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Precision and versatility: the SwissNano revolution in micromachining

8

Les Fils d'Henri Frei: a century of excellence and passion for watchmaking

18

Bien-Air Dental: over 60 years of innovation and quality in dental equipment

28

Swiss Academy: bringing the 'Boom!' to technical education

46



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12

The offset drives on the combs allow for the most complex tool configurations. The Swiss XT is compatible with the tooling of Swiss GT and Swiss DT machines.

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SUMMARY

- 4 *Editorial—True to our brand promise, 'We keep you turning' with meaningful engagement*
- 8 *Precision and versatility: the SwissNano revolution in micromachining*
- 12 *Introducing the Swiss XT: ushering in a new medical manufacturing era*
- 18 *Les Fils d'Henri Frei: a century of excellence and passion for watchmaking*
- 25 *Unlocking the promise of industry 4.0 with Tornos machines*
- 28 *Bien-Air Dental: over 60 years of innovation and quality in dental equipment*
- 36 *Tornos and Bumotec: joining forces to revolutionize MedTech and Dental industries*
- 42 *MultiSwiss 6x16: even greater autonomy with the integration of 2-meter-long bars*
- 46 *Swiss Academy: bringing the 'Boom!' to technical education*



“At Tornos, we aim to go a step further by offering you meaningful engagement and interaction.”

Rolph Lucassen Head of Marketing & Communications – Tornos Group

True to our brand promise, 'We keep you turning' with meaningful engagement

Rolph Lucassen Head of Marketing & Communications – Tornos Group

There's no denying it: We live in a complicated and noisy world, with an enormous range of communication channels—e-mails, text messages, phone calls, video chats, and social media—all competing for our time and attention. In fact, recent research shows that the average person receives more than 80 e-mails per day, including spam, and sends and receives three text messages per hour for a total of 72 messages per day. According to Forbes, 90% of social media users follow at least one brand and 77% of small businesses use social media to reach customers.

These statistics mean that we at Tornos are competing for your attention, so we must clearly communicate what we want you—the market, our valued customers and potential customers—to know about us.

We want to connect with you

We want to connect with you and continue building relationships and engagement. The internet is littered with definitions of customer engagement, and they all come down to this: Customer engagement is about the interactions between a brand and its customers. At Tornos, we aim to go a step further by offering you meaningful engagement and interaction.

What do we mean by meaningful engagement? We mean engagement—across various communication platforms and through face-to-face interaction—

where you are a key contributor to conversation. That's why we focus on two-way interactions, inviting your active participation. We want to hear your concerns. We want to solve your problems—just as we have solved manufacturers' problems for more than 140 years.

At Tornos, we understand that your engagement begins with your first interaction with us and extends far beyond the point of purchase. Our mutual, ongoing interactions are a clear sign that you are engaged. Customers consuming our content on social media, websites, blogs, and e-mail marketing are all engaging with us—and we're grateful for these relationships. They inform not only our marketing initiatives but our technology roadmap and product pipeline, because we know that our success is inextricably tied to your success.

The moments in between

Brands are so often concerned with acquisition, clicks and conversions that it can become easy to forget the importance of those moments in between. Engaging you—our hard-won customers—between and beyond purchases strengthens our connection to you and keeps us close to you.

Beyond simply driving you down the marketing funnel, customer engagement is about connecting beyond the key touchpoints in the customer journey.

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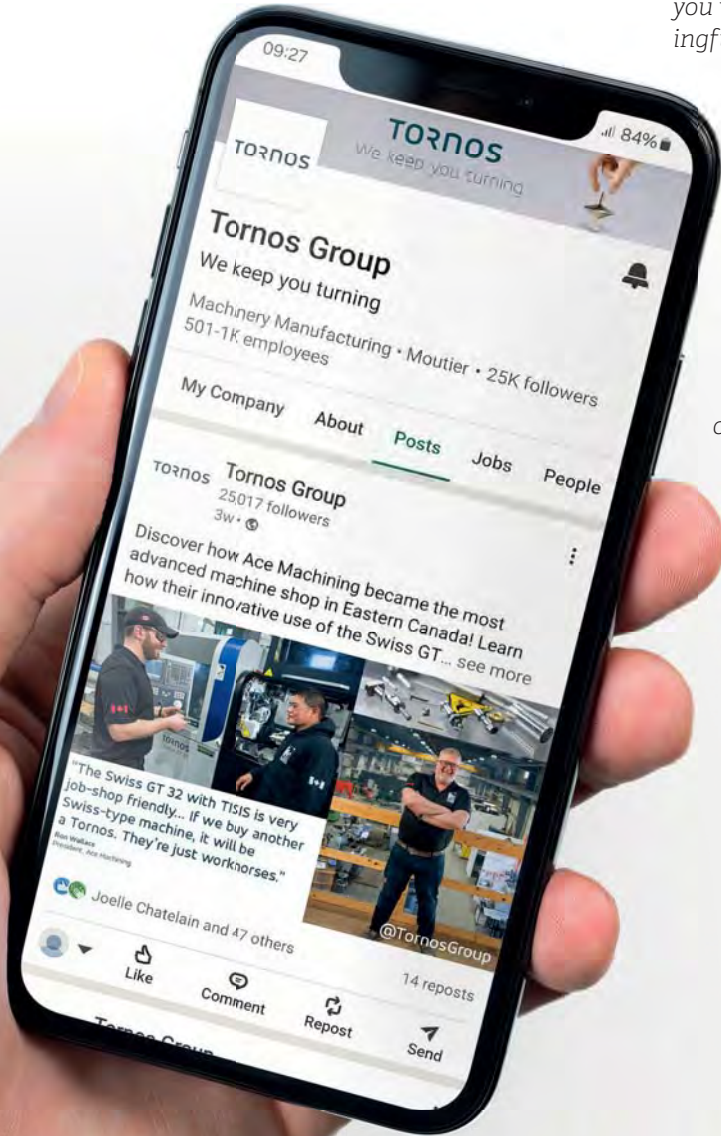
“We want to hear your concerns. We want to solve your problems—just as we have solved manufacturers’ problems for more than 140 years.”

