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99 01-2022 ENGLISH

*Precision and
high-end finishing –
shared priorities of
Tornos and Cyberis*

8

*Herbrig & Co GmbH:
130 million high
precision parts per
year*

22

*Lehigh Defense:
Getting the lead out*

28

*Établissements
Paulme: generations
of passion
and precision*

40



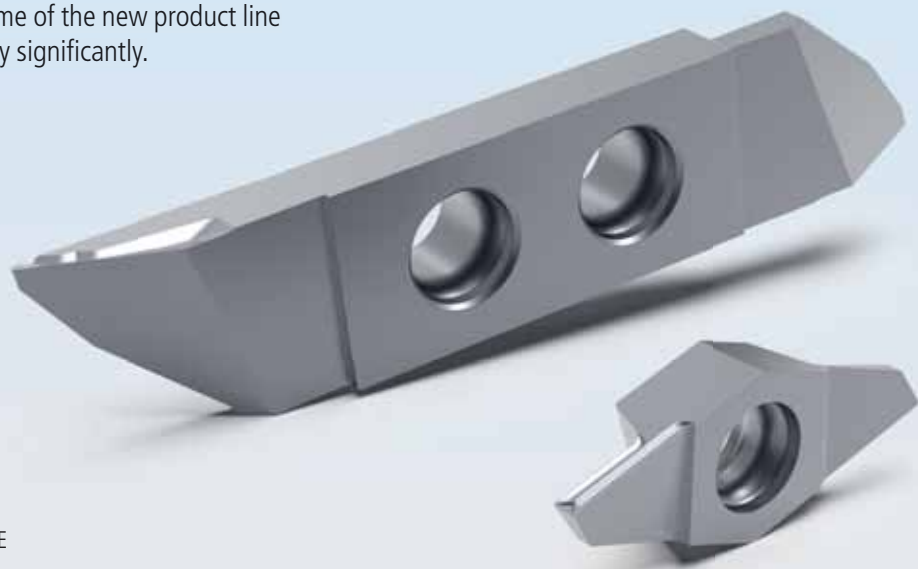
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“Like us, Tornos has extremely high standards when it comes to quality and reliability.”

Herbrig & Co. GmbH

IMPRESSUM

Circulation

17'000 copies

Available in

French / German / English /
Italian / Spanish / Portuguese for
Brazil / Chinese

Publisher

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CH-2740 Moutier
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SUMMARY

- 4 Editorial – Each customer represents a unique opportunity
- 8 Precision and high-end finishing – shared priorities of Tornos and Cyberis
- 14 The Swiss DT range offers unrivalled flexibility
- 22 Herbrig & Co GmbH:
130 million high precision parts per year
- 28 Lehigh Defense: Getting the lead out
- 37 Long parts on multispindle turning machines -
Working within the limits of the material
- 40 Établissements Paulme: generations of passion
and precision
- 47 Extracting long parts on multispindle machines



“Tornos embodies a state of mind, a team spirit and a desire to serve.”

Isaac Acrich General Manager of Tornos Technologies Ibérica

Each customer represents a unique opportunity

Isaac Acrich General Manager of Tornos Technologies Ibérica

At Tornos, we're not content to simply sell our customers machines. We form a relationship built on trust with each of our customers, offering them the best possible solution based on their needs. That's been my approach since I started at Tornos in the early 1980s. Now, after forty years serving the company and its customers, I can say that I've always held the same position and, above all, kept my promises. Firstly, the famous Tornos promise – 'We keep you turning' – which has been my motto from the start, and also the promise to always be there to respond to my customers' needs and requests, supporting them in their day-to-day work to safeguard their production.

Early in my career, our market had very few machine tools and bar turning was in its infancy. I had just left university, having graduated in industrial engineering and I wanted to work in the country I had grown up in. To offer innovative and efficient solutions. At Tornos, I immediately found the ideal partner with which to develop a growing machine-tools market in my country, where anything seemed possible. At the time, there were almost no numerically controlled machines, and the few big companies doing bar turning were wedded to cam-type machines. After a few years, we opened Tornos Technologies Ibérica in Granollers in Catalonia, as well as branches in Madrid and Valencia in the Basque Country, and Tornos became a standard-bearer for innovation – despite people's annoying habit of comparing our machines to Rolls Royce's. In response, we used this reference in our first ad to underscore the indisputable quality

of our machines, while pointing out their intrinsic affordability which put them within reach of any customer, whatever their needs.

While I had to do everything at the start, from initial contact, sales and training to machine installation and marketing, I don't regret either the time or the energy I invested with my team and with Moutier. Quite the opposite! The main thing was to raise the profile of Tornos in our market, to enable our customers to produce and export parts of the highest quality to all countries from our market and, thanks to the profitability and precision of our machines, to satisfy and retain as many customers as possible in our market. Our approach has always been the same: clear, direct, sincere – a win-win approach. If I wanted to achieve something or to convince someone, I first had to be convinced. Then I would contact the relevant person directly or even better – I would go and visit them to discuss the situation and find the best solution and the best service. I think if you really want to succeed, you first of all need to properly prepare for each customer, show that you're different, innovative, and offer new profitable solutions suited to the customer in question.

I never gave up or cut corners. My aim was always to work with my team to improve, to surpass ourselves and to make a difference. I believe each customer is unique and deserves the best help and support. I always treated each one with the utmost respect by making sure our relationship and communication were entirely personalised.

“A highly competent contact who can respond clearly to your specific requirements at any time.”

A great example of this came from one of the big tool exhibitions, the BIEMH that was held every two years in Bilbao, and which Tornos had always attended. It was a unique event where it was always important to distinguish yourself. So, we imported several tonnes of oranges from Valencia and opted for a bold slogan: ‘Boost your production with Tornos vitamins’. We had several Tornos machines running on our stand, with machines in the visitor reception extracting the juice from the oranges, which we served in champagne glasses. The visitors loved it. They were blown away.

After the exhibition, I wrote a personalised letter to each customer who had visited our stand and included a photo of the visit showing the customer – glass of orange juice in hand – next to one of the ultra-high-tech Tornos Swiss Type or multispindle machines producing parts on the stand.

Although when we look back, we tend only to focus on the positives, I will admit that things weren’t always easy. There were certainly problems. But what undoubtedly made the difference was that I always tackled them with the support of my team of qualified experts, who were with me for years. Tornos embodies a state of mind, a team spirit and a desire to serve.

I profoundly believe that Tornos always knows how to adapt. This has always been true and will remain so into the future – either with or without me. Tornos will always offer a comprehensive range of products and services designed to meet the needs of different markets and our customers’ ever-changing requirements, thanks to its innovative, customised and affordable solutions.

If we consider Spain and Portugal and, to a lesser extent, Israel and Brazil, where I have also worked for Tornos, I think the mindset and attitude I adopted in

Isaac Acrich with the Tornos team and customers during a trip to SIAMS in Moutier.

