# deco magazine

96 02-2021 ENGLISH

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# multidec®-LUB

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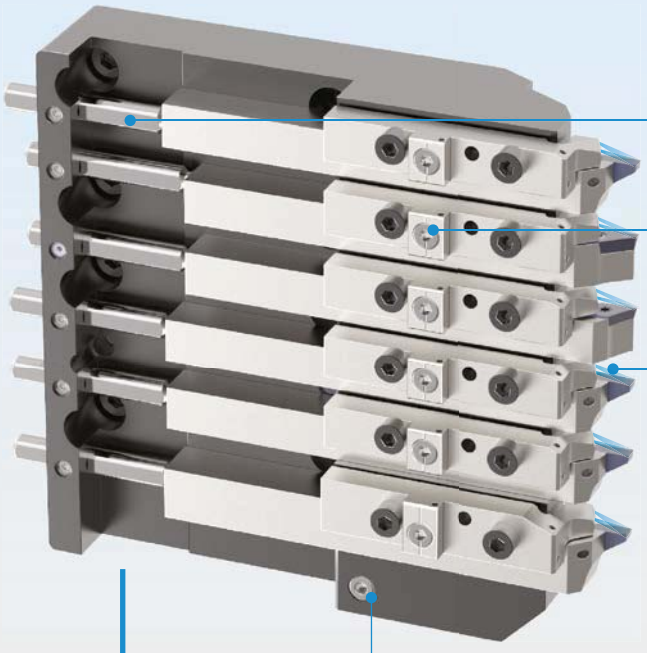

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*"The machine is compact, unbelievably fast, easily accessible, stable, extremely precise and perfect for Moser's parts range."*

Richard Moser KG Präzisionsdrehteile

14

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## SUMMARY

*"By looking for innovations and solutions that are the right match for our customers, we can make it possible for them to further develop their business. This is where Tornos sets itself apart from the competition."*

**Jérôme Kayser** Managing Director of Tornos Germany

# *Supporting customers on their path to success*

**Jérôme Kayser** Managing Director of Tornos Germany

*While Switzerland, and more specifically the the Jura Arc, has established an excellent reputation in the machine tool industry, which can largely be credited to Tornos, Germany also has a long industrial tradition. The region around Pforzheim is, to a certain degree, the birthplace of the German machine tool. This is why I am proud to have become part of this impressive company when I joined Tornos less than a year ago. I look forward to delving into the world of bar turning and playing a role in its further development. Tornos, one of the long-standing market leaders in Germany, is managing to safeguard its market share thanks to all of our loyal customers. We can certainly build on this, but I am aware that we can still do better. There are issues that need to be in order to further increase satisfaction.*

*This is why, since taking on the role of Managing Director at Tornos Germany, I have been working on meeting all of our customers and other interested parties. I would like to get to know their companies and learn more about the challenges they face every day. Only by familiarising ourselves with our customers' requirements will we know how to respond to them. By looking for innovations and solutions that are the right match for our customers, we can make it possible for them to further develop their business. This is where Tornos sets itself apart from the competition.*

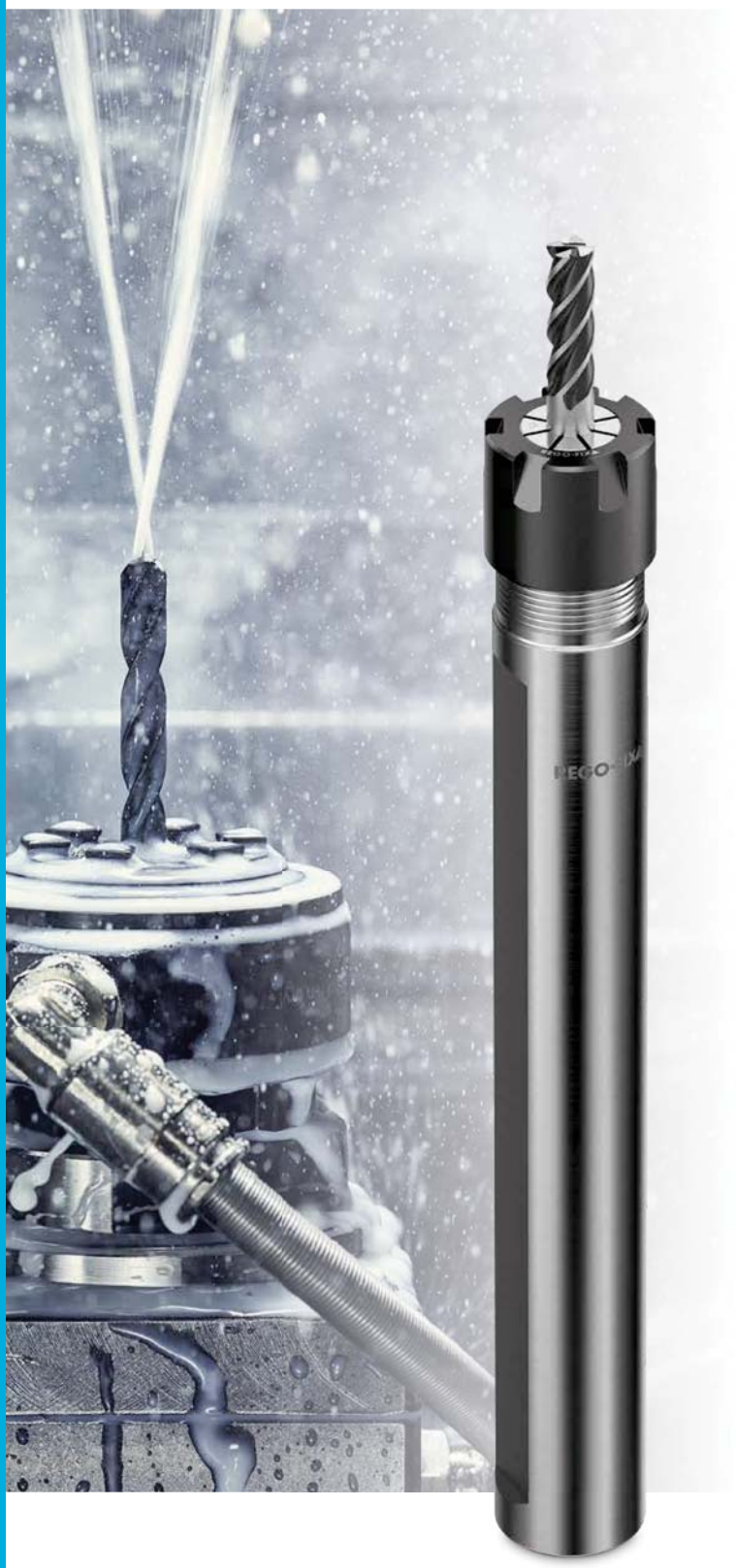
## A market in a state of continuous evolution

*Before joining the team at Tornos, I supported OEM, tier 1 and tier 2 suppliers in the automotive industry, where I held various positions of responsibility. The automotive industry remains an extremely important market for Tornos. While the path towards electric mobility currently seems to be one of the most likely directions over the next few years in conjunction with high-performance combustion engines, there is still a lot to do in this area, but not only here. Our MultiSwiss machines have proven to be extremely efficient in this area, and they are becoming well established in the medical and dental industry. Our range of machinery is extensive and varied. This enables us to meet the needs of today while shaping the trends of tomorrow. It also holds true that, by listening to our customers, we find out where to focus our research and how our machines need to be adapted. Alternately, we even suggest other machines that are better suited to meeting future market requirements. What matters, and is perhaps most important of all, is the expertise of Tornos. If we add together the years of experience held by our technical staff at Tornos Germany, this comes to a high number. This expertise and knowledge is valuable for our customers as it is becoming increasingly rare. We are intending to use this knowledge in the best possible way to meet the requirements of our customers and capture new markets. I think that we can achieve great things in the future with our idea of a technology package that consists not only of our machines but also includes our legendary expertise.*

## Consistently customer-oriented

*Although the Coronavirus pandemic somewhat postponed my plans to meet each of our customers, I am continuing to pursue this aim. I don't just*

## ER System
The original from the inventor



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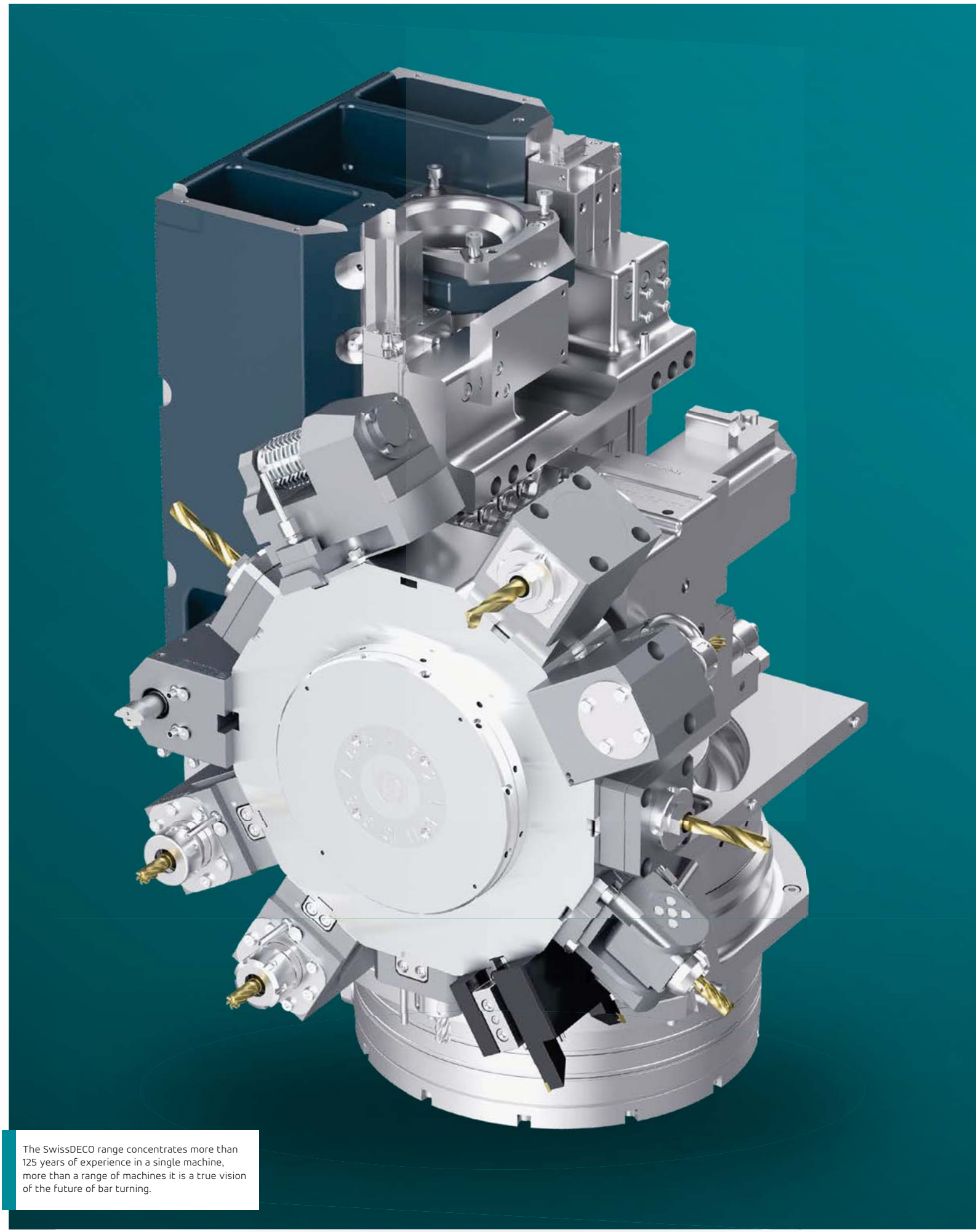
*want to meet them; I want to get to know them personally too. I have a genuine desire to continue the long-standing successful collaboration with them and assist them with new inputs and solutions at the same time. I think that what we all need now is a certain consistency and regularity, supported by a multi-disciplinary team that works together for the benefit of our customers. Leading a team is not a democracy, but it isn't a dictatorship either. Instead, it's a partnership, where everyone is allowed to play a role in the team and to develop and grow with their responsibilities, all together with our valued customers.*

"We are a technological leader and want to build on this strength in future."