Successful and meaningful customer engagement keeps Tornos at the top of your mind when it comes to your decision-making.

You are part of our story

Personal interaction with Tornos takes many forms, including interaction with our salespeople, service technicians, application engineers, and partners. It includes face-to-face engagement opportunities like the upcoming International Manufacturing Technology Show (IMTS) 2024 in Chicago, United States, and AMB 2024 in Stuttgart, Germany, as well as our social media channels, YouTube presence, website, webinars, and our decomagazine. And, as you will read in this edition of decomagazine, meaningful engagement includes Tornos’ partnership with technical education powerhouse TITANS of CNC and the September 2024 launch of our new Swiss Academy.

Across all our communication channels—and with you—we are continuing our founder father Nicolas Junker’s story that began in 1891 here in Moutier, Switzerland the birthplace of Swiss-type machining technology and where Tornos invented the Swiss-type machine. By engaging with us, you become part of that story and help us meet your needs and honor our brand promise: We keep you turning.



Stay connected with Tornos!



SwissNano: compact design, maximizing productivity with just 1.2 m² for SwissNano 4 and 1.4 m² for SwissNano 7.

PRECISION AND VERSATILITY:

the SwissNano revolution

in micromachining

Tornos' SwissNano series stands at the forefront of precision machining, offering unparalleled capabilities for producing small, intricate parts with extreme accuracy. Available with working diameters of 4, 7, and 10 mm, the SwissNano is designed to meet the highest standards of quality and efficiency in watchmaking, medical, dental, electronics sectors and more.

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Unmatched precision

The SwissNano range excels in delivering high-precision results for the most demanding applications. Its symmetrical cast-iron structure ensures exceptional rigidity, providing superior finishes and extended tool life. This precision makes the SwissNano the ideal solution for manufacturing the majority of turned parts in a watch movement, as well as medical and dental components.