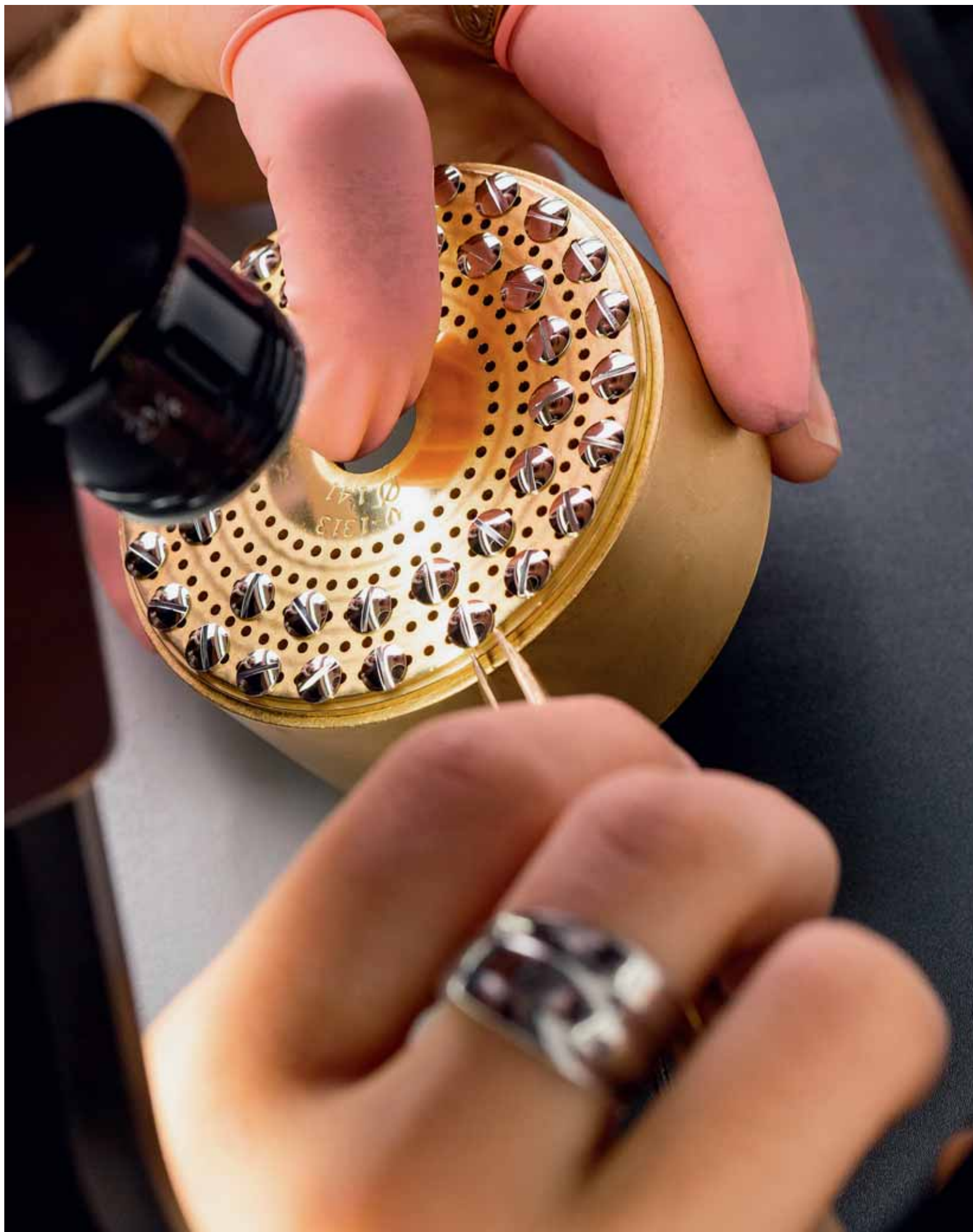


these markets are those exhibited by management in Moutier and all Tornos employees around the world. Because no matter where in the world you are, you can always find the right contact at Tornos. A highly competent contact who can respond clearly to your specific requirements at any time.

Over the years, I've become a little bit Swiss, so when I say 'Je Suis Tornos', it's more than just a slogan. Nor is it an empty phrase. I feel a limitless enthusiasm for Tornos and a passion that has never dimmed. I remember one EMO trade fair in Hanover, where the receptionist had mistakenly typed 'Monsieur Tornos' on my name badge. At the time it was funny, but it

turns out it actually suited me perfectly! Tornos has been my life. As my retirement approaches, I shall remain available as needed and would like to give the following reassurance to all of our existing and potential customers. Each customer looking to purchase a Tornos product should know that they will always find 'A friend at Tornos' who will work tirelessly with their team to meet their requirements, before, during and after the purchase of the machine and/or the after-sales service. A guarantee you can trust.





Precision and high-end finishing –

shared priorities of Tornos and Cyberis

Cyberis SA is a family business headquartered in Bassecourt, at the heart of the Swiss Jura Mountains. It has been established as a market leader in the manufacture of micro-components for the fine watchmaking market for more than 20 years. Since its beginnings in 1991, Cyberis has opted for an inventory of Tornos machines with tailor-made solutions that allow high flexibility and efficiency.

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“For Cyberis, the customer is the utmost priority. We are used to working fast and responding promptly to any request at hand. By producing in a controlled manner, fully aligned with the requirements of our customers, we can remain competitive, with prices that remain stable even though the purchase price for raw materials has been constantly increasing for 15 years,” declares Christian Zanetta, who undertook the management of the family-run business belonging to Cédric and Jérôme Bourquard, the sons of Jean-Pierre Bourquard, in 2016.

Cyberis is fully committed to the privileged relationships with its customers, the proximity and 100% Swiss-Made quality. It has also chosen its technology partners based on these criteria. And that's why Tornos came into play at the very beginning, in particular, due to the precision of its machines and the flexibility of its solutions. “These machines are very easy to program and most of the bar turners from the Swiss Jura Mountains are familiar with

“We pursue a policy of transparency and honesty to achieve the maximum satisfaction for our customers.”

them. By trusting in Tornos, we believe we are well prepared to easily recruit skilled personnel or motivated persons who are willing to learn and can be trained by us,” explains Grégory Gunzinger, Micro-turning Division/Percos Manager at Cyberis.

When asked about Tornos, he is full of praise and really appreciates that they can work with solutions of such a high quality and efficiency day by day. “Tornos machines are both flexible and responsive. They enable us to supply our customers even faster with products, and this is at the top of our priorities and commitment. Our Tornos machines are easy to program and settings can be realised quickly. Thanks to TISIS, the Tornos programming software, everything is much easier. Since 95% of our machines are Tornos machines, everything works as regular as a clockwork. They guarantee uniform action and easier coordination.”



This coordination is applied to the entire company since the various sectors are working in close collaboration. The large number of different trades represented within Cyberis guarantee a reliable and constantly improving vertically integrated production. In this respect, the Logistics Manager Reynald Bourquin plays an important role. “Even if they may not necessarily be put forward in the manufacturing process, logistics play an essential role and enable the correlation of all activities with production. We have to manage and anticipate at the same time. Anticipation is required for us to be able to respond even faster to our customers’ needs.”

Located at the heart of the Watch Valley, Cyberis SA uses all its energy to establish regional partnerships and make its mark in the production of micro-components for watch movements and decoration. One of the company’s new flagship products is the spring-type micro-component that can be assembled without deformation and offers high repeatability in all possible materials and dimensions. Their spring bar made of nickel-free steel and their high-precision





Grégory Gunzinger, Head of Décolletage/Percos
with Christian Zanetta, Director and Reynald Bourquin,
Logistics Manager.

ball-type pawl are further innovative products that Cyberis presented for the first time at the EPHJ last autumn. The latter is a most complex workpiece that can be produced thanks to the amazing precision of the Tornos machines that turn out to be the ideal machines for this kind of high-precision micro components for watchmaking.

The manufacture of watch components implies the mastery of numerous craft and industrial skills that enable every single workpiece to be given an impeccable shape and functionality. To that end, Cyberis implements full ERP to pool all company management processes. This flexible and customisable system allows Cyberis to respond to various issues faced by the businesses and also to adapt to internal and external needs and thus to provide fast and efficient solutions. Furthermore, the vast and proven expertise and experience in the field allow Cyberis to

appropriately meet the specific demands of the manufacture for a Swiss-quality product.