### Maintaining regular contact

*Although I still believe that there is nothing better than personal contact, I think that we have to explore all possible options for remaining competitive and offering appropriate responses. This is why I think that it is worth pursuing the path towards digitalisation that the company has embarked on. I am planning to develop more regular, targeted communication. Not only with our customers but also with companies that could purchase our machines and might potentially be interested in our services. Our current five-year strategy demonstrates exactly what Tornos Germany wants to be in future. A dynamic and proactive subsidiary that goes out and meets people instead of waiting for an opportunity to present itself. Seizing and every opportunity pays off.*

*We are a technological leader and want to build on this strength in future.*
*The encouraging results from the last quarter of 2020 and the even better results at the start of 2021 show us that we are on the right track. I am convinced that the good contact we have with customers, our machine technology and our employees' expertise are what makes – and will continue to make – the difference. What also seems to be more to me personally is knowing how to conduct oneself: Embodying the company's values and acting transparently for the benefit of our customers. I have respect for our traditions and hope to be able to continue on this path under ideal conditions. I would like to set an example of a direction for our team that reflects our strategy and the overall strategy of the company, which are moving in the same direction, with the intention of making our customers more competitive. By improving our flexibility and through growing based on innovation, we will be able to promote our operational excellence and offer unique solutions in many market segments for the continued success of our customers.*



The SwissDECO range concentrates more than 125 years of experience in a single machine, more than a range of machines it is a true vision of the future of bar turning.

*A showcase of cutting-edge technology:*

# SwissDECO

The design brief given to the engineers responsible for the SwissDECO was to create a machine of unparalleled performance. The SwissDECO is the most powerful and most efficient machine on the market – it pushes the boundaries of bar turning ever closer to the world of machining centres. Let's take a closer look at the benefits of this extraordinary platform.

TORNOS

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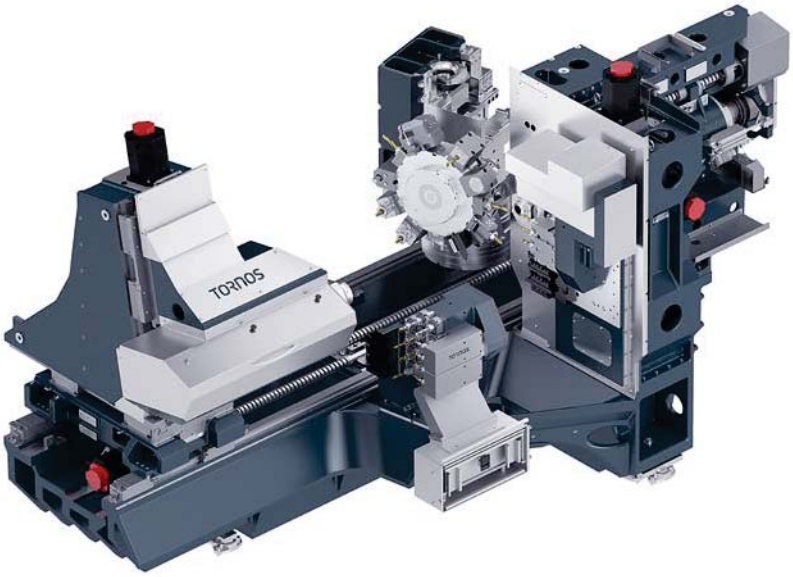
## A platform comprising four kinematics

*No fewer than four kinematic types are available on the SwissDECO. This makes it possible to choose the one best suited to the requirements of the part. All these configurations have three completely independent tool systems; the secondary operation block and the platten to the right of the guide bush are the same. The SwissDECO allows for an extremely rich and powerful range of secondary operations. The machine can be equipped with up to 16 tools, 12 of which are rotating. To form a coherent assembly, the secondary operation block has very high drive power. The tool drive develops 8.2 Nm of torque, providing a maximum rotation speed of 10,000 rpm.*

*The left-hand platen is fully modular and can be adapted as necessary. It is possible to install chisel holder plates, radial drills/milling tools and even*

*special devices. The platten features completely autonomous X and Y movement and it rests on high-precision solid guides, giving the assembly excellent rigidity and enabling very fast chip-to-chip times.*

*The difference between the SwissDECO versions lies in the latest tool system, taking the form of either a turret or a platten. These two devices feature X and Y movement capability. They are also equipped with a Z-axis that enables them to work in differential mode and perform stroke progression*




*operations. The 'platen and turret' version is available with (SwissDECO 36 TB) or without a B-axis (SwissDECO 36 T).*
*The turret facilitates rotation of +/-130° and can perform either main operations or secondary operations. When used to its full potential, the turret's comprehensive tooling can therefore perform operations involving angular machining.*
*This version of the machine can take up to 57 tools with up to 36 rotating.*

## An all-in-one system for virtually zero maintenance

*The SwissDECO is equipped as standard with a container where the various peripherals are installed. This compact system hugely simplifies the use of the machine and increases its autonomy. The device is designed to reduce maintenance to the absolute minimum. Depending on requirements, the SwissDECO can be equipped with a chip conveyor, a heat exchanger, a paper filtering device, various high-pressure pump versions or even an oil mist filtering device fitted on the machine container.*

## A very high-performance spindle

*The 36 mm spindle delivers a hugely impressive 53 Nm of torque. The spindle is fitted with a precision hydraulic brake. This deforms the material to secure the bar in place with an ultra-high level of precision,*

*thereby relieving the pressure on the extremely rigid bearings. Consequently, the SwissDECO's machining capacity is so great that, even at its limits, it can operate with fixed headstock machining parameters.*

*With this assembly, the machine is capable of performing the most advanced operations and can machine the most complex of parts.*

**Do you need to perform deep drilling operations above 500 mm and eject the part? No problem!**

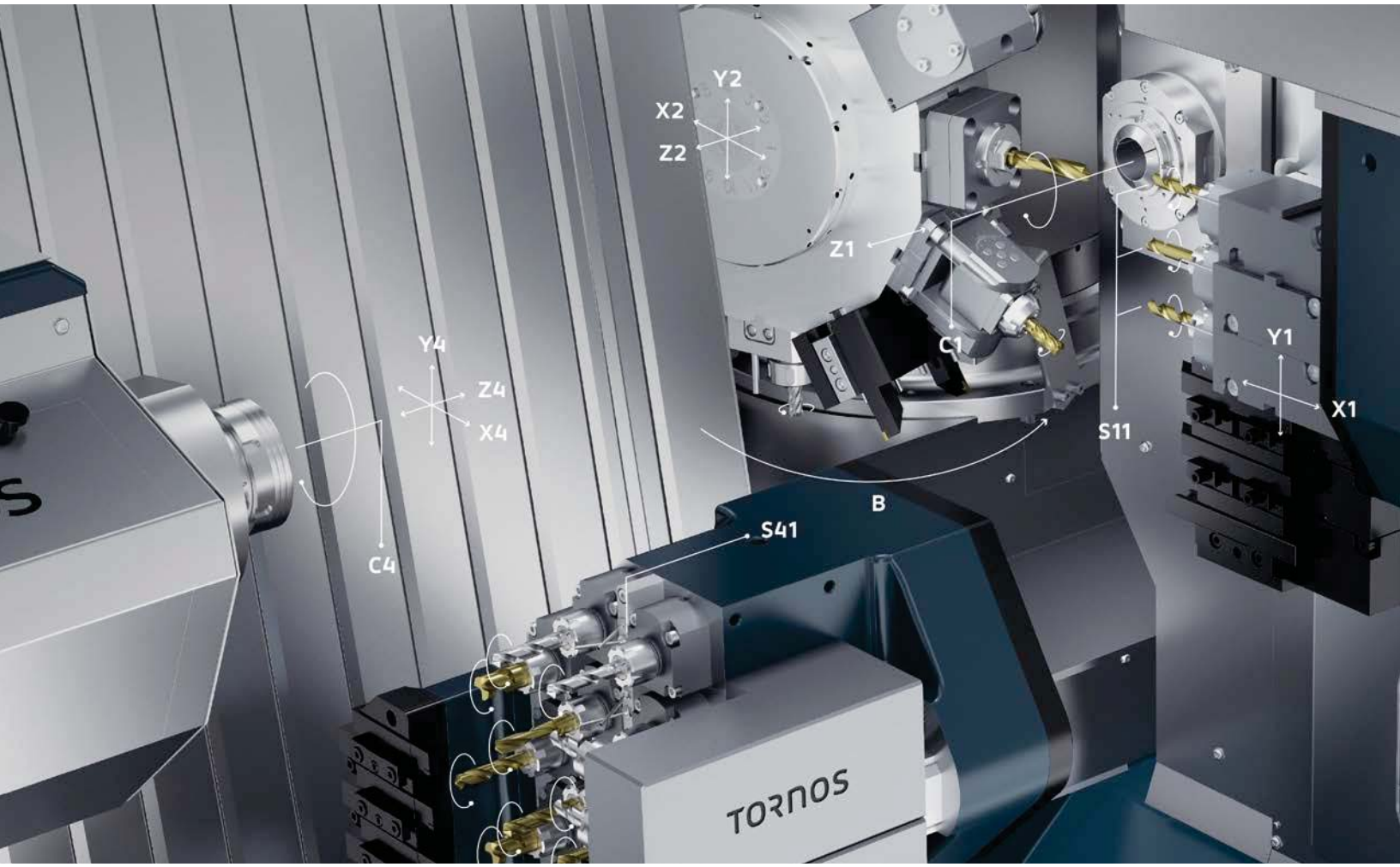
*At EMO 2019, we prepared an orthopaedic pin on a SwissDECO 36 TB. We extended the length of the part by 20%, as we wanted to test whether it was indeed possible to drill 500 mm into this stainless steel part. Even the tool manufacturers doubted a hole this deep would be possible, yet the machine proved its capability not only by achieving this feat but also by ejecting the part without the slightest difficulty. Don't believe us? Watch the video here:*

**A showcase of cutting-edge technology: SwissDECO**

youtube.com/watch?v=xpLCSXKY_VE

*Please do not hesitate to contact your usual Tornos dealer to find out more.*

*tornos.com*



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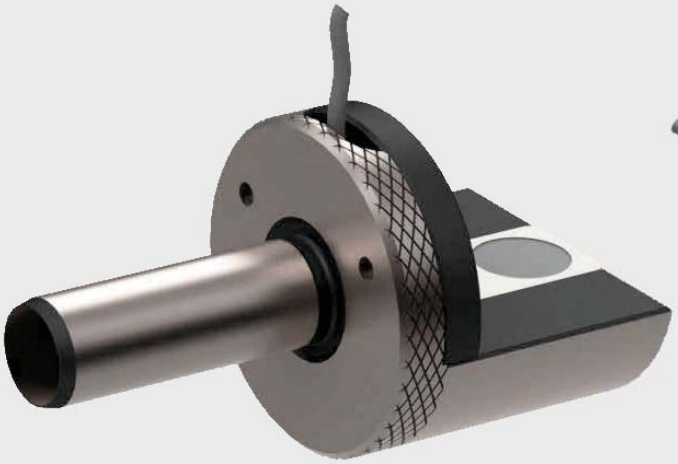

