

Metal Concepts manufactured window screens that ensure ideal temperatures in rooms at the University of Auckland.
At the end of a long, winding street in Pirey are the premises of the company Ricupero. First impressions: the massive, glass-fronted building doesn’t look like a production facility and Franck Ricupero doesn’t look like your typical managing director. He’s wearing jeans, a T-shirt and sneakers instead of a suit and tie. As he starts to talk about his company, his eyes light up and there’s an unmistakable smile behind his beard.

This is a family business in its second generation of leadership, now run by Franck, 43, and his brother Christophe, one year his junior. The two have been working side by side since 1994 and have always made every effort to advance the company. The brothers feel it’s essential that family sticks together. It’s simply a matter of honor that they continue to run the company the way their father did. And there’s every reason for the patriarch to be proud of his sons.

Ricupero has grown so much that it now employs over 50 people and supplies more than just individual components. With the support of a second company – CFI – Ricupero also supplies complete assemblies. A prime example is the entry barriers for a variety of subway and suburban-train stations. Ricupero bends, lasers and welds metal sheets before installing and checking supplied electronics. “Whenever possible, our customers get everything from a single source. This is something they value and it sets us apart from the competition,” Franck explains.

French company Ricupero and TRUMPF have been a strong team for the past 25 years. Much has changed in that time - especially in terms of technical challenges, such as automation. But one thing hasn’t changed at either company: downtime is not an option.
We closely work with TRUMPF on new projects, in order to be able to achieve them. In fact, Ricupero was one of the first companies in France to use a TruLaser Robot 5020, which in turn allowed the company to gain expertise in laser welding. It was this additional know-how that helped Ricupero acquire a major customer: the Paris Métro. When it came to manufacturing a special part for this subway network, the deciding factor was minimizing heat generation during welding – which is where laser welding has the edge over conventional techniques. Ricupero leveraged its expertise in laser welding to win the contract.

As soon as TRUMPF launches a new machine, Ricupero often buys it immediately, getting the jump on his competitors. “It’s crucial to invest in new machines and technology so that we can offer our customers something special. If we allowed ourselves to fall behind the times, we wouldn’t be able to keep customers satisfied. And then we’d run the risk of losing customers to competitors,” says Franck. This is particularly important when it comes to key accounts such as RATP, which operates the Paris Métro, or the French railroad company SNCF. Both rely on Ricupero.

Franck Ricupero’s goals are ambitious, but not impossible. He’s passionate about his company.

“ We are a single-source supplier. That sets us apart. ”

Franck Ricupero, Managing Director of Ricupero
The TruLaser 2030 fiber laser-cutting machine can be automated and comes in a wide range of installation versions. It can therefore adapt to any manufacturing environment – a quality valued by French company Ricupero and others.

In brief:

TruLaser 2030 fiber + LiftMaster Shuttle

TRUMPF has also benefitted from Franck's investments – an open exchange of ideas and direct feedback are of great help to the mechanical engineers in Ditzingen. "A win-win situation," says Franck with a wink.

Ricupero was the first customer in the world to order the TruLaser 2030 fiber in combination with a LiftMaster Shuttle. Franck's brother Christophe even traveled to the factory in Farmington, Connecticut, to witness the machine in action. At that point, the machine hadn't even been launched in Europe.

Collaboration between TRUMPF and Ricupero clearly bears fruit. The French company's reputation for state-of-the-art machinery and a professional range of services has travelled as far as Australia. "We get orders from all over the world and our products are used in numerous countries. That makes me proud and motivates me anew," Franck says. Franck plans to continue investing in advanced technologies – in close collaboration with TRUMPF, of course.
TruLaser 2030 fiber + LiftMaster Shuttle

An important automation component for the TruLaser 2030 fiber is the nozzle changer. It is used during automated processes involving a change in materials. TRUMPF’s tightening principle ensures that the nozzles are correctly positioned so that the laser beam is then dead center.

Ricupero chose the installation version above for the TruLaser 2030 fiber in combination with a LiftMaster Shuttle. During the day, low-volume series and prototypes are loaded and unloaded using the pallet changer; at night and for high-volume series, this is done by the LiftMaster Shuttle.

This short version with dual cart is ideal when the system is installed directly along a wall. People can load and unload the machine from the front. It is easy to access the pallet changer and the dual cart.

The long installation version can accommodate raw sheet metal and finished parts in stacks as high as 900 millimeters.