To this day, the 2,000 m² building that houses Cyberis in Bassecourt has been dedicated to production. Cyberis SA has 30 employees and 60 CNC machines, no less than 55 of them being Tornos machines. The first Micro 7 and Micro 8 machines are gradually being replaced by Swiss GT and SwissNano machines. The machine inventory is being updated based on the actual needs. "In particular, our employees appreciate the intuitive nature of the Tornos solutions. They like working with these machines, especially because of their interface that makes programming easy and efficient."

The highly qualified employees, who are specialists in their field, enable 24/7 operation of the machines in Cyberis' bar-turning workshop. Day and night,

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the machines are automatically producing. Even the smallest components are machined in the production chain following standard practice while the high-quality standards of high-end watchmaking are observed.

Cyberis thus combines traditional know-how, innovation and new production mean to achieve the optimum output. Its workshop has been designed according to industry 4.0 and is fully connected and the production is controlled in real-time, with instantaneous feedback of the production data. This guarantees that the Jura-based company has full operational control at all times.

Efficiency, speed and proximity – these appear to be the philosophy of Cyberis. The company defines itself as being self-sufficient and responsible as well as being on the lookout for every opportunity to improve. “We pursue a policy of transparency and honesty to achieve the maximum satisfaction for our customers,” concludes Christian Zanetta, who rejoices in continuing the fruitful collaboration with Tornos based on mutual trust and the will to evolve and improve together. The shared goal is getting better every day and becoming the privileged partner for the manufacture of any watch component.

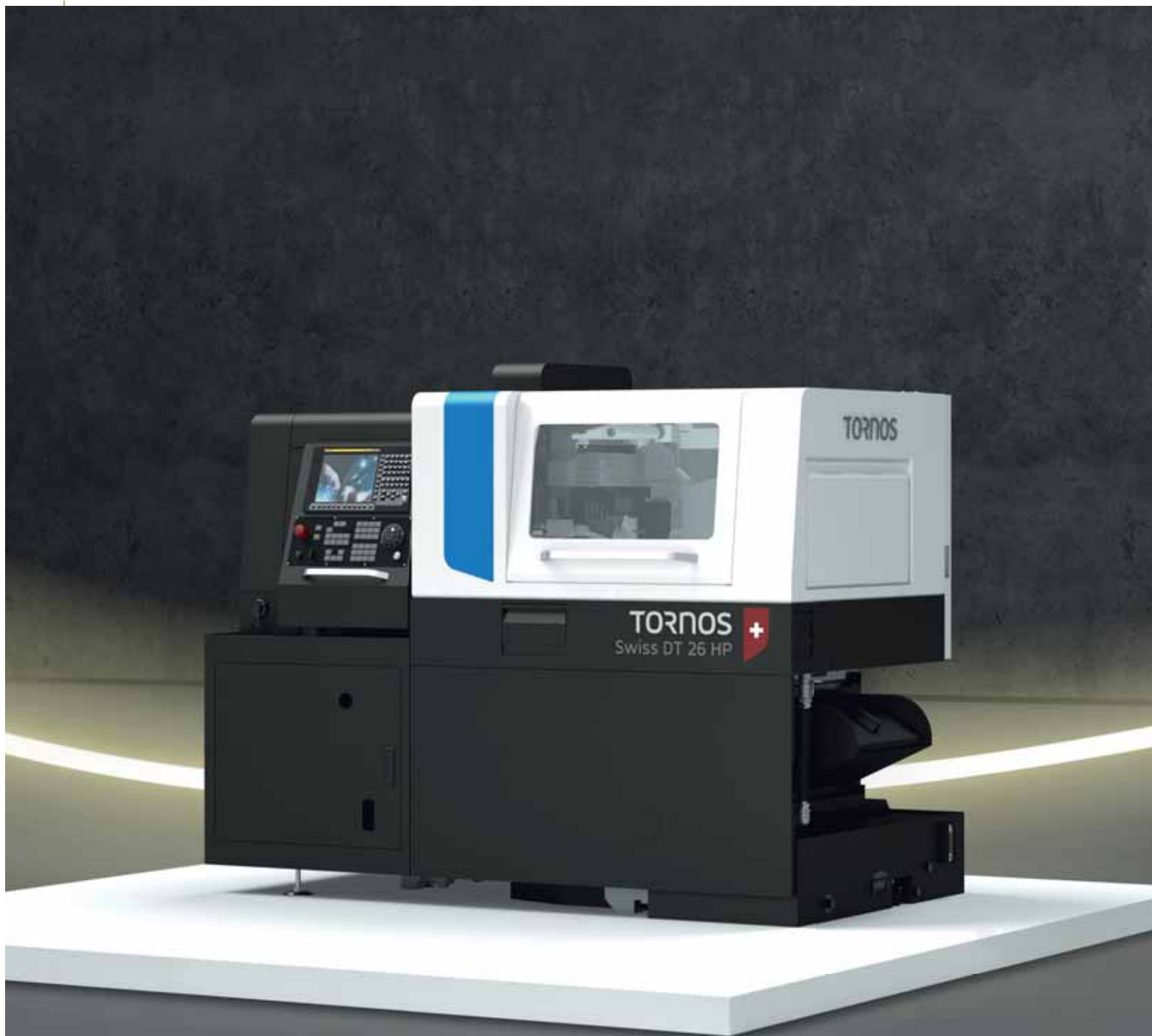
cyberis.ch



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video report under

<https://youtu.be/L8M9Aoj5c4>





The new Swiss DT range from Tornos is an affordable solution, offering the best quality to price ratio on the market.

The Swiss DT range offers unrivalled flexibility

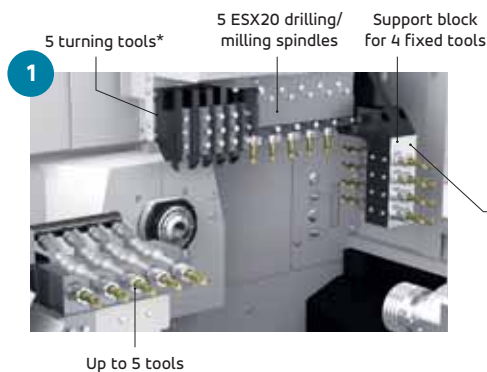
Extremely robust and powerful, the Swiss DT HP machines benefit from kinematics that optimises chip removal.

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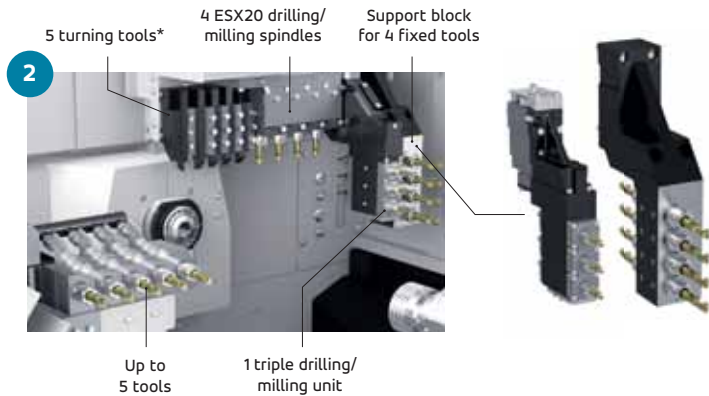
The kinematics are designed as the perfect solution to meet the constraints of machining large diameters with excellent chip removal - without compromising on machining speed.