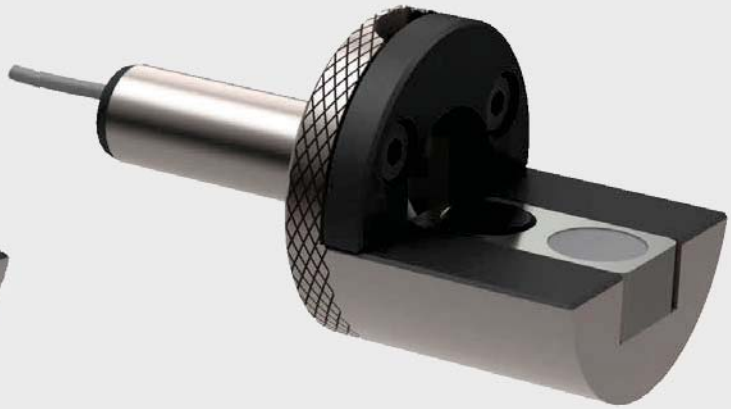

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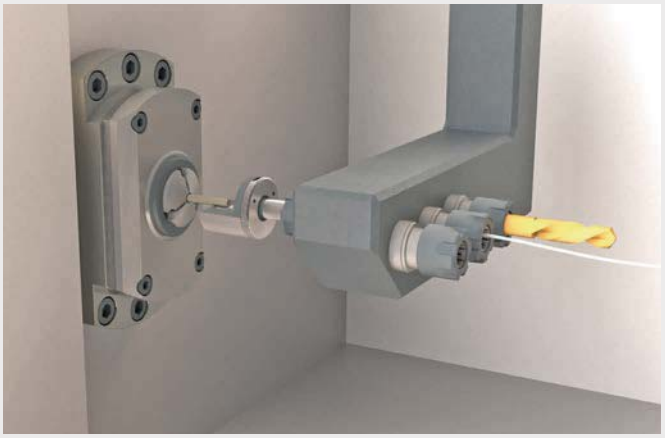

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Thanks to continuous investments in multispindle technology, Moser is always one step ahead of its competitors.

*Moser Präzisionsdrehteile rely on MultiSwiss from Tornos*

# A passion for precision

A visit to Richard Moser KG in Bubsheim is always an exciting event. Continuous process improvements and outstandingly accurate products that meet the highest quality standards bring a level of dynamism and growth to their everyday work that is not found elsewhere. The company owes this to several factors, including an intelligent production strategy and carefully selected machinery. The MultiSwiss solutions from Tornos play a key role here.

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*The customer's satisfaction with this machine concept is undeniable – the company has purchased 18 machines from this range and sings their praises. For Richard Moser, the MultiSwiss is the perfect machine to overcome the extreme challenges they face in terms of complexity, quality and flexibility. Their confidence in this solution is so strong that, in addition to their current 15 machines and despite the economic downturn, they have purchased three further machines, which have been performing to their satisfaction. This is also the hallmark of a company that has been at the heart of a unique success story and sets itself ever-ambitious goals for growth.*

*When Richard Moser took over the family business in 1993, he had four employees and ten machines. Working for his company today are 140 specialists and 100 lathes. This incredible rise is closely linked to multispindle technology. His father and his uncle*

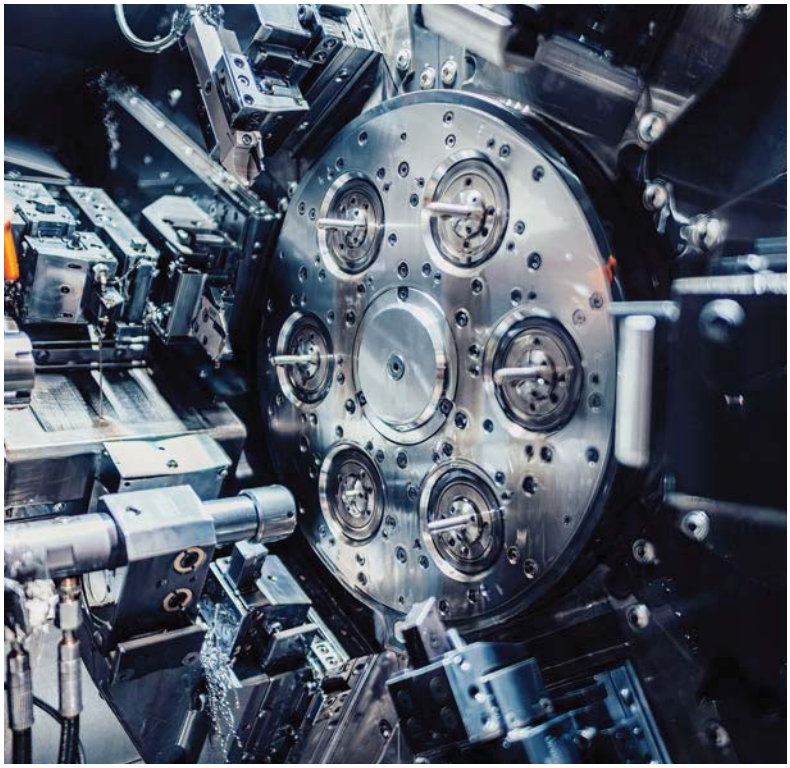
*were among the first to bring multispindle technology to the Heuberg. Shaped by the lessons learned, Richard Moser is at the very forefront of this field. Complex workpieces in demanding materials of superlative quality produced on a mass scale – these are his strengths. They are what the team and machine inventory of Moser Präzisionsdrehteile are geared towards.*

## Ready for any challenge

*The turned parts industry currently faces some major challenges. Geopolitical upheavals, the radical change in the automotive industry, new technologies and the economic downturn are also leaving their mark on this sector and leading to a process of concentration. While some competitors are frantically trying to break into new market segments, Moser still has its sights set on the automotive industry.*

*While the number of combustion engines will eventually cease growing, the technology will continue to evolve in the coming years. Ever stronger and more heat-resistant materials must be machined for new engine management systems, turbochargers and exhaust gas systems. This separates the wheat from the chaff, as not all bar-turners are capable of this enormous level of development. On one hand, the prices of bar materials are currently going through the roof, on the other, customers are exerting considerable price pressure. At Moser, all trials and job time calculations are performed under production conditions on Tornos multispindles.*

*Anything else, according to Richard Moser and Enrico Barbagallo, a young project manager, would make no sense. "When it comes to such challenging, complex parts, even the tiniest change in the tools, oil, machine parameters or handling has an immediate effect on productivity." Moser machines high-alloyed steels that can cost up to €18,000 per ton. As a result, the make-ready stage in particular calls for a great deal of finesse. This is where the experience and flexibility of the young Moser team come fully into play. "When things heat up, we can make a multispindle ready in two to three hours,"*



> “The machine is compact, unbelievably fast, easily accessible, stable, extremely precise and perfect for Moser’s parts range.”

*says Enrico Barbagallo. For initial samples, the multispindles at Moser are even set up for 100 parts, while, in series production, it is worth preparing the multispindles for quantities of 20,000 or even more parts. This speed and flexibility are what customers appreciate and has been integral to their keeping in faith with the company for many years.*

## Spearheading technological development

*You could even be forgiven for thinking that the developers at Tornos designed the MultiSwiss, especially for Moser. The machine is compact, unbelievably fast, easily accessible, stable, extremely precise and perfect for Moser’s parts range. The MultiSwiss is a genuine revolution in the multispindle segment and has stamped its mark on the market. It was launched in 2011 when multispindle technology was still considered highly complex and is known today for its first-class ergonomics and machining performance. In this respect, it is fascinating to remember that Moser was the first customer in Germany ever to purchase a MultiSwiss. Conceived as a solution to bridge the gap between multispindle and single-spindle turning machines, the MultiSwiss 6x32 features six spindles. The spindle drum is positioned using torque motor technology. The cycle times of this speedy solution rival those of cam-controlled multispindle automatic turning machines.*

*Thanks to its hydrostatic mounts, the MultiSwiss achieves outstanding finishes (Ra 0.15) and extremely smooth-running performance even with materials that are difficult to machine. It is also distinguished by its generous tool package. Unlike some other customers, Richard Moser also finds the compactness of the machine with its 1.5 m bar stock to be a perfect size.*

*Above all, however, you don’t need to be an expert in multispindle machines to program the MultiSwiss 6x16 and 6x32. Thanks to the spacious machine compartment, setup and start-up are a breeze and it is easy to program in the same way as six machines with two linear axes. Enrico Barbagallo is particularly enthusiastic about how user-friendly and ergonomic they are.*


At Moser, every employee takes responsibility for quality.

# *Three questions for Richard Moser, the owner of Richard Moser KG in Bubsheim*

***decomagazine: Mr Moser, what do you particularly value about the MultiSwiss?***
**Richard Moser:** *The machine is extremely fast, highly accurate and very precise. We see ourselves as an expert in optimising setup times, so its easy accessibility and flexibility for conversion work is a huge benefit. Lastly, the installation space required for the MultiSwiss is also advantageous, and more than merits the "More productivity per m²" slogan.*

***dm: How have you found working with the new MultiSwiss 6x32?***
**RM:** *As expected, this model also operates reliably and smoothly. The larger spindle and increased power have helped us to cover a higher performance range. It also features a couple of additional machining options, which we are keen to explore in the coming days and weeks.*

***dm: How would you describe your collaboration with Tornos?***
**RM:** *To us, Tornos is much more than just a machine supplier – it is an expert technology partner that helps us to continue evolving. Working together, we have already developed several interesting solutions that have improved both our productivity and quality. We enjoy working with both the team in Pforzheim and the company's headquarters in Moutier.*

## Fits like a glove

*"Each machine is only as good as the person operating it." This belief is a clear sign that Richard Moser and his wife Sandra have an expert understanding of how things work. This is why relevant employees are regularly involved in the procurement process and allowed to have their say on the purchase of a new machine. They truly enjoy working with the MultiSwiss – a fact that is evident from the atmosphere within the team. Each of the team members is a true expert, able to set up and operate the machine themselves. Even their young apprentices have successfully tried their hand at setting up fairly complex parts.*

*This trust and freedom have paid dividends. The team works meticulously and continuously to discover new ways of optimising the machines and processes. In this process, they make good use of evaluations from their self-developed ERP system, ASKMO. This system was installed around 20 years ago when the concept of Industry 4.0 was still virtually unheard of and has been continually developed further. As all machines are linked to the system, Moser always has an up-to-date overview of every production job. The hardware equipment of all the machines alone cost around half a million euros. ASKMO supplies up-to-date information on production times, machine capacity utilisation and production quantities. In the flow of goods, the production status of the goods is clear to see at any time, which means that every employee can immediately provide the customer with information about the status of their order. All documents and the current production drawing are stored in the system; the initial samples, 8D reports, APQP and process flows are similarly integrated.*