About the customer
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Machinery
- TruLaser 2030 fiber with LiftMaster Shuttle
- TruLaser 3530
- TruMatic 7000
- TruBend 7036
- TrumaBend V850S
- TruMatic 6000 i-13
- TruMatic 6000
All key information available with a single click – anytime, anywhere. In an age of smartphones, the notion of “anything, anywhere, any time” no longer seems all that special. But in the world of sheet metal processing, being able to monitor and control workload, production orders and the status of manufacturing machinery at any time definitely is a big deal. This is made possible by the Industry 4.0 solutions that TRUMPF brings together under the banner of TruConnect.

TRUMPF has been active in the Windy City in the Midwestern United States since September 2017. By establishing its state-of-the-art technology center, TRUMPF has taken a major step into the future of sheet metal processing. Visitors to the center can expect to experience the company’s first smart factory, complete with connected production processes.

TRUMPF is pursuing a clear strategy for its smart factory: to be even closer to its customers and to advise them on how best to implement connected manufacturing solutions. The site’s location already takes care of the first point – some 40 percent of all the sheet metal companies in North America are based in Illinois and surrounding states. Here in the heart of the US sheet metal industry, TRUMPF is capitalizing on its strength as developer and
demonstrating just what digitalization can do: effect a marked reduction in the number of indirect processes.

Some 80 percent of production time today is spent pre- and post-processing orders. Now that batch sizes are becoming smaller, the proportion of time spent on such tasks must also be reduced if production is to be economical. Handling orders manually, the laborious compiling of accompanying documentation, committing a lot of time to tracking down parts – none of this applies to TRUMPF in Chicago. Instead, customers will encounter connected machinery that allows for automated order processing. But what makes the smart factory really stand out is not just the automation components – in other words the hardware – but the software. This is what enables orders to be processed in a matter of minutes, including an automatic ordering process, programming, nesting and allocation to the job list for the relevant machine. Production data for all machines is fed into the control center. Here, as well as using mobile devices, it is possible to see the status of production and orders at a glance and make adjustments at any time. In Chicago, production never sleeps. Visitors to the smart factory can do more than observe. Thanks to the connected AXOOM online shop, they can also dispatch their own parts. In this way, TRUMPF brings to life all processes used in sheet metal processing – from inquiries to production to invoicing – and can thus understand its customers’ requirements even better.
### A location system with centimeter accuracy

Growth for connected production: TRUMPF now holds 60 percent of BeSpoon SAS, a French company that develops sensors, system components and software for position tracking. This technology makes it possible to pinpoint within centimeters an object’s position in a production facility in real time. As a result, production processes are more transparent and manufacturing more efficient. BeSpoon’s location technology offers enormous potential for sheet metal processing, and will be available as part of the TruConnect product portfolio for smart factories.

TRUMPF was able to boost its sales in fiscal year 2016/2017 by nearly 11 percent, from 2.8 to 3.1 billion euros. Orders received rose as well, increasing 27 percent to 3.4 billion euros. The highest-earning markets were Germany and the U.S., with China coming in at number three. South Korea, home to many customers in the electronics industry, had especially positive news to report: sales there rose 58 percent to 211 million euros, making the country number four.

“We exceeded our targets in many markets, an achievement in which all our products played an equal role,” says TRUMPF CEO Nicola Leibinger-Kammüller.

### No-look pass

In the Japan Blind Football Association (JBAF), the visually impaired play soccer alongside sighted players – a true example of inclusion.

By sponsoring JBAF, TRUMPF Japan helps further the idea of an open, inclusive society. TRUMPF employees have been profoundly impressed by the achievements of the JBAF teams. The Japanese team is now aiming for the Tokyo Paralympics in 2020 – TRUMPF is crossing its fingers and cheering them on!

### Robotics? Child’s play!

For twelve schoolchildren, the TRUMPF Technology Days in Ditzingen provided a welcome change from their regular classes. The four-day event featured the LEGO® MINDSTORMS® EV3 kit, which brings technology to life for children.

With the kit, the 11- to 14-year-olds could try their hand at being designers, independently developing and programming their own robot models. One example was the penalty shoot-out robot. Building it also provided participants with their first practical experience of using CNC machines to make components themselves.