Versatile machining capabilities

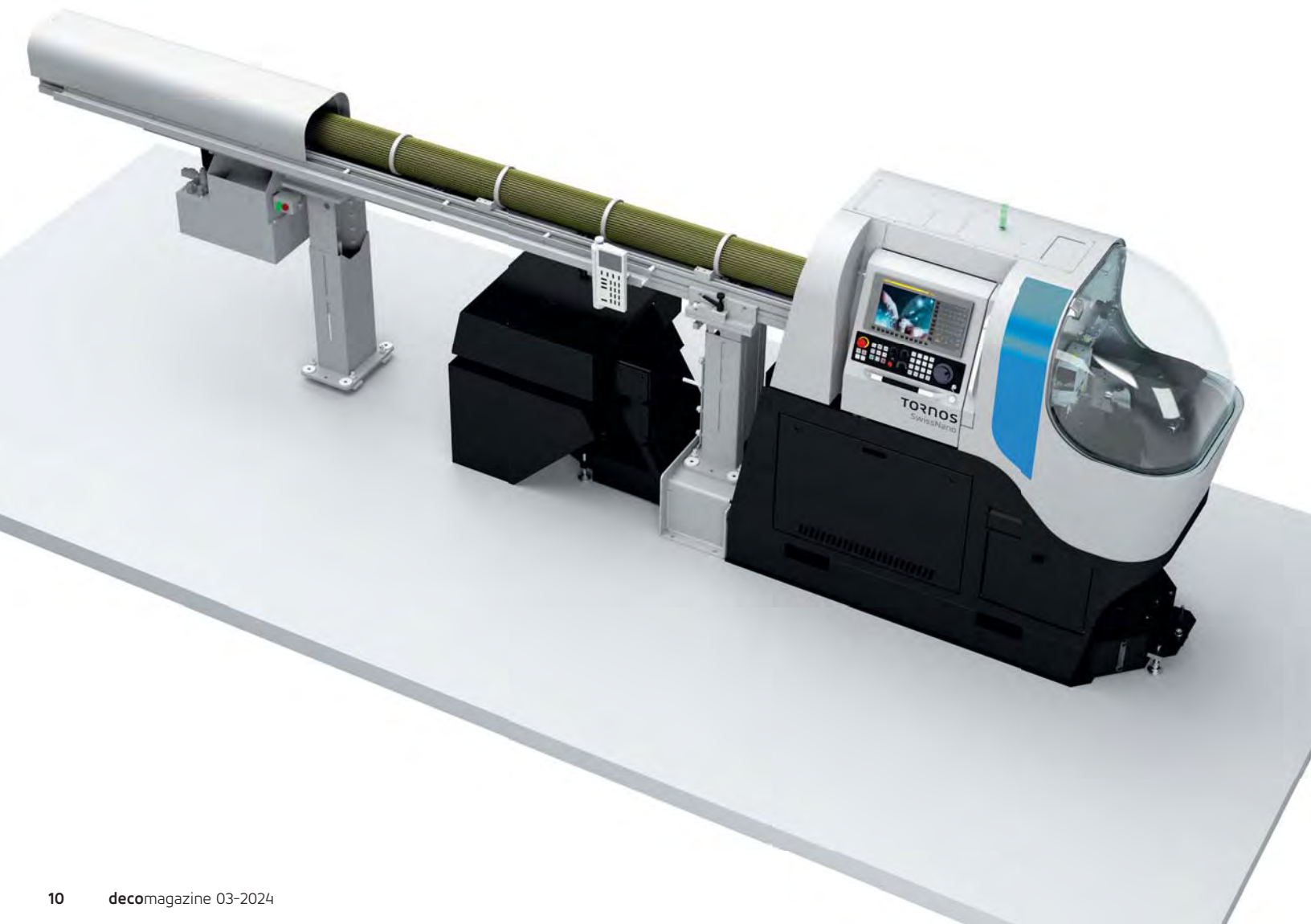
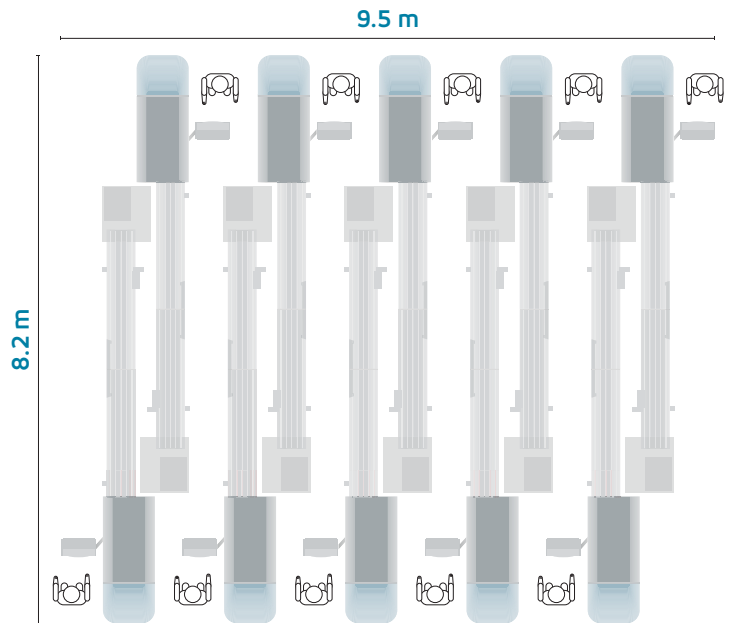
Experience unparalleled productivity with the SwissNano's state-of-the-art kinematics. Featuring six linear axes and two independent tool systems, the machine enables a variety of operations including turning, drilling, cutting, deburring, and finishing. The counter spindle—mounted on three linear axes—simplifies tool centering and adjustment, making it easier to set up and perform complex tasks. The machine can switch effortlessly between using a guide bush and a collet, making it easy to complete conversions in minutes without extensive setup changes.