## Future-proof and fascinating

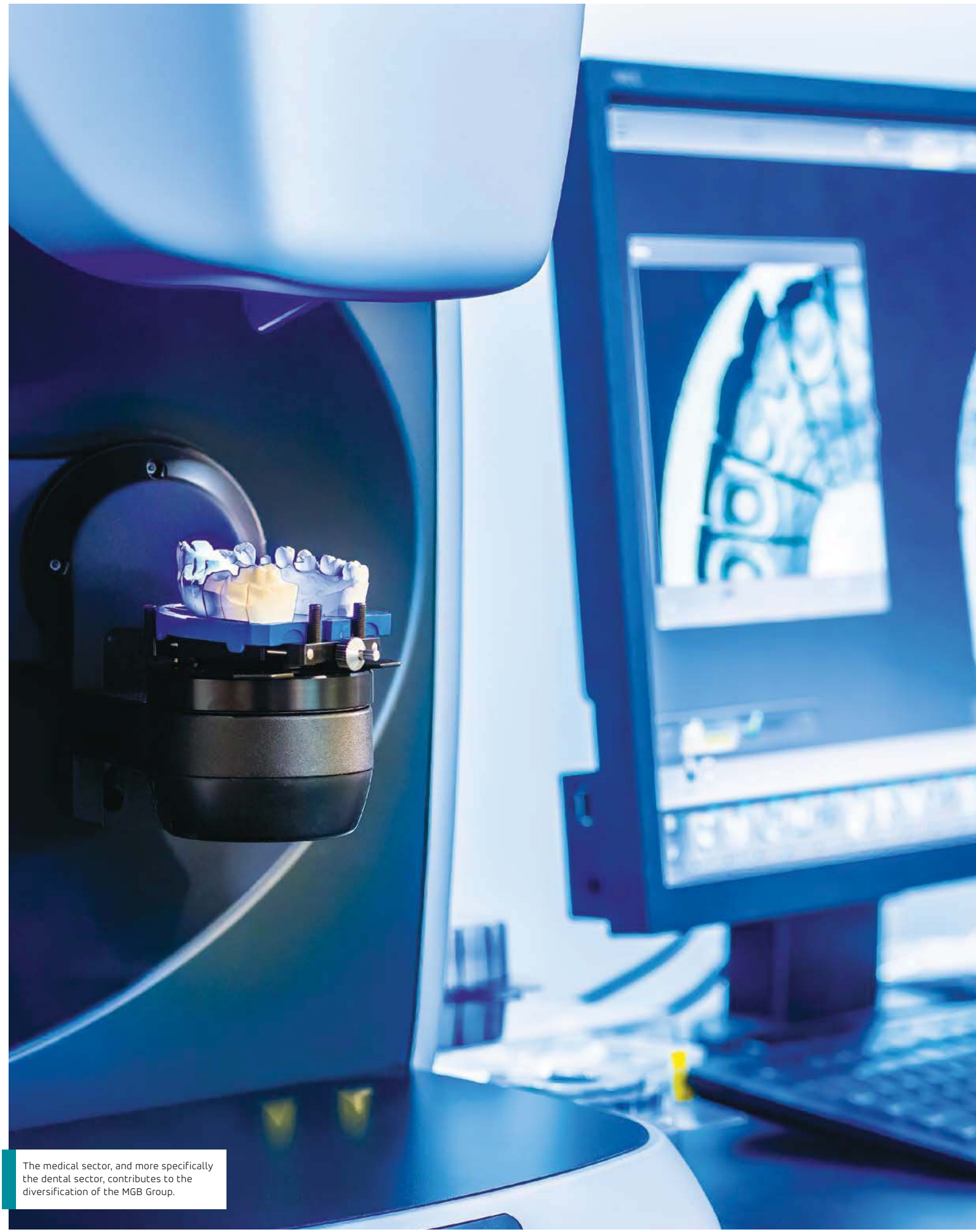
*The passion for precision at Richard Moser's company does not stop at the multispindles – it goes much, much further. In recent months, while many businesses have reined in their activity and spending, Moser has been consistently investing in improvements to processes and workflows. Thanks to a special energy efficiency programme, he expects to make appreciable savings over the next few years. To this end, for example, the cooling of the machines has been coupled to their capacity utilisation, the heating/cooling circuit closed, and a photovoltaic system installed on the roof. Due to the continuously increasing cost of electricity, the energy efficiency*

*of machines will play a decisive role in the future; Richard Moser is pleased to see the efforts that Tornos has been making in this respect.*

*Further measures involved commissioning a new high-bay warehouse, as well as integrating upstream and downstream processes, such as hardening, grinding, etc., into the firm's own value creation chain. In addition, there have been investments in a residual contamination testing laboratory and several cleanrooms. As a result, the company is in a position to fulfil specific customer requirements. "The volume of turned parts will decrease in the long term and global predatory competition will become tougher and tougher. We can only come out on top if we develop unique skills and strengths," explains Richard Moser. In the meantime, more and more customers in Europe and overseas are coming to value the company's strengths. He supplies parts to Switzerland, Spain, south-east Europe, Korea and America. The customer base for workpieces made in Bubsheim even includes a Chinese company. This customer had tried to establish a local production facility in China a few months ago but ultimately stayed with Moser. This reinforces the validity of Richard Moser's strategy and proves him right. He will continue his chosen path of running a high-tech company with flat hierarchies and courageous, forward-looking decisions. As his partner, Tornos will continue to actively accompany him on this path – and it won't take long for the next MultiSwiss to begin its journey from Moutier to Bubsheim.*

***moser-drehteile.de***

Richard Moser, Director, and Enrico Barbagallo, the project engineer at Moser with Jérôme Kayser, Managing Director for Tornos Germany (from left to right).



The medical sector, and more specifically the dental sector, contributes to the diversification of the MGB Group.

MGB:

# A company on three continents

## *with three sectors of activity*

We have previously introduced you to MGB in the decomagazine. This innovative company is active in the connectivity business and it's historical, but not exclusive focus to weather the crisis, has been to branch into the aerospace industry. Constantly innovating, the company has also diversified into the medical sector in recent years. To support this plan, the company has recently invested in a new machine: a Tornos EvoDECO 16 equipped with a B-axis!

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### A global company

*Today, MGB has over 100 numerically controlled machines installed across three continents. The company's headquarters are in Europe, in the French city of Marnaz, and this is where the R&D activities take place. And, since 2005, MGB has opened up to the promising and crucial opportunities offered by Asia, with the creation of a Chinese production site in Shanghai. Since 2008, MGB has also had a presence in the USA, just outside Boston. These subsidiaries enable the company to foster the closeness to its customers that is part of its philosophy. Each of these production units has ISO:9001 and ISO:EN/AS 9100 certifications. The MGB machine inventory on all three sites is formed almost exclusively of Tornos machines, which optimises the exchange of processes between the different sites.*

# “The EvoDECO 16 with B-axis sets the bar even higher in terms of feasibility.”

## Diversification to create stability

*While everything started in the electronics and connectivity business, today it should be noted that two-thirds of MGB’s turnover comes from the aerospace industry. Electronics remains at MGB’s heart, and their expertise in this area is renowned, especially in the miniaturisation of components. In today’s electronics sector, the trend is towards an increase in processing speeds, and the miniaturisation of components is also becoming a key factor in this industry, thereby changing the role that bar turning plays within it. Despite increasing frequencies on ever smaller parts, the precision and quality of the parts have become more important than ever.*

*The Marnaz site is also active in the aerospace and medical sectors. Started in 2001, this diversification has allowed MGB to devote its expertise to helping patients. Naturally, MGB focuses on the most complex parts used, meeting the most stringent production requirements. This new market segment has enabled MGB to limit its exposure to the crisis affecting the aerospace industry and to prove itself extremely resilient to the many economic fluctuations. Proof of this came when the company invested in an EvoDECO 16 with a B-axis, thanks to funding*

Philippe Boucheret and Yves Roda.

*from the 'France Relance' recovery plan, to continue its expansion into the medical domain.*

*Today, MGB has an inventory of machines dedicated to the medical sector. This helps it to respond quickly and efficiently to any demands. With the EvoDECO 16, the company has also acquired an Esprit CAM solution that enables it to create the most complex parts.*


*By combining the flexibility of TB-DECO and the calculating power of Esprit, it is possible to machine extremely complex parts whilst achieving very short cycle times. The EvoDECO machines – known for their excellent productivity with their 4 independent tool systems also become veritable mini machining centres. The EvoDECO 16 with B-axis sets the bar even higher in terms of feasibility.*

*For Philippe Boucheret, director of the MGB site in Marnaz, it is now possible to respond to requests that are outside the range of the conventional parts you would expect a bar-turner to produce. "The EvoDECO 16 allows us to create a large number of parts. It boasts a rich complement of tools that enable us to make extremely complex parts. The reasoning behind this investment is that we had to create dental abutments with an angle that varied according to the family of parts. Of course, it was possible to create them without a B-axis, but the flexibility this equipment provides saved us time on complicated setups and, naturally, increased our productivity."*

*The EvoDECO 16, therefore, completes MGB's medical machine inventory. Philippe Boucheret believes this machine is the key to their success, allowing them to respond quickly to requests from customers and, as it is integrated with the other EvoDECO 16s dedicated to the medical sector, preventing any cross-contamination with the company's other machines.*

*A highly specialist enterprise, MGB can satisfy the most demanding customers thanks to its diversification. To find out more about MGB, visit their website or watch our video report on YouTube.*

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**MGB: A company on three continents with three sectors of activity**

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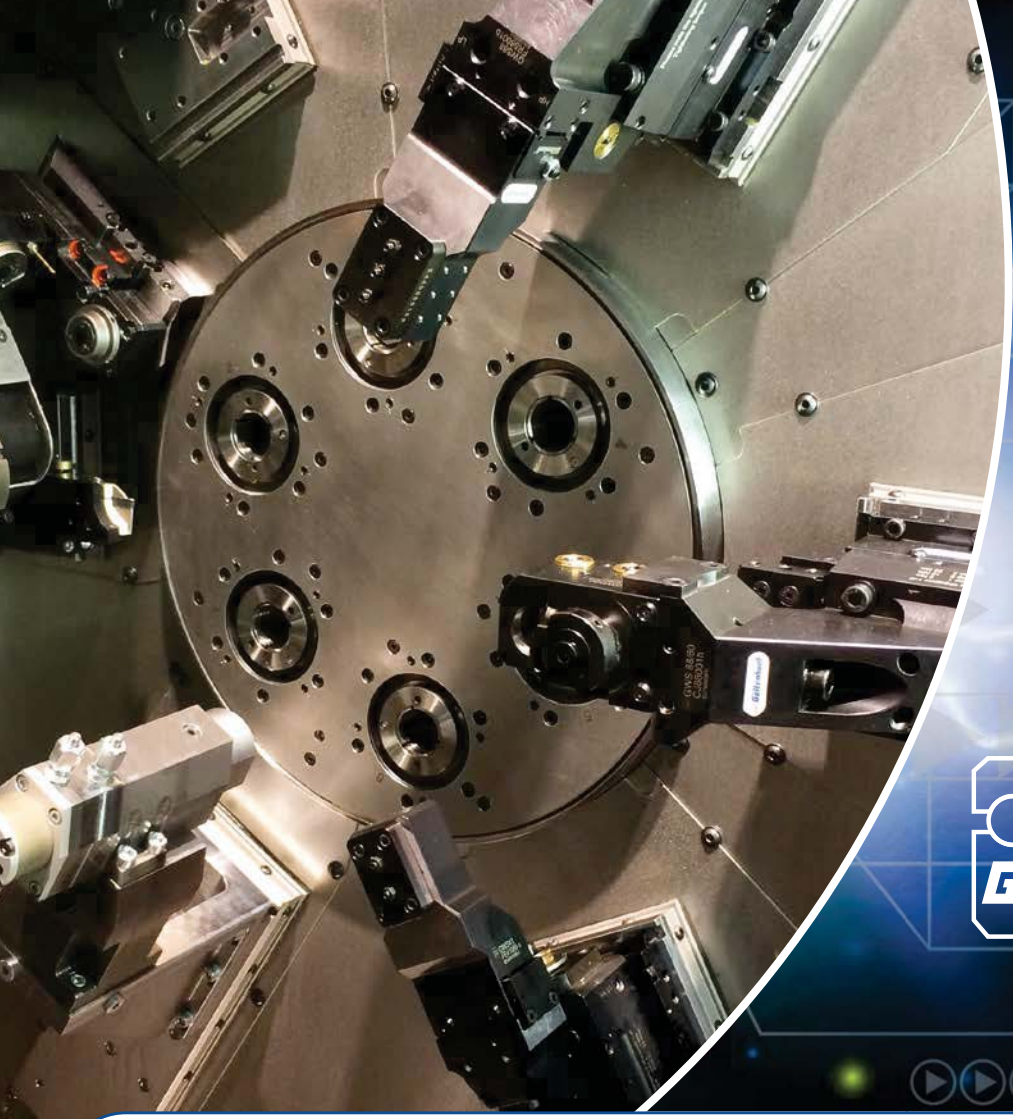