### New technology center

TRUMPF has a presence in Thailand since October 2015. It has now set another milestone by opening a new technology center there. The inauguration ceremony was held this past August in Bangkok, with guests from all over the world. Visitors were able to view a range of the latest technologies in sheet metal processing. In the future, the technology center will be available for training as well as application tests.

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“We exceeded our targets in many markets, an achievement in which all our products played an equal role,” says TRUMPF CEO Nicola Leibinger-Kammüller.

### Digitalization in real life

TRUMPF is shipping items to its customers from a new logistics center.

The previous facility had reached the limits of its capacity, so in 2015, TRUMPF broke ground for a new building with enough room for consumables and spare parts. At roughly 13,000 m², the new logistics center is more than three times as large as the old one, and already houses 30,000 products. The mix of automatic and manual operations creates a high degree of flexibility. Another highlight is an SAP-based software solution developed especially for TRUMPF, which handles all paperwork processes, manages material flows, and tracks inventory.

This not only creates transparency, but also ensures that the company can take action quickly. Such a degree of digital connectivity is sure to pay off well into the future.
Punching technology:
FROM PUNCH TO MACHINE

Punching machines are all-around talents, capable of much more than merely making holes in metal sheets. These machines are instead flexible production partners that work quickly and efficiently. Punching has advanced tremendously over time. The simple geometric shapes of the technology’s infancy gave rise to today’s sophisticated machines, which can process many different materials to create a nearly infinite array of shapes. The infographic explores the most exciting and fascinating facts of punching technology today.

**The Classic system’s round punch offers 142,840 configuration options.** This ensures suitable solutions for all customers and all requirements.

**The clock is ticking**
The TruPunch 5000 is the world’s fastest punching machine. Thanks to its powerful hydraulic drive, this machine completes as many as 1,600 punching strokes per minute. What else in the world transpires in 60 seconds?

**Turnaround times for new punching tools**
If a customer orders a standard tool before noon, then TRUMPF will ship it that same day. This is faster than online retailers, which typically need two days. The punching-tool facility in Gerlingen is home to automated, 24/7 manufacture of punches and dies. TRUMPF is thus able to quickly supply customers many different versions of its products.

**Same-day Shipping**

**TRUMPF customers can choose from 79 different applications.**

**Punch whatever you like**
TRUMPF machines can be used to punch, slit, form and mark – providing operators with range and flexibility. More specifically, there are 44 different standard geometries that can be punched. In addition, users can choose from 10 separating and 20 forming applications. And marking tools integrated into TRUMPF machines can add lettering or logos.

**79 applications**

**360° tool rotation**
A punching head can rotate any tool to any angular position – regardless of tool shape, size or position in the magazine. Tool rotation not only reduces retouching times and tool costs, but also boosts material efficiency.

**Bevelled punching surfaces**
Minimize sheet distortion and reduce punching noise by as much as 50 percent.

**Babies are born.**

**A human blinks 15 times.**

**Usain Bolt would cover 637 meters at top speed.**

**1,600 strokes per minute**

**1,600 punching strokes per minute. What else in the world transpires in 60 seconds?**
Buiksloterham, a district of Amsterdam. At one time it was a wasteland of heavy industry. Today, it is an up-and-coming neighborhood for digital companies. One of these is MX3D, a specialist in robotics and 3D printing technologies. The latter sounds almost like part of the old economy here in “Dutch Silicon Valley,” where the truly disruptive technology is generative design.
Mention “design,” and most people’s first thought will be of creative types. In generative design, however, the main role is adopted by a powerful computer. Designers no longer hunch over their drawing boards; instead, they define the parameters that the desired end product has to fulfill: What materials should the final product consist of? What is the most it can cost? What stresses does the product have to withstand?

An algorithm uses this input to develop countless designs. The program also calculates where forces of varying intensity will act on the material. As a result, the designs often resemble structures found in nature. For instance, a chair doesn’t stand on four legs – it rests on a skeletal framework. After the designer chooses their favorite from among the computer-generated options, they optimize it with the algorithm. The final step is 3D printing.

In Amsterdam, 3D printing has long since moved past being a novel way to inexpensively manufacture plastic parts. The technique is now applied to pieces of steel, welded together by fully automatic robotic arms with a dazzling degree of precision. MX3D now plans to combine generative design with this state-of-the-art 3D printing and print a pedestrian bridge to join Amsterdam’s more than 1,200 other bridges. Launched in 2015, the project is nearing completion. The bridge will span the Oudezijds Achterburgwal canal.