Unlike other machines in its category, it benefits from a modular machining area for both main and secondary operations. The possibilities these offer are extremely broad, and in this article, we will outline several of these points.



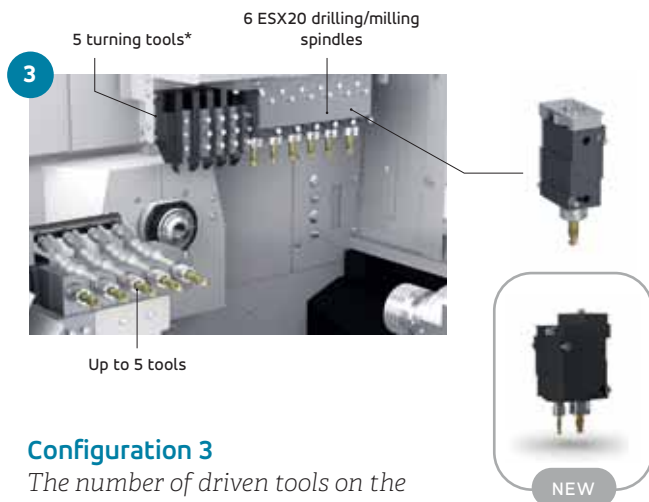
Configuration 1

In its basic configuration, the Swiss DT is equipped with six turning tools, five rotating tools and an angle tool post that allows four tools to be fitted for main operations and five tools for secondary operations.



Configuration 2

In this version, the basic configuration is adopted, with one radial rotating tool replaced with a triple frontal drilling device.



Configuration 3

The number of driven tools on the Swiss DT can be changed. For example, if the angle tool post is not needed, it can be replaced with a driven device. Thanks to the drive system, this operation is quick and easy. It is also possible to install a sixth radial drive tool on the platten.

* Optional, and with the removal of one ESX20 drilling/milling spindle, the machine can be configured with six turning tool holders 12 x 12 mm / 1/2 x 1/2 in or five turning tool holders (16 x 16 mm / 5/8 x 5/8 in).

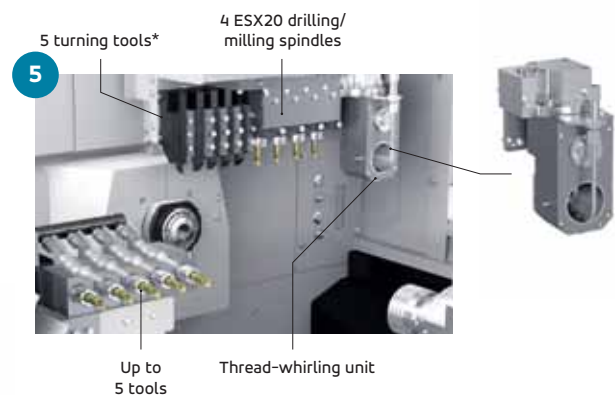


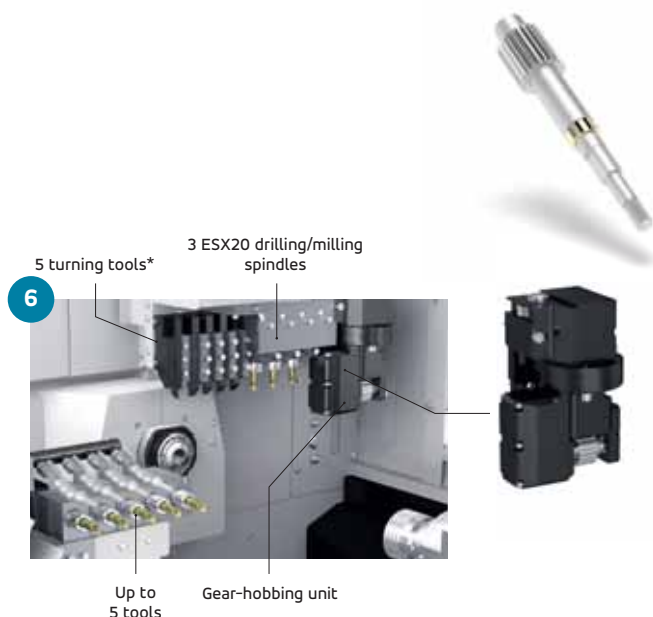
Configuration 4

The possibilities do not end there! It is also possible to equip the machine with highly specialised devices, such as a dual angled milling device that can be adjusted from 0 to 90 degrees.

Configuration 5

It is also possible to use the Swiss DT range to machine medical screws. The below configuration is proof of this.





Configuration 6

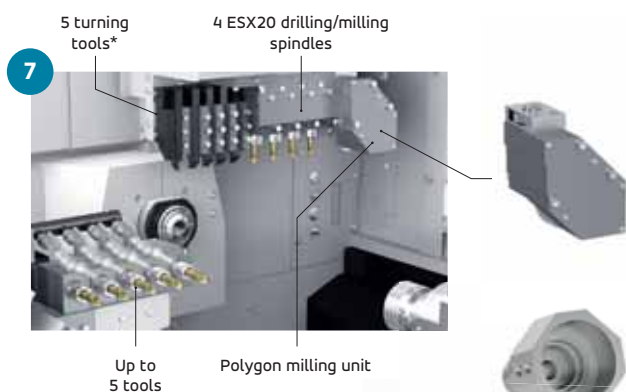
Gears are yet another component that can be created with the Swiss DT, as a gear hobbing device is an available option on the entire range.



Configuration 8 and 9 'Plug and play' B-axis

The machines can be fitted with a plug and play B-axis that can be added based on the 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 even deburring operations.

tornos.com



Configuration 7

A polygon tool can also be installed on the platten.



Plug and play B-axis

Number of rotating tool positions (main operations / secondary operations)	3/3 (4/4 as an option)
High-frequency spindle	1 (option)
Rotating tool speed	8000 rpm
Rotating tool power	1.0 kW
Max. drilling diameter	Ø 5.2 mm
Max. tapping diameter	M3X0.5

Swiss DT 13 HP
Swiss DT 13 S

Swiss DT 26 HP
Swiss DT 26 S

	Swiss DT 13 HP	Swiss DT 13 S
Diameter	13 mm	13 mm
Standard workpiece length with guide bush	210	210
Maximum number of tools	28	28
Maximum number of rotating tools	14	14
Plug-and-play B axis	Option	-
Spindle power (S1/S6)	4.0 kW (5.0)	4.0 kW (5.0)
Counter spindle power (S1/S6)	4.0 kW (5.0)	4.0 kW (5.0)
Direct-drive guide bush	Yes	No