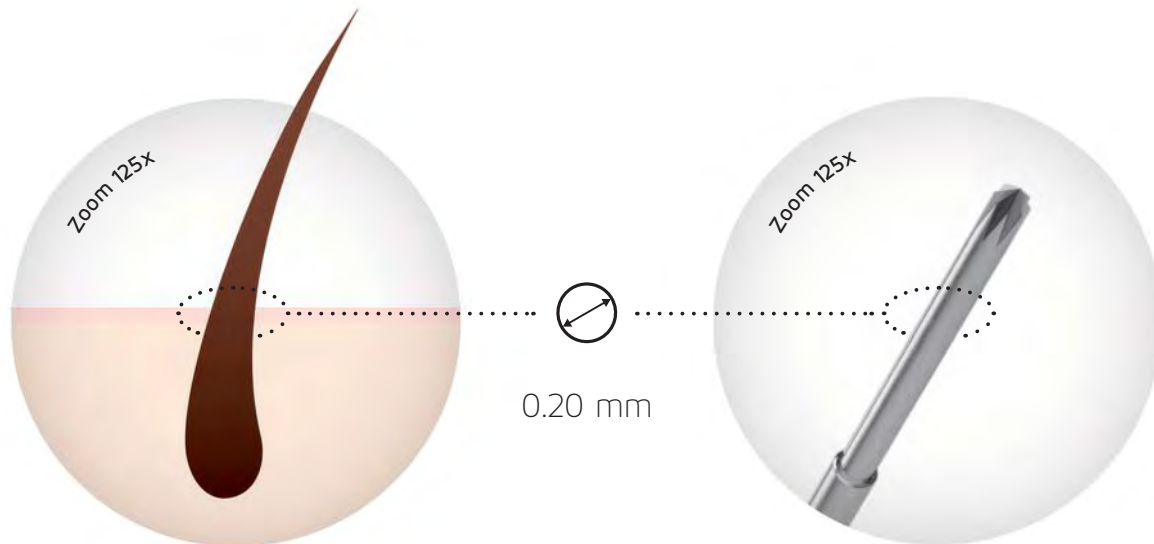
Ergonomically perfect

The SwissNano is designed with the operator in mind, offering 180-degree access to the machining area. This unique design allows operators to face the guide bush directly, enhancing comfort and operational efficiency. The machine supports quick and straightforward changeovers, with no time-consuming assembly required, making them extremely user friendly. Customizable configurations ensure the machine adapts to various workpiece requirements, further boosting productivity and ease of use.

The smallest footprint on the market

The SwissNano is designed to maximize productivity while minimizing space requirements. With a footprint of just 1.2 square meters, up to 10 machines can be installed in less than 80 square meters. The compact design is complemented by efficient use of resources.





The smallest part in the world

The SwissNano 4 is capable of loading bars as small as 0.8 mm in diameter, which is as thin as human hair. This remarkable capability makes it ideal for producing the smallest, most intricate parts in the world. The SwissNano 4's precision and adaptability to various micromachining needs demonstrate its unparalleled capability in producing components at an almost microscopic scale.

Vacuum parts-removal system

The SwissNano series features an innovative vacuum parts-removal system to safely handle micro-precision parts during discharging. This system minimizes the risk of damage by gently extracting tiny components from the machining area. Additionally, an optional carousel system sorts and tracks parts efficiently.



Optimal chip management

To cope with the increased diameter, the SwissNano is designed to manage additional chip removal requirements. The machine is equipped for high pressure, allowing it to tackle the most challenging tasks despite being the smallest machine on the market. Additionally, a chip conveyor can be installed as an option, enhancing the machine's ability to efficiently handle high-volume production. This capability is further boosted by the Active Chip Breaker Plus (ACB Plus) software, which allows users to improve and guarantee their process autonomy.

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

Minimal energy consumption

Another advantage of the Swiss Nano is its energy efficiency. The power consumption of the spindles and counter spindles is optimized to significantly reduce energy use compared to direct competitors. This efficiency reduces operational costs while enhancing overall productivity.



The Swiss XT 32 demonstrates its versatility and power by producing an 18 mm long, 14 mm diameter titanium polyaxial head in just 138 seconds.

INTRODUCING THE SWISS XT: *ushering in a* new medical manufacturing era

Where precision meets possibility

The Swiss XT by Tornos is set to revolutionize the medical manufacturing landscape. This versatile machine, engineered to transform into a true machining center, is specifically designed to meet the demanding requirements of the medical industry.

Highlighting this solution's advanced capabilities, Tornos is launching a comprehensive promotional campaign to demonstrate why the Swiss XT is an ideal choice for producing high-precision medical components.