Generative design is not unique to the Netherlands; German architects, too, have been working with this new technology. One well-known example is the Elbphilharmonie, the Hamburg concert hall that was completed in 2016. Its special design is intended to unlock previously unheard-of dimensions of sound. This is especially visible in the Grand Hall, which is covered with 10,000 individual gypsum fiber panels. Architect Benjamin Samuel Koren designed each of them with a computer to reflect sound into every corner of the space. The result is a unique, virtually perfect auditory experience, regardless of where the listener is sitting. Generative design will soon make its way into the world of aviation as well. Researchers developed an innovative partition for Airbus that they optimized using the new technology. They developed their algorithm based on their observations of nature; in this instance, the way slime mold grows. Their efforts produced a door with struts that mirror the mold’s structure, and weighs 45 percent less than the conventional design. What’s more, printing this door consumes 95 percent less in the way of resources.

But is generative design a trend with large-scale application, or only for niche one-off cases?

For companies, generative design offers an opportunity for reducing their use of resources and therefore production costs. This can be particularly helpful in industrial sectors where material and production costs play a decisive role. In addition, product development moves faster, since designers no longer need to start at square one. But at the same time, it will be easier to offer products and solutions tailored to individual customers. And generative design sometimes has a highly practical use: as in Amsterdam, where the MX3D designers are confident that pedestrians will soon be crossing their printed bridge.
Innovations, technologies and future trends.

Well positioned

True to its name – TRUMPF’s part indicator helps operators to find the correct position for inserting the blank into the bending machine, thus minimizing waste. Behind the seemingly simple name is a sophisticated system – two cameras, one in front of and one behind the press beam, are used to display a complete image on an additional screen. The correct insertion position is marked in color, which allows the operator to see immediately if the blank's actual position matches its ideal position and to make any necessary adjustments. In this way, the part indicator guarantees not only that the correct part is placed in the machine, but also that it is properly aligned. This is a major benefit, especially for symmetrical parts. As well as the part indicator, the additional screen also facilitates programming the machine by making it easy for the operator to retrieve data relevant to production. This helps minimize the volume of accompanying documents.

Higher performance, longer runtime

TRUMPF has expanded its portfolio of TruTool products. Joining the 10.8 volt versions are nibblers, shears and other machines with 18 volt batteries. Li-ion battery technology is taking the world by storm, with key advantages of these energy-storage systems including a high energy density and protection against overheating. In cordless operation, the new 18 volt machines can even process sheets between 2.0 and 2.5 millimeters in thickness. The combination of the gear head with Power Head technology, and a brushless motor achieves a 60 percent longer runtime after each full charge.

XXL sheet processing

Two of the latest TRUMPF machines – the TruPunch 1000 punching machine and the TruMate 1000 fiber punch laser machine – are now available in large-format versions. These can process sheets as large as 3.0 x 1.5 meters. And these larger formats can naturally accommodate several parts at once, which in turn means sheets have to be exchanged less frequently. Large formats also increase the number of tool stations to 21.

Direct marking of coated sheets

Thanks to the TRUMPF ink marking tool, customers can maintain an overview of their parts. The tool is usable on all oil-free surfaces and really comes into its own when dealing with coated sheets. In the past, it was necessary to first remove the coating and then mark the sheet directly. This tool eliminates the elaborate step. Equipped with a special felt-tip pen, the tool applies water- and abrasion-resistant markings directly to the coating. The surface of the sheet itself remains intact.

A machine of many talents

The new TruLaser 2030 fiber provides high performance in a compact form. Key components such as laser, switch cabinet and compact dust extractor have been integrated into the machine frame. And even with the pallet changer, the machine has a footprint of just 7.8 x 5.9 meters. Its intuitive operation makes using this technology easy. Although the TruLaser 2030 fiber really comes into its own when processing sheets with thicknesses of 1 to 12 millimeters, the machine can be used to process thicker sheets too. Equipped with a robust TruDisk laser, it can use nitrogen to cut even highly reflective materials such as copper. The same cutting unit is used for all materials and sheet thicknesses, and in conjunction with the collision protection feature serves to minimize non-productive time. An automatic nozzle changer with slots for up to 8 different nozzles further reduces setup times. Depending on workload and the desired level of automation, the machine can be equipped with a manual pallet, a pallet changer or the LiftMaster Shuttle for automated loading and unloading.