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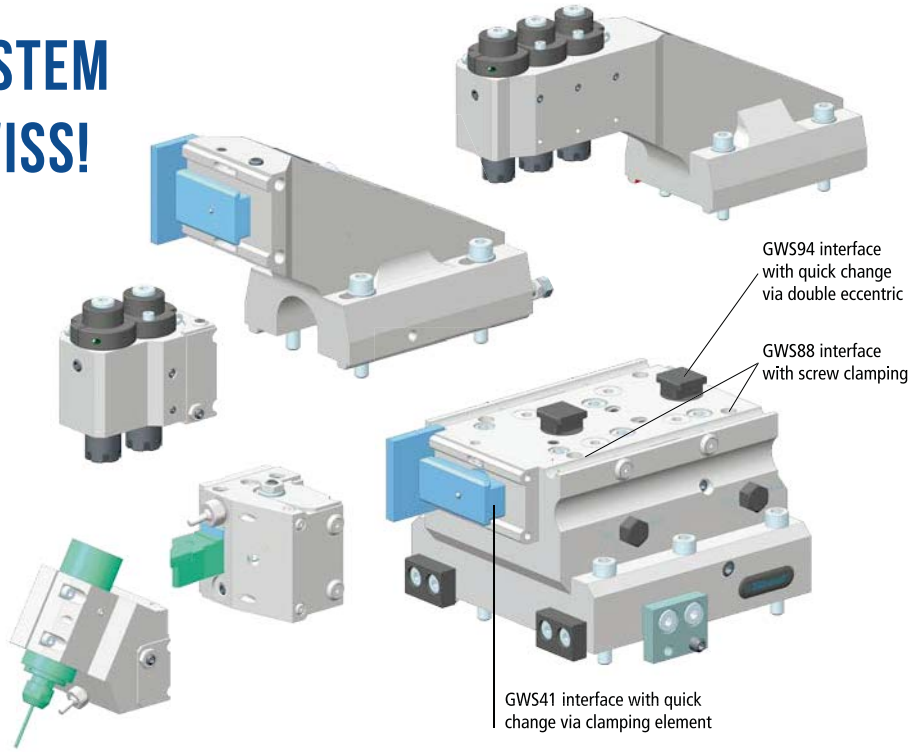


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Hardly to be discerned with the naked eye. High-sensitivity components by Heraeus Medical Components.

*Tornos TISIS software – a tool to increase productivity*

# Digitized high-precision manufacturing

A visit at Heraeus Medical Components will probably cause experienced lathe operators to get goose bumps. The workpiece dimensions, the complexity, the material and the extreme precision meet the highest standards. This excellence in micro-machining and micro-manufacturing is even topped by a comprehensive digitization strategy that is probably unique on a global scale. At the spearhead of this process are almost 40 Tornos turning centres.

Heraeus

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heraeus.com

*The Heraeus Technology Group headquartered in Hanau, Germany, is a leading international family-owned company. The company's roots go back to a family-run pharmacy that started in 1660. In 1851, Wilhelm Carl Heraeus took over the 'Einhorn' pharmacy and developed it into one of the most important family businesses in its industry. In 1856, for the first time, the pharmacist and chemist succeeded in melting two kilograms of platinum in an oxyhydrogen blowpipe he had developed himself. The first 'German Platinum Smelter' was born, and a ball had been set rolling.*

*Today, the Heraeus group includes a variety of businesses in the environmental, electronics, medical and industrial applications sectors. Customers benefit from innovative technologies and solutions that are*


Jörg Hempel (left), responsible for the Tornos machines, and Lars Schubert, Lean Manager Digital Projects.

High-precision cable adapters (top) and connectors (right) made of a platinum-iridium alloy are manufactured with highest surface finish and without any burrs in batch sizes of up to 4,500 pieces.

*based on broad materials expertise and technological leadership. Under the umbrella of Heraeus Holding, the Heraeus Group is organized in Global Business Units (GBUs) These GBUs are market-oriented and functionally structured. One of these GBUs is Heraeus Medical Components. A specialist in metallurgical solutions for the design of highly demanding medical components, Heraeus Medical Components combines many years of experience in precious metals and alloys with world-leading manufacturing expertise.*

*This business unit primarily manufactures components for cardiac rhythm management, neuro-modulation and electrophysiology. To be able to reach the corresponding areas in the human body, however, the components and devices must be increasingly miniaturized. For Heraeus Medical Components, micro-machining is much more than the sole manufacture of small and miniature parts and components. For the company, it's about increasing skills and performance. Based on this approach, they have earned worldwide reputation for their know-how and excellence in micro-machining and micro-manufacturing. In conjunction with their unique expertise in the fields of precious metals and materials science, Heraeus Medical Components provide their customers with unequalled micro-machining innovation.*

## Turning with excellence

*The turning shop is the origin of almost all components. Here, the basis is established for the requested absolute quality. So, it's no surprise that Heraeus Medical Components opted for Tornos and are solely using Tornos machines for their turning tasks. Their machine inventory comprises almost 40 Tornos Swiss-type lathes. On these machines, about 250 different workpieces are manufactured in batch sizes up to 4,500 pieces. The unique feature of these components is the fact that many of them can hardly be discerned with the naked eye.*

*That is why many machines are equipped with special vacuum-operated discharge systems that deposit the workpieces on a fleece. Sometimes, the*

"The TISIS programming software from Tornos enables the users to get access to a world unknown to them so far."

*high-sensitivity components have a diameter of just 1 mm and a length of just 2 mm. Such components made of a platinum-iridium alloy are supplied with 0.01 mm holes and milled grooves and slots. At this point, not only programmers and machine operators, but also the SwissNano machines are reaching their limits. Since these components are used for the medical industry, absolute quality, the non-existence of burrs, excellent surface finishes and traceability are mandatory.*

*The experts from Heraeus Medical Components know they can absolutely rely on their Tornos machines. They praise their high accuracy and long life as well as the flexibility that is achieved thanks to the counter-spindle. For them, easy access to the machine and high ease of use are highly appreciated as well. Especially for the materials used. Such aspects are extremely important. Heraeus relies on systematic precious metal tracking and every job is billed with the material measured down to every single gram. Certain tolerance thresholds must be maintained here. For this reason, the machines are meticulously cleaned after every job and before they are released for the next job in a completely clean state.*

## Process optimization based on digitization

*Heraeus wouldn't be so successful if the company wasn't committed to continuous evolution. Innovation has and will always remain one of the keys to business success. Based on this assumption, at the middle of 2019, the Global Business Unit entrusted to Lars Schubert – as the Lean Manager for Digital Projects – with the task to make machines digitally visible that had been analog up to that point. The aim of this measure was to analyze manufacturing processes, reveal productivity reserves, shorten procedures, incorporate quality management and documentation into the manufacturing process and thus to establish a better basis for decision making.*

*At a first glance, this seemed to be a lost cause. But supported by the experts of Heraeus Digital Hub, Lars Schubert opted for a pragmatic approach and proceeded in small steps. First, they looked at the following questions: What information do we need, from whom do we get such information and how can we benefit from it? Even if the team focused on the big picture from the very beginning, it approached the solution step by step. In collaboration with the Tornos experts from Moutier, Heraeus Digital Hub upgraded four pilot machines with the TISIS Connectivity Pack for a start.*

## TISIS, the key to the world of digitization

*The TISIS programming software from Tornos enables the users to get access to a world unknown to them so far. It is the ideal means for machine programming and communication. To ensure appropriate tool selection, the software has a database that contains all the tool carrier systems – from simple turning tool holder plates to milling and polygon cutters and thread whirling cutters – for each machine. Each of these devices has its own features that are considered by TISIS.*

*If a device is selected, only the positions where it can be fitted on the machine will be enabled. TISIS also detects incompatibilities between various devices.*

# *Heraeus Digital Hub: driver of digital transformation*

*Heraeus Digital Hub supports the Heraeus Group and its Global Business Units as a partner in matters of digital transformation. For this purpose, Heraeus Digital Hub offers consulting, service and solutions in particular for the three following areas of focus.*

- ***Machine Learning and Data Science***
- ***IOT, Robotics and Automation***
- ***Digital Customer Experience***

*In doing so, the Heraeus Digital Hub team supports the Business Units from the strategic development to the design, implementation and scaling of solutions in order to generate sustainable added value for the company.*


*It thus provides intuitive user guidance through the operation of the machine. Furthermore, each tool carrier system has its own picture to allow easy identification. It should also be emphasized that the default geometries are automatically displayed when a tool is selected. In addition to actual programming, it is also possible to electronically transfer programs to the machine inventory. And as if that weren't enough, the programs can even be modified on the machine and transferred back to the office PC while maintaining full traceability.*

*A function particularly appreciated by Heraeus Medical Components during the project start was the monitoring function. TISIS enables detailed monitoring of the machine inventory. Monitoring does not only involve the status of the machines in the workshop but also the running of production. This includes the workpiece counter, the remaining production time as well as the workpiece name and drawing that can all be retrieved at any time.*

## Step by step towards better transparency

*As a first step, the 'Tornos pilot machines' defined by Lars Schubert and his team delivered all the required information regarding availability, production times and downtimes. Heraeus Medical Components created their own visualization program and provided all departments involved with dashboards used to visualize the results. Once the stable run of this pilot test had been guaranteed, it was extended to almost all the Tornos machines. This step alone generated a remarkable increase in efficiency.*

*Lars Schubert emphasizes that it was extremely important to the responsible managers to get everybody involved in a timely and extensive manner. "Such a project can only work if appropriate leadership is guaranteed," Lars Schubert says in retrospect. "We have involved our colleagues at an early stage, and we made clear that we didn't want to keep tabs on them but rather support them." Therefore, the project was very well accepted, so the reasons for downtimes could be analyzed as a second step.*

*For this purpose, a suitable catalog containing eight criteria was compiled in collaboration with the employees. Appropriate QR codes were assigned to the criteria and these codes were attached to the machines or near the machines. In case of a machine downtime, the employee responsible for the machine*

*simply scans the QR code and everybody else is informed in real time about the actual downtime, its reason and duration. On this basis, any remaining analysis tools can be implemented subsequently. The appropriate data are aggregated and made transparent.*
*Large computer monitors are installed in each department and the results are discussed at regular intervals during the 'Team Dialogue'. Problems with machine components and tools can thus be jointly determined and solved in a relatively fast manner.*
*All these measures have brought about a significant increase in productivity and are exemplary for the whole company. So, last year, the project was nominated for the global intra-group Heraeus Award and made it to the final round. Such successes further motivate Lars Schubert and his team and made them already schedule the next project steps.*

*All EDM machines shall be incorporated into the system soon. At the same time, quality parameters shall be incorporated gradually with process documentation also to be shifted into the system. With this strategy, Heraeus demonstrates once more that permanent innovation pays off in a high-wage country like Germany and is suitable to guarantee the growth of the Group. Tornos is proud to contribute to this success with appropriate machines and innovative software.*

***heraeus.com***

3D printing holds no secrets for Jellypipe, in partnership with the i-moutier Incubator.