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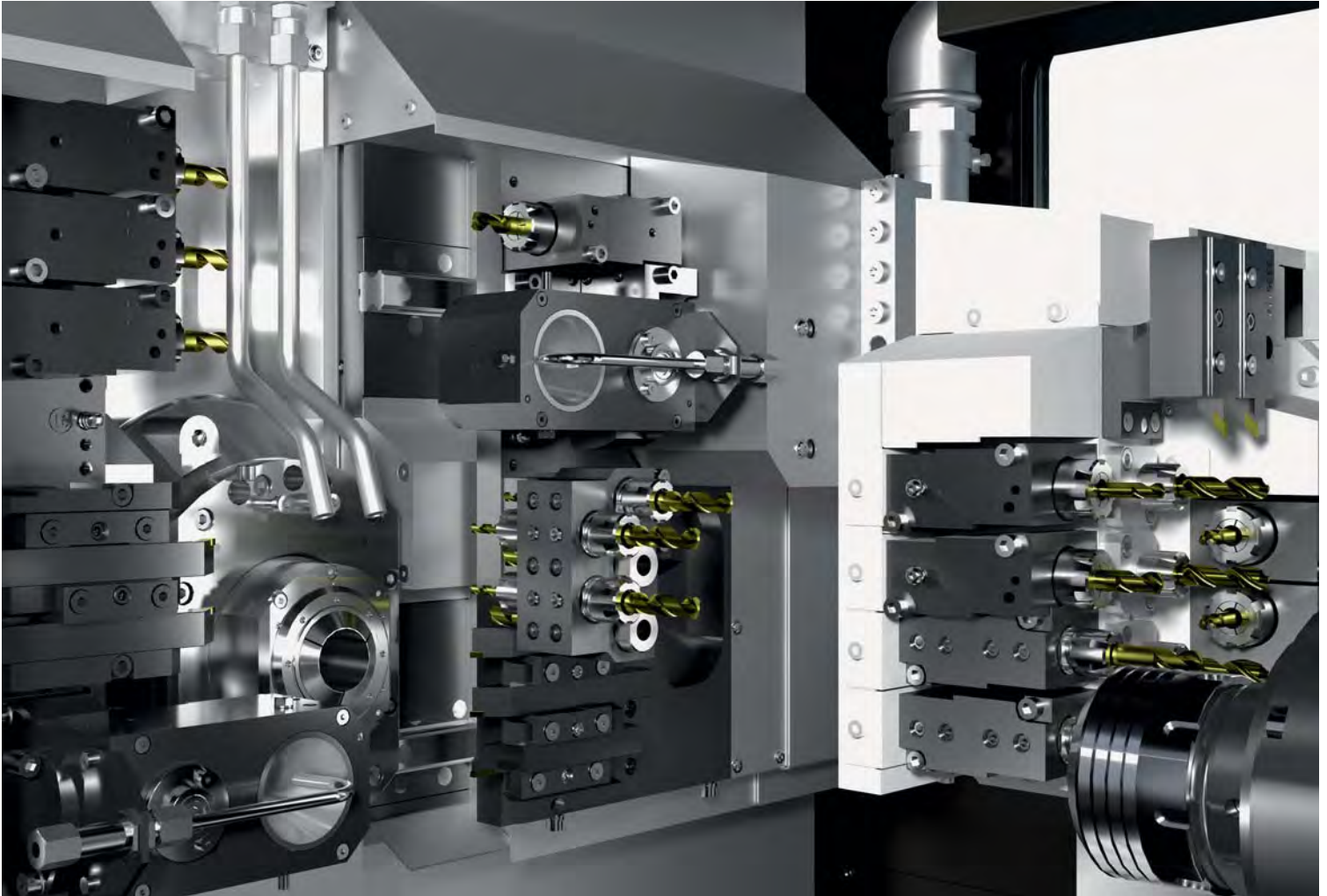
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Efficiency and precision for medical applications

At the heart of this campaign is the production of the polyaxial screw head, a critical component in spine surgeries. The Swiss XT excels in manufacturing this intricate part, offering unmatched precision and quality. The machine's ability to reduce the cycle time of polyaxial head production by 30% significantly enhances production efficiency, allowing manufacturers to meet increasing demand without compromising on quality.

Setup and performance of the Swiss XT

The Swiss XT 32 showcases its versatility and power by producing a titanium polyaxial head with a length of 18 mm and a diameter of 14 mm. This part perfectly demonstrates the machine's capabilities.



The offset drives on the combs allow for the most complex tool configurations. The Swiss XT is compatible with the tooling of Swiss GT and Swiss DT machines. Additionally, in this image, an additional drive has been installed on the first top comb.

The Swiss XT 32 can produce each polyaxial head in just 138 seconds, highlighting its efficiency in high-precision medical manufacturing.

Thermal stability and rigidity

The Swiss XT is thermally stable and highly rigid, ensuring consistent precision across long production runs. Its robust design minimizes vibration and thermal deformation, which are critical factors in maintaining the high quality of medical parts.

Easy programming with TISIS

Programming the Swiss XT is straightforward and efficient thanks to TISIS, Tornos' intuitive programming software. TISIS simplifies the creation of complex machining programs, reducing setup times and increasing productivity.

Unmatched versatility

One of the standout features of the Swiss XT is its versatility. The machine can accommodate two thread whirlers, a unique capability in this range of machines. This feature allows the Swiss XT to produce screws with two types of threads, showcasing its adaptability to various manufacturing requirements.

Eco-friendly and safe machining

In addition to its efficiency, the Swiss XT is designed with sustainability in mind. The machine's Eco Mode minimizes energy consumption, making it an environmentally friendly option for manufacturers. Furthermore, the integration of Active Chip Breaker Plus (ACB Plus) technology ensures that even the most difficult-to-machine materials are handled with ease and safety, providing a seamless manufacturing process.

The Swiss XT range: versatility and performance

The Swiss XT range comprises two main models, each tailored to specific manufacturing needs:



Swiss XT 16

- **Bar capacity:** optimized for bars up to 16 mm in diameter.
- **Spindle speed:** maximum rotation speed of 12,000 rpm, ensuring rapid and precise machining.
- **Extended capability:** option to accommodate bars up to 25.4 mm with a reduced spindle speed of 10,000 rpm.
- **Configuration options:** available in eight-linear-axis and nine-linear-axis configurations, ideal for standard and specialized operations.