Swiss DT 32 HP

Swiss DT 38 HP



Swiss DT 26 HP

25.4 mm
210
28
14
Option
8.2 kW (10.5)
8.2 kW (10.5)
Yes

Swiss DT 26 S

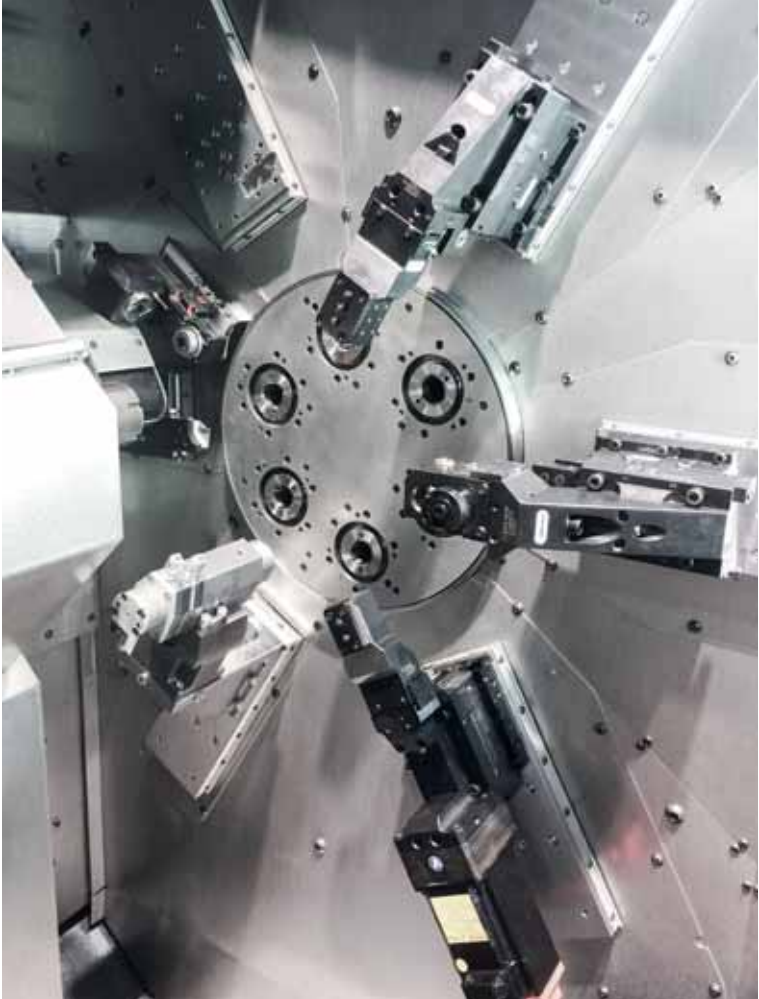
25.4 mm
210
28
14
–
8.2 kW (10.5)
1.5 kW (2.2)
No

Swiss DT 32 HP

32 mm
210
28
14
Option
8.2 kW (10.5)
8.2 kW (10.5)
Yes

Swiss DT 38 HP

38 mm
210
28
14
Option
8.2 kW (10.5)
8.2 kW (10.5)
Yes



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PRECISION FROM SAXONY

130 million

high precision parts per year

Many efficient and innovative bar turners have become established in the area of the world-famous Glashütte watchmaking industry in Saxony. One of the biggest and most successful of these is Herbrig & Co GmbH in Bärenstein. Each year, around 180 employees produce highly precise turned parts of outstanding quality on more than 160 CNC turning and rotary indexing machines. In doing so, Herbrig predominantly relies on Tornos machines, as these are best suited to the high demands of the industry.



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Herbrig & Co GmbH in Bärenstein is a traditional business in the valley of Müglitztal. Back in 1956, Egon Herbrig founded a precision engineering workshop. Since being re-established in 1990, the company has specialised in series production of precision turned parts, precision assemblies and tools. Despite the rapid growth, Herbrig has remained a family company in the best Saxony tradition and has been exemplary in its support for the region and training young people.

When Christoph Herbrig took over the company from his great uncle in 2008, he also took on this commitment to the region, and he has invested over €40 million in new technologies, machines and processes. Within just ten years, he more than tripled the machine inventory in size from 50 machines to more than 160 machines – of which 115 are Tornos long-turning machines from the EvoDeco 10/26 series,

as well as the SwissNano 4. Each year, Herbrig manufactures between 130–150 million precision turned parts.

The machine inventory in numbers:

- 5 Tornos SwissNano 4 long-turning machines up to 4 mm diameter
- 88 Tornos EvoDeco 10 long-turning machines up to 10 mm diameter
- 22 Tornos EvoDeco 20/26 long-turning machines up to 32 mm diameter
- 17 Index C100 short-turning machine up to 42 mm diameter
- 30 Pfiffner rotary indexing machines up to 32/25 mm diameter

The complete value creation chain from a single source

This production volume would not have been possible without this commitment and the skillset of almost 180 employees. The majority of the team has already completed their training at Herbrig and are well

versed with the tasks that they need to perform. The company is, therefore, able to provide consistently high quality, irrespective of the number of turned parts that are required. And these turned parts offer just that. Herbrig manufactures parts for a wide range of sectors. Its main customers include companies from the connector and automotive industry, from testing, measurement and locking technology to the watchmaking and medical technology sectors.

The complexity of the parts, the tight tolerances, as well as the materials processed frequently pose special challenges for the employees. Herbrig not only processes all of the Cu alloys (brass, beryllium copper and bronze) and free-cutting and case-hardening steels but also aluminium alloys. It also increasingly processes stainless high-grade steels, plastics and lead-free materials into short and long-turned parts. Of course, this diversity of parts also requires exceptional quality and flexibility in the machine inventory, for which Jan Lippert, as the Technical Manager, is responsible: "Like us, Tornos has extremely high standards when it comes to quality and reliability.



“Like us, Tornos has extremely high standards when it comes to quality and reliability.”

These attributes unite us and create common ground upon which we can successfully build.”

Like Tornos, Herbrig also continuously expands its services and offers additional machining options, such as automated testing of series production parts, the assembly of components and the surface finishing and hardening processes. “We want to offer our customers a full-service package, and continuously

work on improving our work processes to achieve maximum cost efficiency. We therefore offer our customers the option to network with our IT systems. Of course, we take care of the individual packaging and labelling,” says Christoph Herbrig.

100% quality

The name ‘Herbrig’ stands for high-quality standards. In addition to the precise working method of the qualified employees, the reason for this is a modern IT-controlled quality check on SPC measuring stations. In the QS laboratory, CNC-controlled 3D coordinate measuring machines, contour measuring devices, profile projectors and digital laser micrometers, hardness and roughness testers are available. The rigorous test routine involves seven modular test systems with the latest digital camera measurement technology.

The company’s high-quality standards are underpinned by certifications in accordance with DIN EN ISO:9001 and the IATF:16949. Furthermore, Herbrig



has three cutting-edge ultrasound cleaning systems and therefore fulfils the strict cleaning specifications concerning residual dirt.

Sustainability in practice

For Herbrig, sustainability is not just a buzzword – for years, the company has accepted their responsibility and continuously invested in environmental protection. A large photovoltaic system was therefore installed in 2018 and they have driven forward the expansion of alternative drives, heat recovery on a wide range of machines, and the use of LED strip lights. The sum of the energies created in this way is used to supply the offices with power, for example.

Sustainability and responsibility also shape how the company deals with its employees. Like his great uncle, Christoph Herbrig is heavily involved with the young talent in the region. In the training centre, ten prospective cutting machine operators are currently gaining their first experience and are being trained to become first-class skilled workers. However, the care starts even earlier than this. In the training centre, Herbrig has also worked with the town of Altenberg to set up a well-equipped daycare centre, in which its employees' children are also lovingly looked after. "We want to be an attractive employer for our employees in the rural area. In addition to



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good pay and working conditions, this also includes reliable childcare, varied clubs and associations, and affordable housing."

In summary, Herbrig is more than just a company. It has become a beacon for its region and is a point of reference for the series production of highly precise turned parts. The close partnership with Tornos has contributed to this because the precision engineering in Tornos automatic turning machines is unbeatable when it comes to productivity and cost-efficiency. High standards of precision and reliability unite these two companies. Together, they develop solutions that offer the maximum benefits to the customers. Herbrig is therefore predestined to see further growth and it is only a question of time before the company surpasses 150 million highly precise turned parts per year.