*A partnership between the i-moutier business incubator and Jellypipe, the specialist*

# in 3D printing services

Since it entered into a partnership with Jellypipe at the beginning of 2021, the i-moutier incubator, that counts Tornos among its members, has been able to offer its members access to this 3D printing services platform that is at the forefront of innovation. This partnership unquestionably brings added value to any i-moutier member. It opens up new prospects and offers an even wider range of possibilities to all those who are contemplating a future collaboration with the microtechnology incubator located at the heart of the Swiss Jura Mountains.

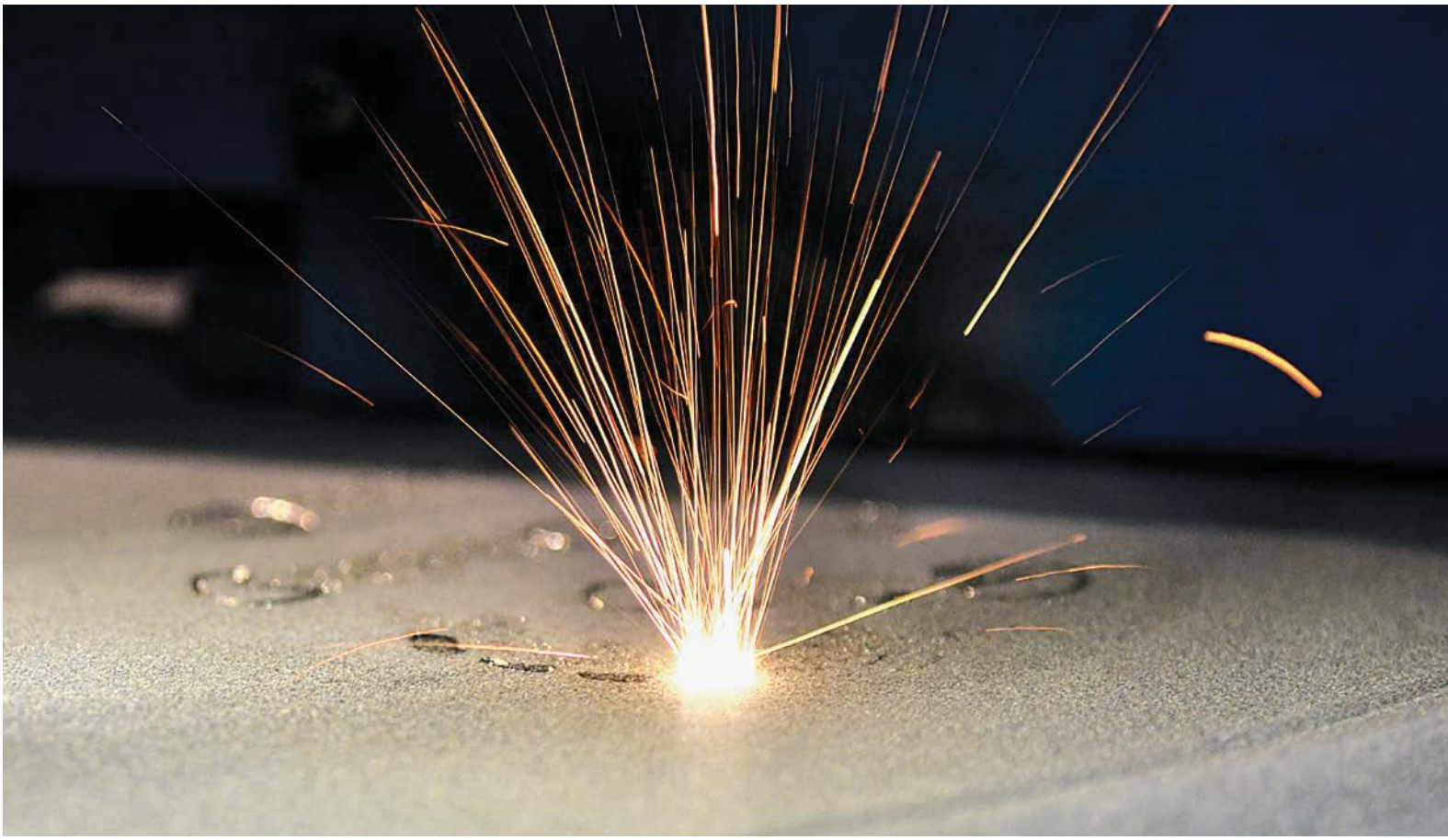
**Incubateur i-moutier**
Anne Hirtzlin
Project Manager and General Secretary of the i-moutier incubator
Switzerland
Tel. +41 32 494 42 75
hirtzlin.a@tornos.com
i-moutier.ch

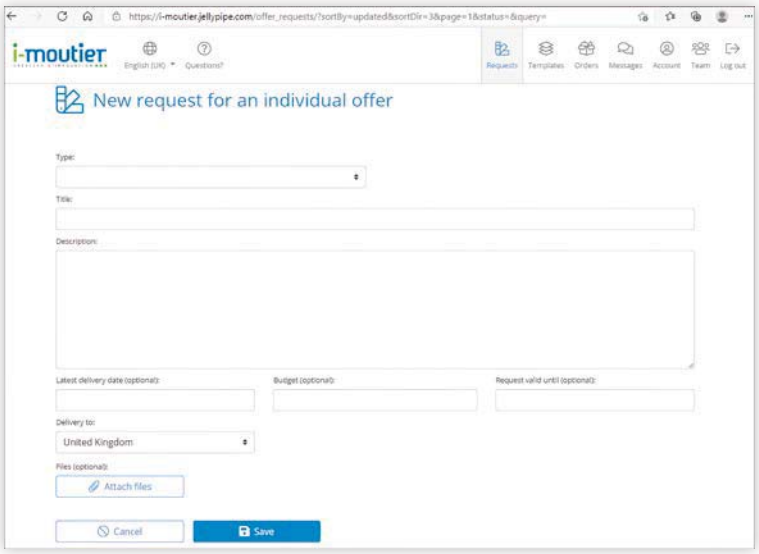
*As an interactive platform based on partnerships, Jellypipe primarily addresses industrial professionals that specialize in production or manufacturing. Are you looking for a fast, simple and cost-effective solution for printing 3D parts? Jellypipe has a solution for your needs. Jellypipe is dedicated to supplying professional users with perfect and, what's more, profitable 3D printing solutions. Jellypipe will meet your needs – no matter where or when and no matter what kind of part or material. This new partnership perfectly matches the vision and mission of i-moutier whose purpose is to promote high-precision expertise, drive the ecosystem and attract talent.*

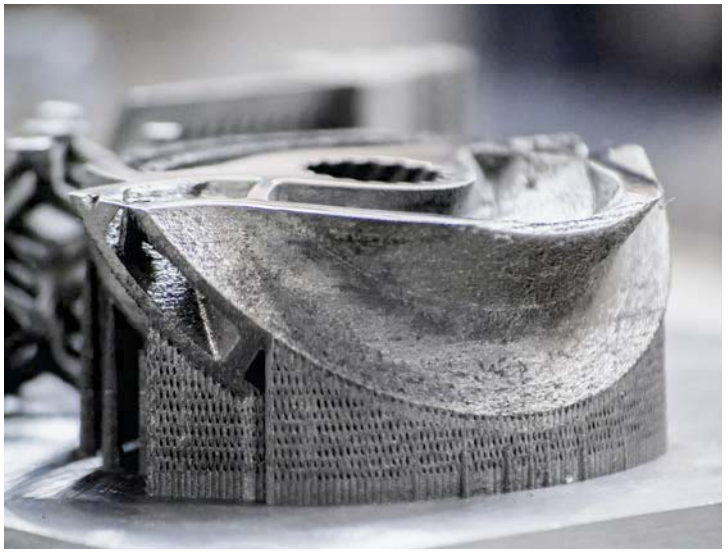
"Innovation by collaboration – that's the prospect for the future and that's exactly the mission of the i-moutier incubator, the innovator that gave birth to this new project."

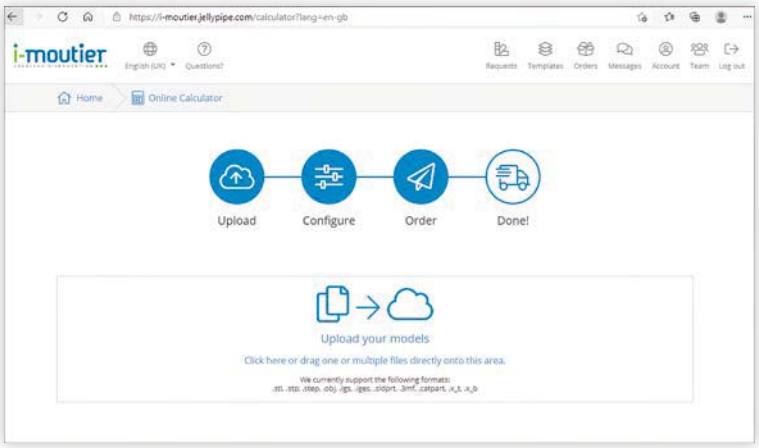
*The idea behind this cutting-edge platform is quite simple: Jellypipe offers a highly secured real-time B2B connecting platform that connects partners from the 3D solution business to the 3D printing business within the framework of a 3D ecosystem. For the partners of i-moutier, this means undisputable added value. They can address a network of professionals that can meet their needs with appropriate technologies. Time-consuming tendering and learning curves during the creation process can thus be avoided. The Jellypipe partners draw on a common base of 3D printing expertise that enables the professionals to benefit from expert advice in their field.*

*Jellypipe relies on a virtual network of 3D printing technology: in this way, hundreds of 3D printers from all over the world are connected to the Jellypipe ecosystem. These unprecedented connections create a vast virtual network of 3D printing service providers unparalleled in Switzerland.*