Swiss XT 32

- **Bar capacity:** built to handle bars up to 32 mm in diameter.
- **Guide-bush-free operation:** can operate on bars up to 38 mm without a guide bush, offering greater material flexibility.
- **Configuration Options:** Available in eight-linear-axis and nine-linear-axis configurations, suitable for complex and robust machining tasks.

Join us at AMB and IMTS

To showcase the Swiss XT's capabilities, Tornos invites you to visit its booth at two major upcoming events:

AMB (International Exhibition for Metalworking)

- **Date:** September 10–14, 2024
- **Location:** Messe Stuttgart, Stuttgart, Germany
- **Booth:** Hall 4 – Booth 4A11



IMTS (International Manufacturing Technology Show)

- **Date:** September 10–14, 2024
- **Location:** McCormick Place, Chicago, United States
- **Booth:** South Building Level 3 – Booth 338578



These events offer a unique opportunity to see the Swiss XT in action and meet with Tornos experts to discuss how this machine can transform your manufacturing processes.

Both models

- **Double gang configuration:** allows for customized setups to meet specific part needs, enhancing flexibility and efficiency in production.
- **Z2 axis for deburring and support:** ensures smooth and precise finishes, providing stability during complex operations.
- **Simultaneous turning and milling:** reduces production time and increases overall efficiency and output quality.
- **High-powered spindles:** equipped with ceramic bearings for long-lasting durability and minimal friction, delivering an impressive 10.5 kW of power.

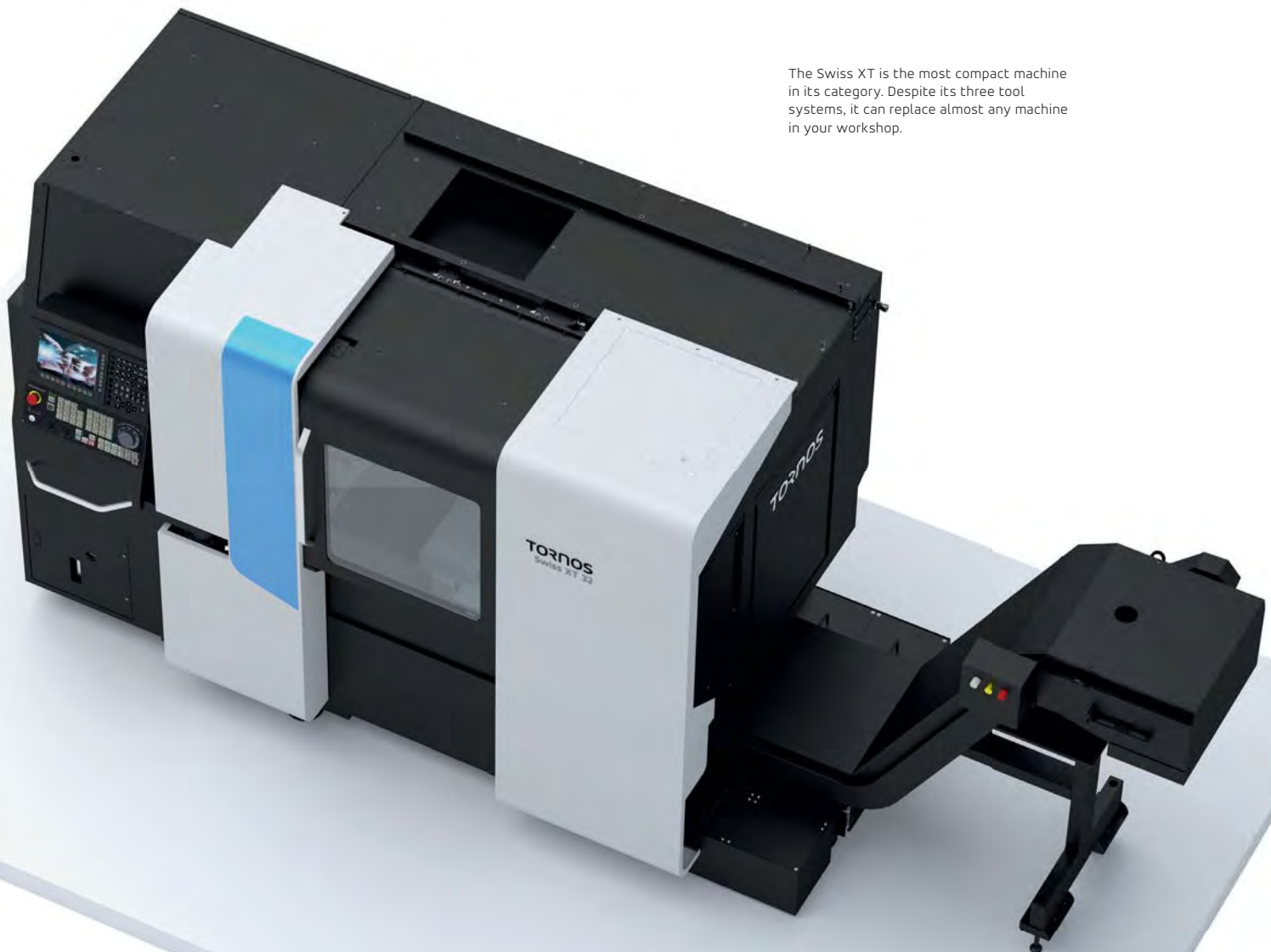
- **Quick guide-bush conversion:** seamlessly transition between guide bush and guide-bush-free operations in as little as 15 minutes, maximizing flexibility.