[herbrig.com](https://www.herbrig.com)







Getting the lead out

Pennsylvania (United States) manufacturer Lehigh Defense is pushing back against a formidable environmental threat—lead-based projectiles—with the help of Tornos' MultiSwiss 6x16 multispindle automatic lathe.



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The science around lead-based ammunition is clear: Lead hunting ammunition presents an unintended but proven hazard to the people who make it, animals who come in contact with the remains of wild game brought down by lead projectiles, as well as to humans who eat that game meat. Lehigh Defense's solid copper projectiles are safer and offer greater performance than lead projectiles, but they're significantly more costly and time-consuming to produce—and that's where Tornos' MultiSwiss 6x16 makes a big contribution in terms of productivity and cost per part.

"Our objective was to eliminate lead from projectiles due to the health and great environmental risks created by the element," explains Dave Fricke, president of both Lehigh Defense and Quakertown machine shop Millennium Manufacturing. "Lead has been used for projectiles for centuries and it has many desirable characteristics when used as a projectile. In order to eliminate lead, we needed to replicate in solid copper the characteristics that made lead a good projectile."

Fricke and his team applied material science and Swiss-type machining technology to add stress concentrations in the bullet through internal features, slots, and grooves, as well as alloy section.

Positioned for the future

"We were very successful at engineering a no-lead projectile with much greater performance than a lead projectile. The struggle was the cost component of the process," Fricke says. "Lead is a relatively low-cost material and lead projectiles are produced at more than 10,000 pieces per hour. Lehigh is using precision

"Currently, we have the CT 20 and our MultiSwiss 6x16 running 20-plus hours a day"



copper and a Swiss-type machine output of under 200 pieces per hour. We constantly strive to apply advanced cutting tools, machining technologies, and unattended operations to drive costs out of the process. It is inevitable that lead will be eliminated from projectiles, and we are positioning Lehigh to be ready when that occurs.”

Tornos DECO 10 gave Fricke his first taste of Tornos technology: A Tornos DECO 10 was the second machine Millennium purchased in 1999 when Fricke and his partner, Pete Vogel, were launching the business.

“At the time, we were producing connector components and, being new to the industry, new to business, and—frankly—not very knowledgeable machinists, we needed every advantage available,” says Fricke. “When the DECO was released, it was so unique, so innovative, we were immediately attracted to the technology advancements of the machine.”

Significant impact

It didn’t take long for the DECO 10 to make a significant impact at Millennium.

“The DECO 10 immediately cut our cycle times



by 30 percent. On top of the cycle time reduction, the greatest long-term gain was from the TB-DECO software," he says. "As a young company, we ran lean and program refinement was a luxury we did not have time for. We just focused on getting machines running with 'green lights.' TB-DECO changed all of this. It allowed us to optimize programs in the office. Even today, with almost 40 computer-numerical control (CNC) machines, program optimization is extremely difficult to do once a job is running; optimization is most effective before setup and TB-DECO makes this so simple."

Millennium used that original DECO 10 for 15 years, eventually trading it for a Tornos CT 20. And, until last year, the company had a dedicated product line produced on a Tornos ENC 74.

"Currently, we have the CT 20 and our MultiSwiss 6x16 running 20-plus hours a day," Fricke says. That MultiSwiss 6x16 is dedicated entirely to projectiles in Lehigh Defense's Xtreme Defense and Xtreme Penetrator product lines, which use the company's proprietary "Fluid Transfer Monolithic."

Machine operator Doug Brown (right) and Operations Manager Gordy Edwards (left) discuss processes and procedures that help maintain quality at the highest level.





Engineering's Greg Schmell and operator Greg McNutt discuss the quality control inspection processes implemented by using Oasis visual inspection equipment.

"The design of this type of bullet uses hydraulic forces that duplicate that of a lead, deforming bullet. We hold several patents on this technology and believe that this concept is an excellent technology for a hunting and personal defense bullet," says Fricke.

Those two product lines were originally produced on Swiss-type machines but market acceptance of lead-free projectiles and vastly increased production volume made it impractical to continue expanding the company's Swiss-type machining capacity.

"For years, I knew a Tornos multispindle machine had a place at Millennium and Lehigh but the math—at least math I was using—would never support the purchase. All the return-on-investment (ROI) models I ran said to buy more Swiss-type machines, which is what we did until we ran out of floor space," Fricke says.

A 'simply amazing' machine

Even after buying the MultiSwiss 6x16 in July 2021, Fricke was not 100 percent convinced it was the right decision—but Tornos' small-diameter champion soon made a believer of him.

"The MultiSwiss is simply amazing!" he says.

"Our outside diameter (OD) part tolerance is ± 0.0003 inches (0.0076 mm) which we really have no trouble attaining on a Swiss-type machine day in/day out.

On the MultiSwiss, we are holding a total of 0.0001 inches (0.0025 mm) OD tolerance and 0.0001 (0.0025 mm) roundness. If we were making the part simultaneously on five Swiss machines, our total variation would be near three times that on one MultiSwiss. If you have five Swiss machines, one is going to be running near maximum tolerance at some point in the day, one running at minimum tolerance, and the other three in between; the precision of the MultiSwiss dramatically reduces part variation on high volume production."



Continuous improvement and timely deliveries begin with support from the top down: Business partners Dave Fricke (left) and Pete Vogel (right) showcase the Tornos MultiSwiss 6x16.

From an ROI standpoint, Fricke says, the MultiSwiss has one high-pressure coolant system, one mist collector, one bar loader, etc.—a factor that should not be underestimated.

“In equivalent Swiss-type machine output, there would be five of each of these systems that need maintenance and could fail; no, a better way of putting it is they will fail at some time. The MultiSwiss dramatically reduces the maintenance and support cost per part,” he says.

A long-term partnership

On top of the machine’s performance, Fricke values his 20-plus-year relationship with Tornos.

“The expectation for service and support on a machine with the price tag of a MultiSwiss is extremely high—and Tornos has come through every time, no matter what the situation is,” he says. “There is a learning curve on a machine like this and Tornos is just a phone call away in helping us be successful. We feel like Tornos’ ‘Customer of the Year Award’ winner every day.”

Currently, Lehigh Defense’s MultiSwiss is booked for more than a year—and another MultiSwiss purchase may be on the horizon.

“After seeing the amazing advantages of the machine, we have had an additional MultiSwiss quoted to produce some of Millennium’s electric vehicle parts,” he says.

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LONG PARTS ON MULTISPINDLE TURNING MACHINES

Working within the limits *of the material*



One of the features of bar turning machines is their ability to produce long parts that generally exceed the limit of 2.5 times the diameter. This is a key feature and this feat is made possible thanks to the guide bush, a central component along with the machine spindle used to drive the bar. The bar turning principle is that the tool is fixed and the bar moves along the Z-axis, in contrast to fixed headstock turning machines where the tools are mobile.

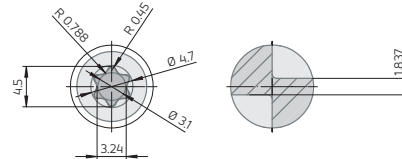
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This principle is also found on multispindle machines, in fact, on these machines, the bar remains fixed after it is fed into position. In 2011, with the MultiSwiss 6x14 machine, Tornos launched an innovative concept - a mobile spindle specially designed to separate the guides, thereby making the elements rigid.

All MultiSwiss machines are equipped with spindles with high-power synchronous motors ensuring the machine offers impressive dynamics, the acceleration times are very short (0-8000 rpm in under a second on a MultiSwiss 6x16). In addition to its own C-axis, each spindle has its own Z-axis, guided by hydrostatic bearings. This enhances vibration damping,





A new possibility for long parts

The addition of a guide bush compromised the machine's key features and a more conventional solution was also conceived with supports that could be fitted in the machining area. This solution guarantees excellent repeatability and ensures a quick setup without compromising chip removal.