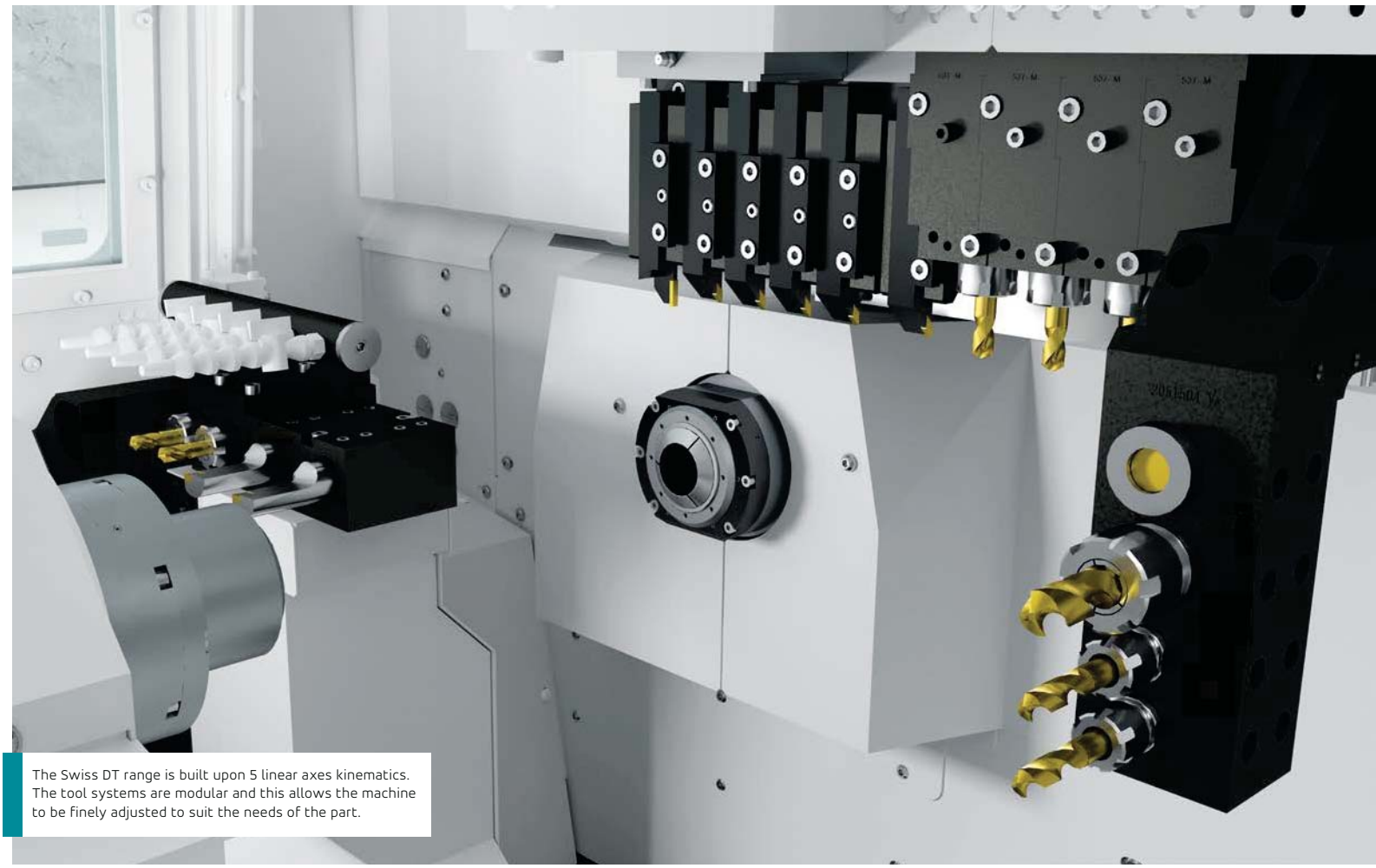

*The i-moutier members can thus profit from even more competencies, such as a broader range of solutions and higher flexibility. In addition to the prolific and wide choice, they get higher production capacity and real-time solutions.*

*This means they are embedded in a virtual network and can take advantage of the expertise of i-moutier as well as the services offered by and to the i-moutier members. Therefore, the i-moutier business incubator showcases the typical regional skills beyond 3D printing.*

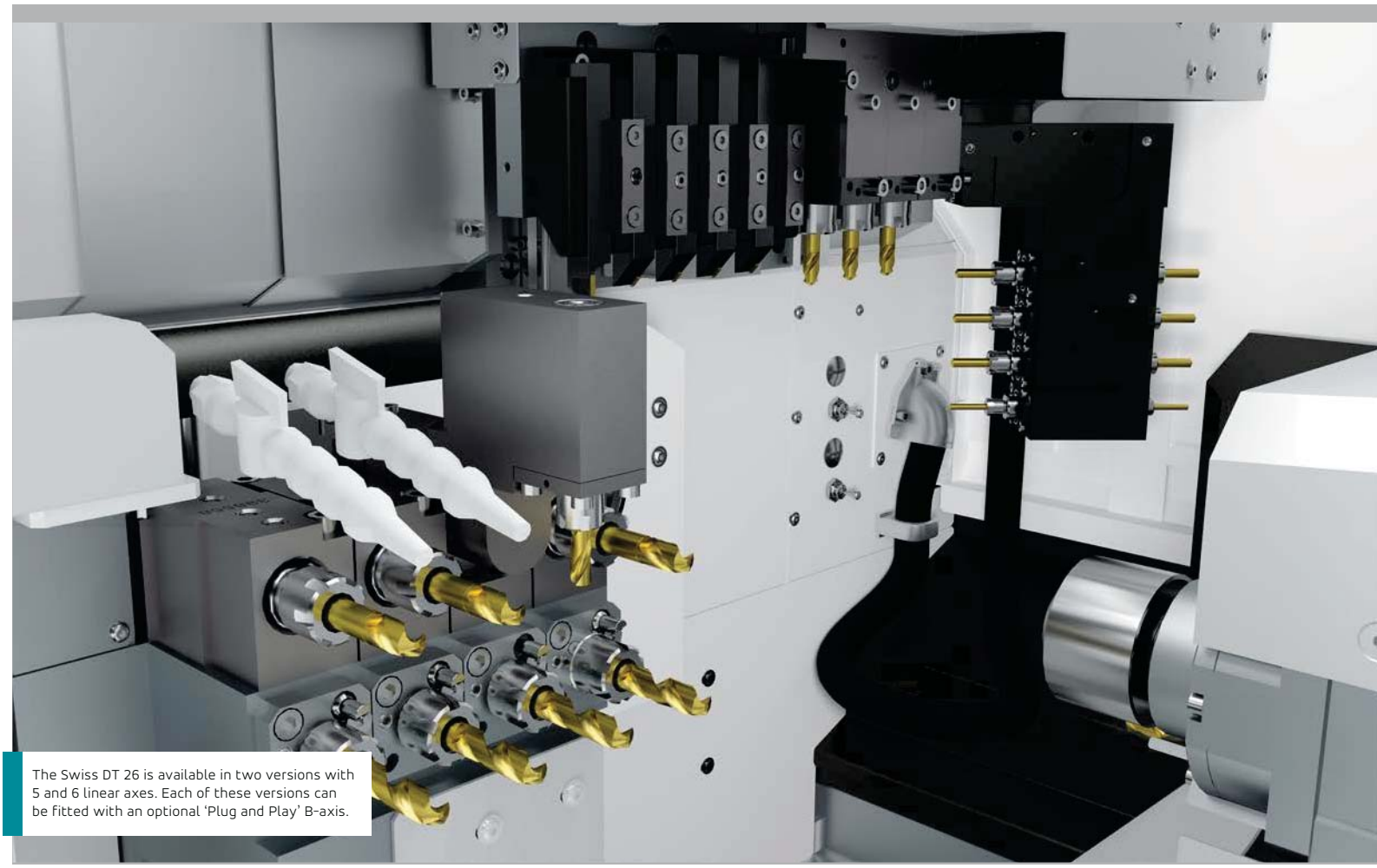
*Innovation by collaboration – that's the prospect for the future and that's exactly the mission of the i-moutier incubator, the innovator that gave birth to this new project. By pursuing its mission to enhance the know-how in the field of high precision and to drive the ecosystem of machine tools and microtechnology, it will support and stimulate the industrial players in their policy of development, innovation and diversification. i-moutier entered into this partnership to offer its members real added value in the spirit by which it is inspired.*

*Does this offer arouse your interest? Become a member of the i-moutier incubator: you will benefit from all these services and a wide range of other advantages at no extra cost. For useful details and information on the terms of membership, please contact Anne Hirtzlin, Project Manager and General Secretary of the i-moutier incubator.*

***i-moutier.ch***



The Swiss DT range is built upon 5 linear axes kinematics. The tool systems are modular and this allows the machine to be finely adjusted to suit the needs of the part.



The Swiss DT 26 is available in two versions with 5 and 6 linear axes. Each of these versions can be fitted with an optional 'Plug and Play' B-axis.

*A new range of*

# high-performance entry-level machines

Six years ago, Tornos launched its Swiss DT 13 and Swiss DT 26 machines. Since their introduction to the marketplace, the Swiss DT 13 and the Swiss DT 26 have been well received by manufacturers from a diverse spectrum of industry sectors. Soon, the range of Swiss DT machines will be completely updated to meet even more of your turned part requirements.

TORNOS

**Tornos SA**
Industrielle 111
CH-2740 Moutier
Switzerland
Tel. +41 32 494 44 44
tornos.com

*The bases of the new Swiss DT machines will be available in four different diameters:*

- *13 mm*
- *26 mm*
- *32 mm*
- *38 mm*

*All the machines benefit from a unique modular design. The main tooling platen will accommodate a large number of tools. The Swiss DT range can also take an impressive number of rotating devices. This includes:*

- *Thread whirling unit*
- *Polygon tool*
- *Gear hobbing device*
- *Splitter*
- *Milling unit*
- *High-frequency spindle*

*The machine platten is modular for optimum tool installation and with a large work zone, this gives the operator improved visibility and accessibility.*

### Two kinematics: five or six axes for the Swiss DT 26

*The Swiss DT machines are fitted with tried-and-tested kinematics with five linear axes. Given the diameter and power of the machines, the Tornos engineers have focused on ensuring effective chip removal by placing the platten above the guide bush or spindle.*

*To go even further and make the most of the numerical settings on three axes in a secondary operation, the Swiss DT 26 has a Y-axis for main operations. This is installed directly on the back spindle carriage, thereby extending the machine's capabilities. The secondary operation block, which can hold up to five tools on the 5-axis kinematics, sees its capacity increase to eight tools on the Swiss DT 26/6, four of which can be rotating tools. To make full use of the extra flexibility provided by the Y-axis, the machine is also fitted with a tool holder designed specifically for deep drilling.*

## *Standardised programming with TISIS*

*Every Tornos machine can be programmed using the TISIS programming software. This is especially effective for the Swiss DT machines that can also be fitted with the Connectivity Pack for remote status monitoring of the machines. TISIS has a database that contains all of the tool resources, from simple chisel holder plates to thread whirling tools and even polygon tools or milling devices. Each of these tools has its own constraints, and these are integrated in TISIS. So, if a tool is selected, only the positions where it can be fitted on the machine will be activated.*

*TISIS also manages incompatibilities between the various tools. Users are guided intuitively through the use of their machine, and each tool has its own image to allow easy identification. Another advantage is that the default geometries are automatically displayed when a tool is selected. The ISO editor automatically synchronises the code between the channels and uses syntax highlighting to enable value codes to be easily distinguished.*

*Visit store.tornos.com to download your free trial version of TISIS.*

*This means four tools can be positioned next to the back spindle. There is also the option of driving two tools on this block.*

## Unbeatable rigidity

*The base shared by all these machine has been optimised with Finite Element Analysis and is made from only the very finest quality materials. This improved base enhances rigidity and vibration damping, which gives the Swiss DT range improved precision, surface finish and tool life compared with other machines. This also gives customers the option to machine deeper passes at higher feed rates and spindle speeds. The aim is to provide an ultra-efficient base for this new range of machines.*

## High-performance spindles

*As always, Tornos pays particular attention to the spindles, which are ultimately the heart of the machine. As such, the 26 mm and 32 mm models are fitted with the SA 26 and SA 32 spindles, which can also be seen on the Swiss DT 26, Swiss GT 26 and Swiss GT 32 machines. These spindles are fitted with a powerful 10.5 kW motor, delivering an impressive*