Why Choose the Swiss XT?

The Swiss XT stands out in the market for several reasons:

- **Versatility and customization:** With options for eight or nine linear axes, the machine can be configured to meet a wide range of manufacturing needs.

The Swiss XT is the most compact machine in its category. Despite its three tool systems, it can replace almost any machine in your workshop.





At AMB and IMTS, visitors will be able to admire a polyaxial locking head on the Swiss XT, a product with a very short cycle time.

- **Advanced tooling systems:** The double gang configuration and Z2 axis for deburring and support ensure smooth and precise finishes.
- **Energy efficiency:** Eco Mode significantly reduces energy use, making the Swiss XT an eco-conscious choice.
- **Ease of use:** ACB Plus technology simplifies the machining of challenging materials, ensuring both safety and efficiency.

Discover the Swiss XT difference

Tornos' Swiss XT is more than just a machine; it's a comprehensive solution for medical device manufacturers seeking precision, efficiency, and sustainability. Visit www.tornos.com to learn more about the Swiss XT and how it can benefit your production line.

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Join us in embracing the future of medical manufacturing with the Swiss XT: where precision meets possibility.

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In the center, Michel Frei (Managing director), flanked by his son Joyce on the left and Anil Oektem (operator) on the right, personify the expertise and passion that drive Les Fils d'Henri Frei.

LES FILS D'HENRI FREI:

a century of excellence and

passion for watchmaking

Since its foundation in 1924 by Henri Frei, Les Fils d'Henri Frei—located in Court, Switzerland, just 4 km from Tornos headquarters in Moutier—has continued to develop and innovate to become a major player in the watchmaking industry. Having recently celebrated its 100th anniversary, the company bears witness to both a century of success and the transfer of passion and know-how from generation to generation. Les Fils d'Henri Frei's story highlights the devotion of its managers and the loyalty of its employees, the pillars of the company's success.



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Solid roots and constant evolution

Les Fils d'Henri Frei is a family business founded by Henri Frei in 1924. Initially, he worked out of a house and two garages on the outskirts of the village. His eldest son, Roland, took over the business at the age of 18 after his father's untimely death, soon joined by his brother Jean-Pierre. In 1963, the brothers built a modern building in Court, initiating a new stage in the company's expansion.

The company's development was marked by the acquisition of Tornos machines, particularly cam-type models such as the Tornos M7, MS7 and R10, which played a crucial role in industrialization and increased production capacity. In 1983, Roland's son, Michel, joined his father in the cutting department. In 1991, Jean-Pierre's son, Jacques, joined the company

to work in bar turning. In 1997, two cousins, Michel and Jacques Frei, took over the reins of the company. Over the years, the Les Fils d'Henri Frei's machinery has been modernized to meet customer needs and requirements in the field of high-precision watchmaking.

Specialization and diversification

The company specializes in bar turning and machining high value-added parts for the watchmaking industry. With the evolution of techniques and the acquisition of new machines, Les Fils d'Henri Frei has been able to adapt to the growing demands of its customers in terms of quality and precision. Today, the company also aims to diversify into sectors such as medical and aeronautics, thanks to its high-performance equipment and skilled team.

Precision at the heart of its creations

Les Fils d'Henri Frei is renowned for its high-precision timepieces. The company uses SwissNano and EvoDECO 10 machines to produce limited series of



complex parts of exceptional quality. The kinematics of the SwissNano are ideal for generation hobbing, thanks in particular to the tool station under the counter spindle. This configuration enables deburring to be carried out simultaneously with the hobbing operation. As an option on the SwissNano 7, it is possible to have two hobbing units per generation, one in main operation and the other in counter-operation, making it possible to produce strategic parts such as the sliding pinion.



“Thanks to the SwissNano machines, we have been able to achieve significant time savings and improve the quality of our parts thanks to hobbing operations carried out without rework.”

Michel Frei
Managing Director

Highly thermostable, the SwissNano range excels in the production of high value-added parts, which is a major asset for Les Fils d'Henri Frei. Before acquiring the SwissNano, the company produced these parts on Tornos cam-type machines and had to rework them on cutting machines. With the SwissNano, this is done in a single operation, which saves a significant amount of time and ensures impeccable quality. The company manufactures time-setting parts such as rods and pinions, as well as watchmaking parts such as crowns, gears and wheels, thus meeting its customers' demands for precision and quality. “Thanks to the SwissNano machines, we have been able to achieve significant time savings and improve the quality of our parts thanks to hobbing operations carried out without rework.” said Michel Frei, Managing Director.