Twice is nice

The new TruPrint 1000 is a powder-based 3D printer, optimized for the manufacturing requirements of the dental industry. What is special about this machine? Its multi-laser unit features not one but two 200-watt lasers that work in tandem to create components of the required shape by layering metal powder. This allows the operator to produce bridges or crowns for custom dental prostheses. Thanks to the multi-laser system, it’s possible to generate up to 80 percent more parts with no change in capacity utilization – pure processing time for producing parts is cut almost in half.
Herr Hofele, has the use of Highspeed Eco had any tangible effects on your production process?

“Using the new nozzle, I can cut four-millimeter sheets around 80 percent faster than before. This is thanks in part to the higher feed rate, but also to a faster piercing process. The combination of these two factors increases my sheet throughput by up to 50 percent.”

Have there been any changes in the amount of gas you use?

“I use six bar gas pressure to cut four-millimeter sheets with the new nozzle. Previously I had to use 20 bar to do the same job, so that’s a huge difference.”

What has your experience been with the nozzle’s service life?

“That’s something I’m very pleased with. Cutting thick sheets, I can generally get through two whole production shifts using the same nozzle. Another advantage is that I don’t have to change the nozzle to work on different sheet thicknesses. This new nozzle sure has reduced my set-up times.”

Highspeed Eco makes laser cutting up to 100 percent faster while reducing the use of cutting gas by an average of 70 percent. We briefly introduced this process in a previous issue of TRUe — and the secret to its success lies in a patented nozzle.

This nozzle can withstand collisions better than its conventional counterparts. This is so because the nozzle’s base body and inner section are separated by a gap from the sheet surface. This gap of 1.5 millimeters is quite large compared to the gap found in standard processes. The nozzle’s flexible sleeve glides effortlessly over spatter residues and slightly elevated surfaces, ensuring that the cutting gas is forced into the kerf very efficiently. This reduces gas consumption and often results in improved cut quality, with minimal burr formation even at acute angles.

The specially designed nozzle geometry also boosts feed rates and reduces piercing times. All in all, this collectively ramps up sheet throughput. The bar graph shows the increases in throughput that can be achieved using a TruLaser 5030 fiber with eight kilowatts of laser power.

TruDisk 8001 (TruLaser 5030 fiber)

**HIGHSPEED ECO**

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<thead>
<tr>
<th>Sheet Throughput (Sheets/h)</th>
<th>Mild steel N₂</th>
<th>Stainless steel N₂</th>
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<tr>
<td>4 mm</td>
<td>100 %</td>
<td>100 %</td>
</tr>
<tr>
<td>8 mm</td>
<td>100 %</td>
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<td>12 mm</td>
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*Cannot be laser-machined*
SpaRe pARts AT THE ToUCh OF A BuTTOn

Make life easier with Easy Order, the fastest and simplest way to order TRUMPF Genuine Parts and punching tools. This new system comprises three different ways of ordering: the Easy Order Button, the Easy Order App and our Genuine Parts Centers.

The button can be programmed to order consumables and can be installed anywhere you like, even on the machine itself. Simply press the button to submit an order!

As well as the button, TRUMPF now offers an Easy Order App for smartphones and tablets, providing access to 150 popular consumables and punching-tool components. The scanner feature allows users to scan a Data Matrix code on the tool they need, so ordering a new one takes just a few seconds. Decision-makers can use the app to browse an overview of ordering processes and confirm them.

Customers can use their personal MyTRUMPF account to configure Easy Order however they like, including settings such as who can place orders and who can approve them. Customers in Germany can use Easy Order at no charge through their MyTRUMPF accounts starting in fall 2017.

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

A speedy smartphone solution – the TRUMPF Service App offers straightforward assistance in the event of technical issues.

Whenever and wherever a problem arises, it takes just a few clicks to submit a service request with your smartphone or tablet. Simply use the app to explain which machine is affected and what the problem is. You can also add a description with photos and details of whom to contact.

Click send and the service request will be immediately sent to the technician responsible at TRUMPF. That allows them to get a first impression of what might be wrong before they get in touch with the customer. The sender and their colleagues can check the status of the service request at any time; as soon as the status changes, the app automatically sends them an update.

The TRUMPF Service App is available from the App Store or Google Play. All you need is a MyTRUMPF account. MyTRUMPF is free, and there is no charge to use the app.