*This option is only available ex-works.
To find out more, please contact your nearest
Tornos representative.*

decomagazine 01-2022



Today, there are no less than nine CT 20s in the workshops at La Roche-sur-Foron. According to Didier Guillemot, the CT 20 has enabled Établissements Paulme to strengthen its competitiveness in its range of historical parts.

ÉTABLISSEMENTS PAULME:

generations of passion *and precision*

In 1925, Edmond Paulme, a graduate of the Cluses watchmaking school, set up a bar turning workshop in the centre of La Roche-sur-Foron in France with his brother Antoine. They started by manufacturing components for wireless radio systems, before moving into cycle and car parts from the 1950s.



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Generations of bar turners

While the company no longer produces parts for the now-defunct wireless radio, it has seen constant growth thanks to the flawless quality of its work and its capacity for innovation.

To support this growth, Établissements Paulme has placed its trust in Tornos and its CT 20 machine which, thanks to the expertise of the company and the Tornos France technicians, creates parts as quickly as a cam machine working with coil stock. Interview with Didier Guillemot, president of Établissements Paulme.

A company at the cutting edge of technology

The company has always prided itself on its exceptional level of expertise. For many years now, the family company has directly supplied the procurement chains of the largest car manufacturers. Backed by expertise in a very diverse range of sectors of activity, Établissements Paulme has a machine inventory that allows it to machine parts in diameters from 3 to 64 mm in prototypes (1 to 100 items), medium runs or mass production (1,000,000 per month). The company also has a specific workshop for mounting and assembly. With 30 employees, and extraordinary expertise, the company has built its success on three pillars:

- **Quality objective:** zero defects
- **Deadline objective:** zero delays
- **Price objective:** competitiveness



“Flawless quality also had to be maintained, another challenge in which the CT 20 excelled, meeting the expectations of the company perfectly.”

A family tradition of passion

A man of many talents, Didier Guillemot first joined the sales team, working alongside his father. His studies in mechanical engineering, and extensive experience in bar turning and the manufacture of machine tools in Germany, Switzerland, England and the United States, provided him with in-depth knowledge of the sector. In 1995, he became sales manager, supported by his uncle; like all members of their family, they were driven by a passion for engineering.

Overhauling the technology

A few years ago, the company was seeking to replace its inventory of 10 cam machines working with coil stock. These machines were used to create small pins at a high rate, with high-quality results. To



remain competitive, a fast machine offering great value for money was needed. The choice was a CT 20 - a straightforward bar-turner able to meet these exacting requirements. Thanks to the expertise of Tornos France and the Établissements Paulme team, it was possible to push the machine to its very limits to obtain cycle times comparable to those of the cam-type machines working with coil stock. Flawless quality also had to be maintained, another challenge in which the CT 20 excelled, meeting the expectations of the company perfectly.

Today, there are no fewer than nine CT 20s in the workshop at Roche sur Foron. According to Didier Guillemot, the CT 20 has enabled Établissements Paulme to boost its competitiveness across the parts that have traditionally been the

company's strength. The machining capacities of this equipment also allow it to offer its customers a much wider range of parts.

To find out more about Établissements Paulme, visit their website or watch our video report on YouTube.

paulme.fr



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SPECIAL DEVELOPMENT:

Extracting long parts *on multispindle machines*

In our previous edition of decomagazine, we looked at a specific customer solution for loading and unloading a Tornos Swiss DT 26 single-spindle machine. Unloading problems are not limited to single-spindle machines; multispindle machines also often encounter issues with unloading. Although MultiSwiss machines are renowned for their efficiency and their ease of use, efficiency is not limited to the machining area and sometimes the specific features of the part mean that it's not possible to use the standard solution.

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This unloading solution is used to remove the parts from the back spindle toward the outside of the machine with a motorised linear extractor. There are several advantages to this solution; for example, the part can be removed from the back spindle by the pneumatic gripper equipped with two clamping jaws made from a synthetic material that protect the part from impact and avoid damaging its finish.

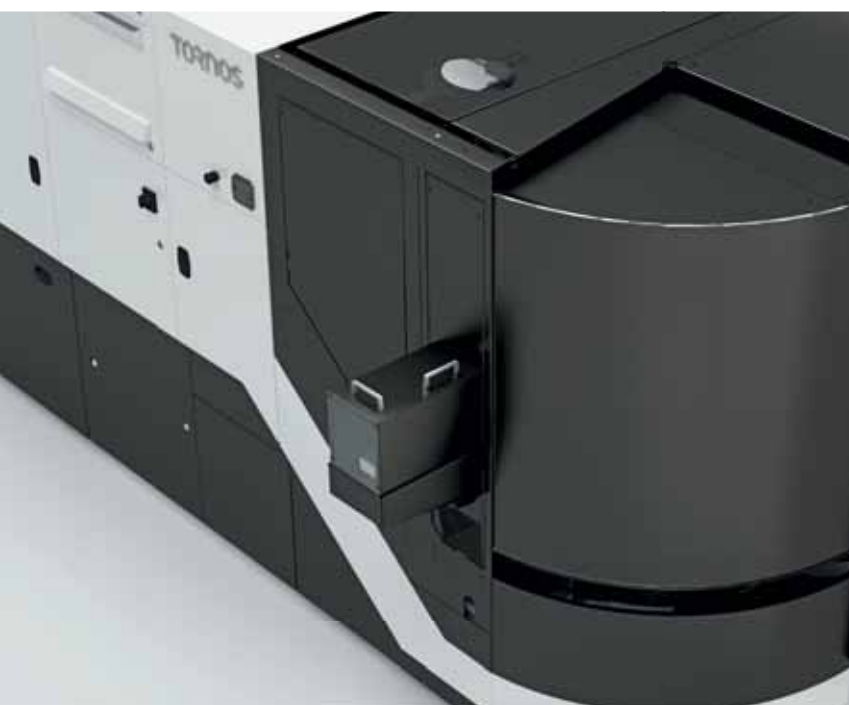
Very close attention has been paid to chip management when opening the access hatch to the machining area. So, when a part is being extracted, a high-pressure oil curtain is used to limit the presence of chips in the part extraction device. The pneumatic gripper benefits from air overpressure to prevent any unexpected blockages.

The system is used to extract parts that measure 26 to 32 mm in diameter and 120 mm in length, which significantly expands the machine's production capacity. The motor is numerically controlled, which offers great flexibility for programming, or even adjusting the grip and use. This control integrated into the CNC enables the extraction cycle times to be optimised by halting the linear arm closest to the machining area; this means that the part can be extracted in under 5 seconds. All the data is displayed on the machine interface: trajectory, value and operating status. This makes it outstandingly user-friendly for the operator.

During the design phase, our team of specialists took into account the integration of this automatic system in the standard machine. They did so without making

major changes, which means that this application can be adapted to an existing machine and can also be configured to your requirements.