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*torque level throughout the speed range, from 0 to 10,000 rpm on the 26 mm model and from 0 to 8000 rpm on the 32 mm and 38 mm models. The Swiss DT 13 is fitted with an ultra-dynamic 5 kW spindle, capable of reaching its top speed of 15,000 rpm in a few tenths of a second. The highly powerful spindles make the Swiss DT the only machines in the 'entry level' class to offer this level of efficiency. It should also be noted that it is possible to work with or without the guide bush.*

## A like-for-like replacement

*Users of the current Swiss DT models will not be left feeling lost when it comes to these new machines, because they have retained all the same basic features as the earlier models, simply with the addition of some unique extras, such as a plug-and-play B-axis. This can be installed on the machine depending on the workpiece requirements. The ACB Plus system facilitates controlled chip breaking. The filtration system has been updated and optimised for easier maintenance and smoother chip removal.*

## A B-axis like no other

*The machines can be fitted with a plug-and-play B-axis that can be added to suit your workpiece requirements. Once installed, this device facilitates the machining of awkwardly shaped parts in both main and secondary operations. It is fitted with three ESX 11 rotating spindles for both main operations and secondary operations. There is also the option of installing a fourth ESX 8 rotating spindle. It is also possible to install a high-frequency spindle on the B-axis for micro-machining or deburring operations.*

*This exceptional flexibility is built into every aspect of the Swiss DT range. For example, the machine offers a high level of autonomy with different options, such as chip conveyors, oil mist extraction units, part collection devices and, of course, our very own Robobar SBF bar feeder.*

## Presentation at EMO Milan

*The machines will be presented at the Tornos Italy customer centre in Milan and buses will be available from nearby the Tornos stand at EMO to drive visitors the six-minute journey to the customer centre, where they will be able to discover the many innovations on offer to boost their productivity.*

*tornos.com*



FGM Dental Group in Brazil produces state-of-the-art dental implants using Tornos machines.

*FGM optimizes implant production with*

# Swiss GT 26 and Swiss ST 26

The FGM Dental Group, a manufacturer of dental products in Joinville, Brazil, has been investing in the development of innovative solutions to consolidate its position in the implant market. Against this backdrop, for the past four years, the company has been investing in machines from Tornos to meet their production needs.

**FGM Dental Group**
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Brazil
Tel. +55 47 3441-6100
fgmdentalgroup.com

*The company has developed an implant system called Arcsys, that enables angulation of the head of the prosthetic component in dental surgery. To this end, FGM Dental created a mechanism, the 'angulator' that enables implant head angulation in a simple and fast manner.*

*"We developed an implant system, patented in several countries with which the dental surgeon can realize angular positioning of the head of the prosthetic component in his surgery in a simple, fast and intuitive manner. This allows the dental surgeon to expand his implant placement possibilities while maintaining prosthetic aesthetics," explains William de Souza Wiggers, FGM researcher and developer for Arcsys and Vezza Implant Systems.*

*In 2017, FGM launched a product redesign to manufacture all components on the same machine and due to its complex geometry, the base of the implant required several machining operations. The solution*

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HAROLD HABEGGER

Arcsys
Frictional
Implant

*was found with the Tornos Swiss ST 26. "The manufacture of this component wouldn't be possible without a machine that allows the attachment of a wide range of tools," says Wiggers.*

*The Arcsys System comprises implants, prosthetic and instrumental components that are all produced exclusively on the Swiss ST 26 machines. "We were pleasantly surprised by the Swiss ST 26 model, which has various motion axes, allowing for complex machining to be carried out with high precision and delivering high productivity. Furthermore, the machine boasts a large variety of tools," the researcher highlights.*

*When FMG launched a product that required angular milling, another demand arose. For this task, the company found a Tornos solution and acquired a Swiss-type CNC lathe model, the Swiss GT 26. With its B-axis – a feature that allows angular milling, the model enables the development of new geometries. The acquisition of machinery, along with the expertise of the in-house staff has resulted in a reduction of process time and a substantial increase in production capacity.*

*Currently, the implant industry represents about 15% of FGM's revenue with the company's main product being whitening products. "The growth curve has been on the rise since the launch of the system so far," says Wiggers.*

## Low Scrap Rate

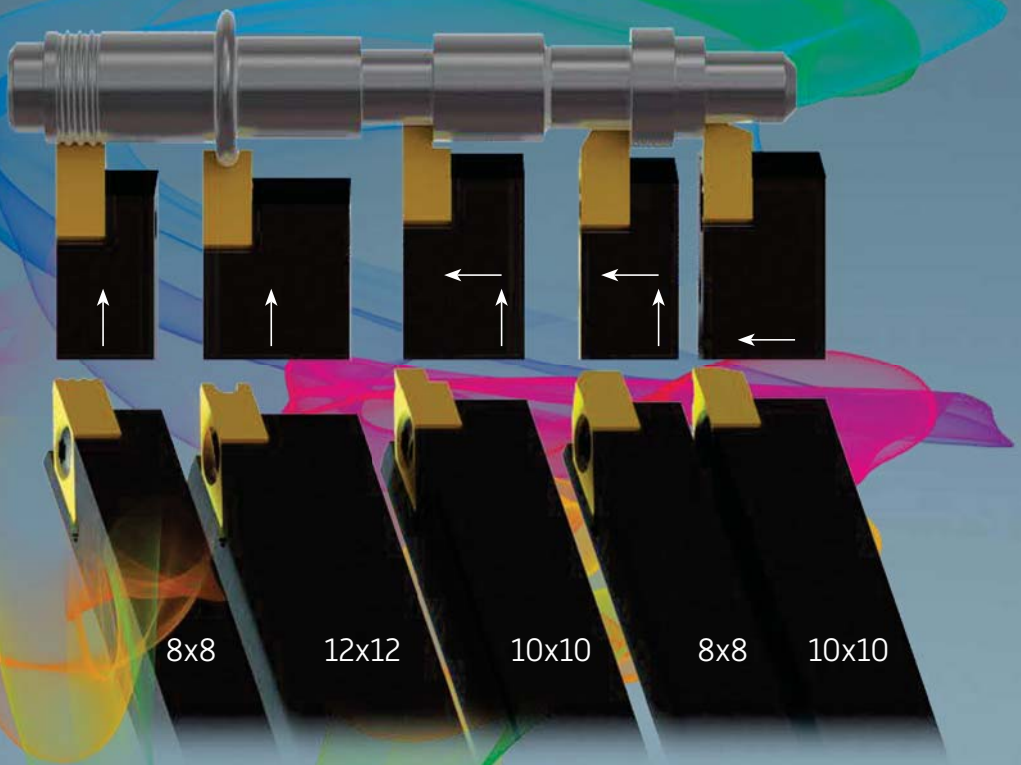
*Despite working with high-strength materials, which reduces the life of the cutting tools and challenges the machining quality, FGM has a low scrap rate. According to Wiggers, this is due to metrological controls carried out during production and to the quality of the machining tools and equipment used.*

*The company states that having equipment from the same brand facilitates employee training as well as the programming and operation processes. In Wiggers' opinion, Tornos machines are robust and have good ergonomics. Moreover, they provide easy access both for mounting and removing tools and for chip removal. "The access for adjusting the machine collet and guide bush is also very convenient," he concludes.*

***fgmdentalgroup.com***

Bianca Mittelstadt, CEO of FGM and
Fred Mittelstadt, CTO of FGM

**TURNING & GROOVING ON**
**SWISS-TYPE LATHES** WITH SCHWANOG

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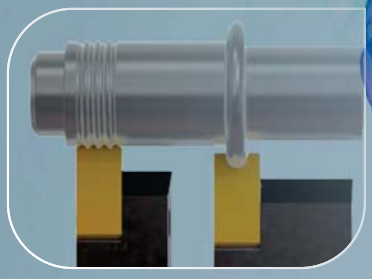

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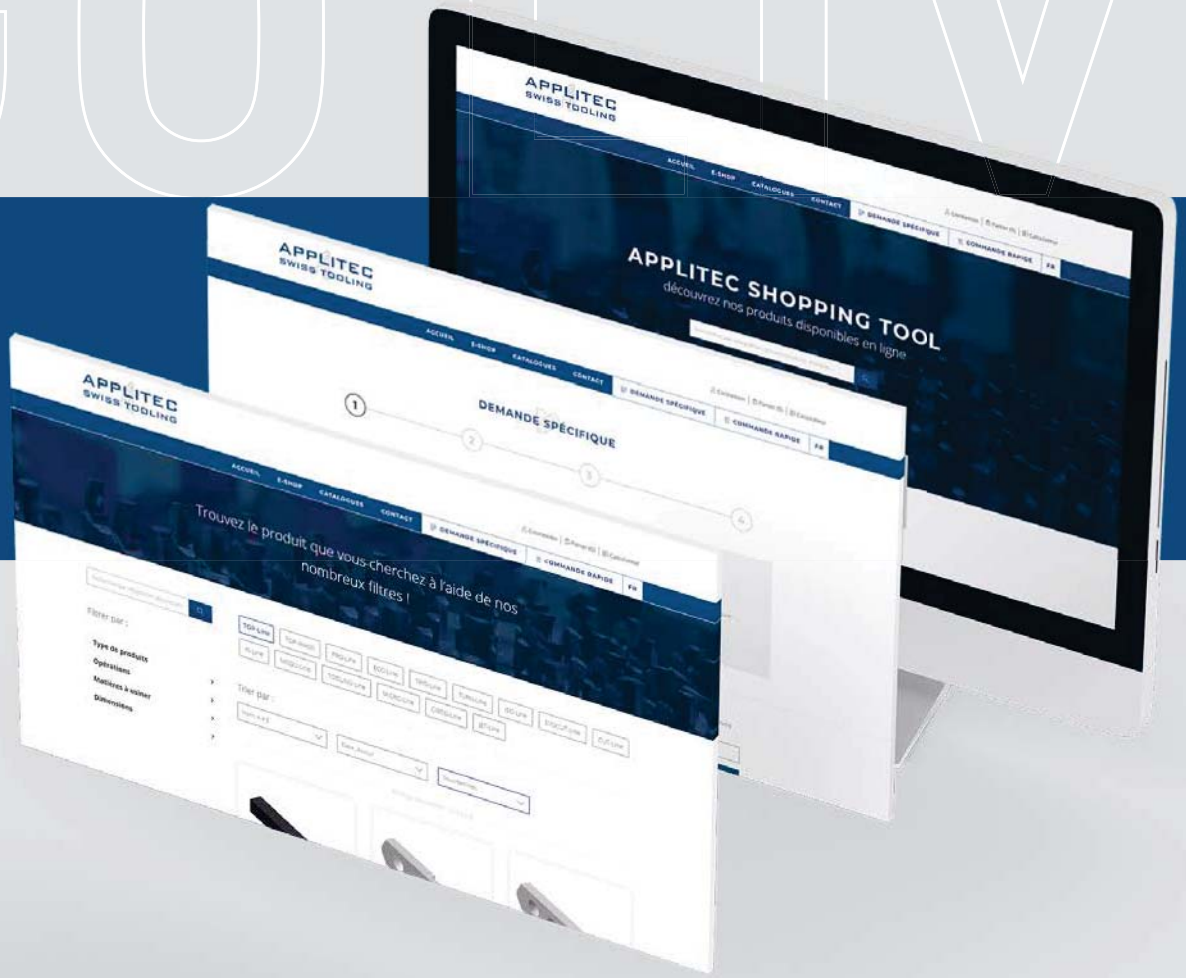


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