Customers can choose whether to use the button or the app. Both options are equally simple, with no need to search for a material number or pick up the phone to place an order. Another solution that is just as easy to use as the button and the app is the Genuine Parts Center. This can be loaded with whatever consumables a customer needs, making them accessible around the clock. It’s easy to check current stock levels, and new orders are placed automatically when stocks run low.

Find out more: www.trumpf.com/s/easyorder
When technology is transformed into art.

Every issue of TRUe showcases selected components in a whole new light. This time: the original disk bellows for the beam guidance on CO₂ laser machines as you have never seen them before. Photographer Tobias Ertel took this TRUMPF consumable out of its familiar environment and placed it in an entirely different setting.

People protect what's important to them. TRUMPF is no exception. In the realm of CO₂ laser machines, the beam guidance optics need protection. To ensure customers benefit from their machine's full laser power, TRUMPF's disk bellows keep dust and other unwanted particles at bay. Only nitrogen or purified air is permitted inside the bellows, so the laser beam remains undisturbed. This also protects the mirror from dirt and smoke, potentially avoiding expensive repairs and maintenance. The bellows are made from a specially developed 0.7 millimeter thick plastic, offering both stability and flexibility. The bellows need to be remarkably robust, for they are subjected to extreme mechanical loads due to the high speeds of the cutting head. The patented manufacturing process helps ensure a long service life. The external mounting and support frames are break-proof and designed to facilitate smooth operation. A catch lock prevents the bellows from over-expanding. The length of each set of disk bellows is tailored to each machine. Proper sealing of the beam guidance system protects the mirror from dust and dirt. A specially developed plastic 0.7 millimeters thick offers excellent wear resistance. Break-proof mounting and support frames keep the bellows functioning smoothly. A catch lock prevents the bellows from over-expanding. Patented: Welded beam apertures prevent abrasion of the outer material.
Go on!

Of all the chores I had as a kid, one of the most hated was when my parents had me take the kitchen scraps out to the compost. After all, getting to the compost bin meant going through our garden, which on dim winter evenings was populated by frightening figures. At least it was in the horrors of my childhood imagination.

One evening, as my father noticed me hesitating at the back door, he made a suggestion: “I’ll stay here and keep watch. You go into the garden and take a look at what’s going on.” And that’s what I did. When I returned some 30 seconds later, unscathed from my snap inspection, I had conquered my fear and learned a valuable lesson.

It’s always worth examining things up close, to compare what’s really going on with your preconceptions. Today we talk about leaving our filter bubble.

Trouble is we don’t do this very often. The world is far too complex to always take a fresh look and grasp it in full. Instead we follow a more heuristic approach – in other words, we follow rules of thumb, a shorthand that prevents us from drowning in a flood of information and stimuli. This heuristic approach accompanies us whenever we go to the store (where we associate purple packaging with chocolate) or assess risk (a cracking noise + the smell of smoke = danger). Any situation in which our limbic system, which is only marginally different from that of a rat or a kangaroo, can recall a similar experience. Seen one, seen ‘em all. And in many situations, this strategem works remarkably often.

But it has its limits, in particular when we draw sweeping conclusions based on meager amounts of information. To quote Mark Twain, “It’s not what you don’t know that kills you, it’s what you know for sure that ain’t true.” Actually, this sentiment could easily be attributed to a frustrated marketing executive, according to a study by the Nielsen market research company, a staggering 76 percent of new consumer goods that appear on the market unceremoniously disappear again within a year. This means that designers, marketing teams and salespeople spend months upon months painstakingly developing, manufacturing and – at a great deal of effort and expense – ultimately launching innovations, only to have over three quarters of them rejected or simply ignored by the very people they were designed for. Why? Clearly, because the experts paid too little attention to the importance of scrutinizing the situation and listening to what it is people actually want.

Given this situation, the only viable course of action is to repeatedly break free of any entrenched mindset and – in the dreadful parlance of motivational speakers – “step out of your comfort zone.” We must try to look at the world from other people’s point of view. Anyone who can do that automatically gains a fresh perspective, and frees themselves somewhat from inherent assumptions and certainties, which when considered from a different point of view are generally not quite what you assumed.

Why not shine some light into the darkness? Take a close look at what’s really going on in the dim corners of our knowledge and experience. And check whether supposed ghosts and ghouls aren’t really just trees. We should all strive to harness this ambition. Just like in the next issue of TRUe, which is all about this very idea.

Oskar Simon