Automation

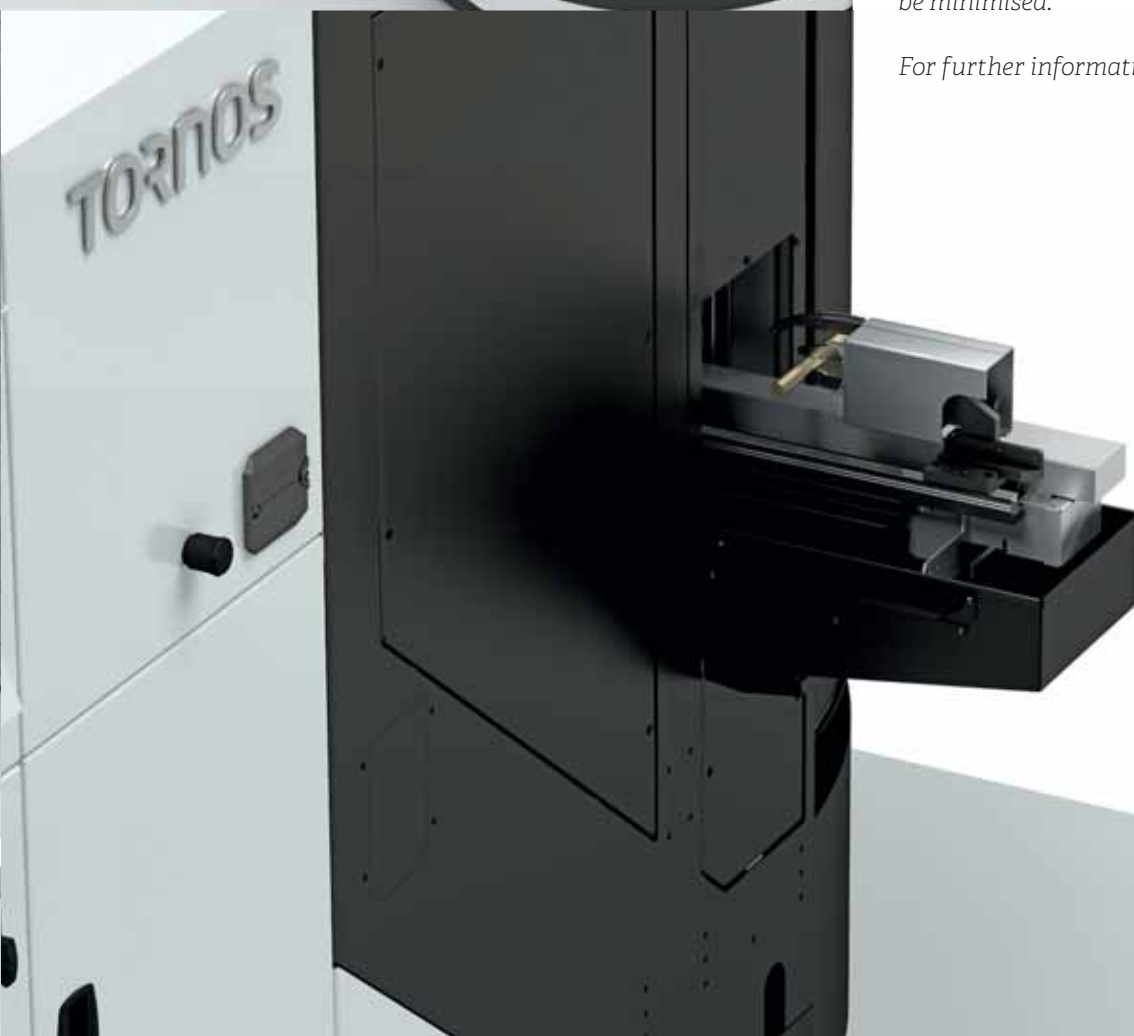
Automation is at the heart of current productivity requirements and efficiency is increased with the scrap rate reduced. Once a part has been extracted from the machine by the motorised arm, thanks to its precision positioning, it can be set down via a robotised cell which can, as required, complete and finalise the process.

The cell is equipped with a 6-axis robot that is used to perform several tasks, such as palletisation or performing systematic SPC checks. The cell increases the machine's autonomy and offers a fine-tuned solution to any requirement. It is also possible to expand this peripheral solution with cleaning or vision modules to further boost machine productivity and autonomy.

The designers also took environmental considerations into account: the electrical consumption of the assembly is constantly controlled, which enables the environmental impact of the machine to be minimised.

For further information, get in touch now!

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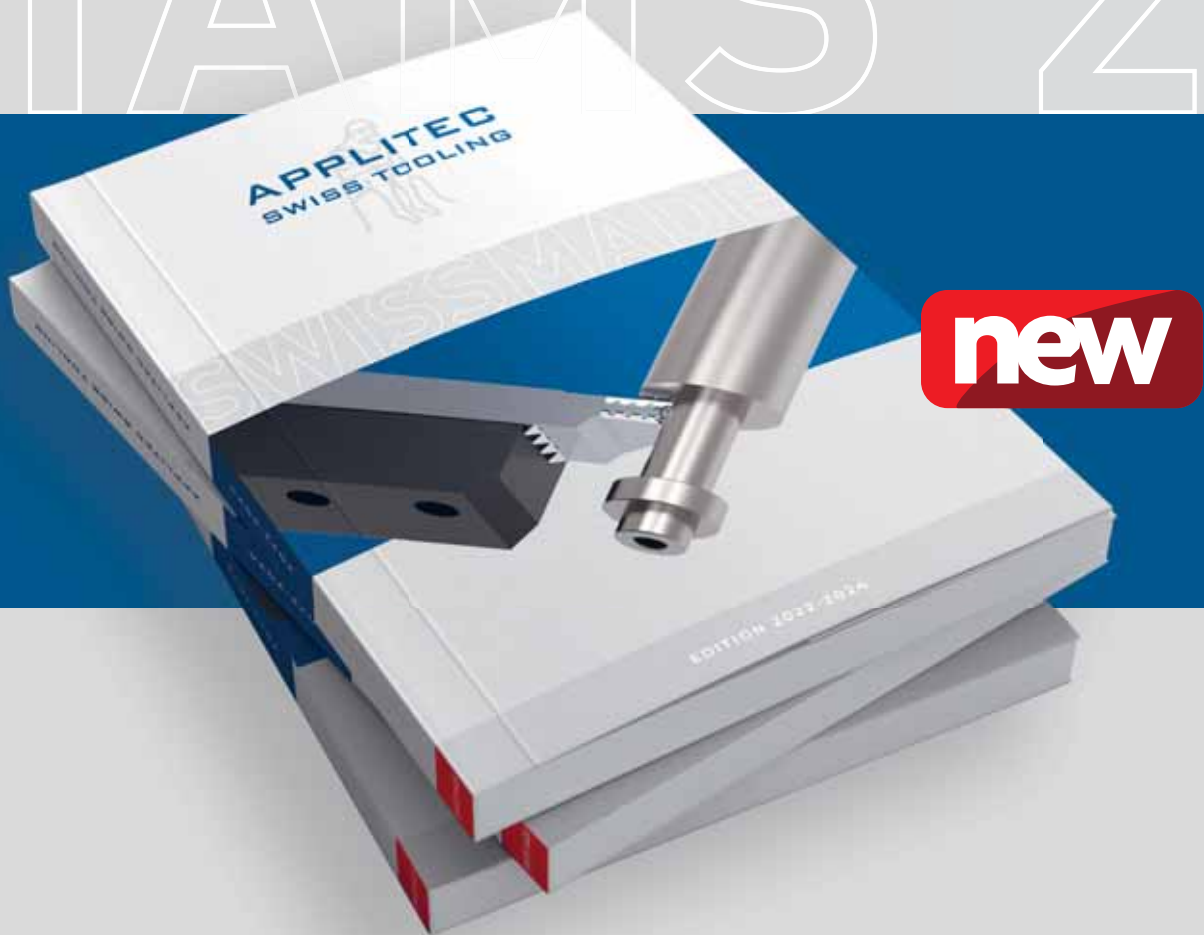
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