A dedicated and competent team

The company's real strength lies in its dedicated and competent staff. The employees, often trained on-site, are the beating heart of Les Fils d'Henri Frei.



The small size of the 25-strong team fosters a family atmosphere and a high level of responsiveness. The loyalty of Les Fils d'Henri Frei's employees, some of whom have been with the company for over 20 years, is testament to the positive working environment and the value placed on individual skills.

Toward a promising and diversified future

Les Fils d'Henri Frei embodies a remarkable history, marked by an unwavering passion for watchmaking and visionary management. On the eve of its centennial, the company is confidently preparing for new challenges under the leadership of the new generation. The combination of state-of-the-art machinery and a dedicated team ensures a promising future. Les Fils d'Henri Frei remains a shining example of tradition, innovation and passion, ready to write the next chapters of its century-long history, with

Joyce Frei, the son of the current managing director, already involved in the company and ready to ensure its continuity. The current managing director also expressed his ambition to diversify the company's activities into the medical and aerospace sectors, using the company's skills and high-performance equipment to conquer new markets.

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our video report



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AMB
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Unlocking the promise *of Industry 4.0 with Tornos machines*

Industry 4.0 is a widely promoted concept in the machine tool industry but what does it actually mean? Industry 4.0 as a concept aims to enhance productivity, flexibility, and efficiency in manufacturing, which translates to producing more goods with the same resources (workforce, machinery, raw materials, etc.) while being able to more quickly react to the challenge of changing customer demands.

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For example, a producer of electronic parts recently shared the following supplier flexibility expectations:

- **In the short term** (two weeks):
±20 % of the forecast demand
- **In the midterm** (1 month):
±30 % of the forecast demand
- **In the long term** (6 months):
± 50 % of the forecast demand

It might seem this could be achieved with a storage unit, producing parts to store, and shipping as needed. However, the challenge is that this manufacturer's average batch size is around 2,500 parts, with many specific developments. Building up storage would not only be expensive, but it's also often not feasible.

To meet these terms of flexibility while remaining profitable, parts producers need well-informed production planning. The management of concurrent and successive work orders must be perfectly orchestrated. If one machine breaks down, it is essential to have information on the current status of the production order and where there is available capacity to fulfill the order without impacting other orders. Furthermore, it is paramount to have reliable and highly automated machines that can run 24/7 with as little human intervention as possible. Fortunately, Swiss-type lathes provide a high level of automation out of the box with a bar loader. To run reliable overnight production while maintaining quality requirements, a closed-loop control process can help. Produced parts are automatically measure. The measured values are entered into a statistical

processing unit, which detects systematic changes in values and automatically adjusts the machine accordingly.

With Tornos machines, the Connectivity Pack is the gateway that allows manufacturers to achieve flexible and profitable production. It provides the link between all the user's production software systems and the machine. Tornos offer two popular data transmission protocols: Open Platform Communications Unified Architecture (OPC-UA) and FANUC FOCAS. Most software vendors of manufacturing and enterprise resource planning (ERP) software support one or both of these. This makes it possible to access all the information required to most efficiently manage production. Data that can be read on Tornos machines includes the current

With Tornos machines, the Connectivity Pack is the gateway that allows manufacturers to achieve flexible and profitable production.





machine status, how many parts of the current production order have been produced, how many remain to be produced, and the estimated production time to job completion.

But Tornos doesn't simply output machine data: the external tool offset correction option is a very useful functionality that accepts the output of closed-loop control software and corrects the machine based on this output. The results are reduced scrap rates, non-stop production with no manual interventions, and fewer human resources needed to run the machine.

For more information or to schedule no-obligation discussion about how to increase the efficiency of Tornos machines, get in touch today: communications@tornos.com.

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





Bien-Air robotic cell: integrated with MultiSwiss for anomaly detection and closed-loop self-correction.

BIEN-AIR DENTAL: over 60 years of innovation and quality *in dental equipment*

Since its foundation, Bien-Air Dental—a division of Bien-Air Medical Technologies—has grown to become a major player in the dental equipment industry. Located in Biel/Bienne, Switzerland, the company has a rich history of innovation and quality spanning over six decades. As a family-owned business, now in its third generation, Bien-Air remains committed to manufacturing excellence and technological advancement.



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Solid roots and steady growth

Founded as a small family business, Bien-Air has always focused on maintaining control over its production processes. The company manufactures a wide range of dental products, including turbines and contra-angles, all produced in-house to ensure the highest standards of quality. This dedication to in-house production reflects the founders' vision of preserving their manufacturing expertise within their own facilities.

Over the years, Bien-Air has expanded its operations, employing approximately 250 people locally and 400 worldwide. The company also has a sister firm, Bien-Air Surgery, specializing in surgical devices for facial reconstruction. This diversification underscores Bien-Air's commitment to applying its technological prowess across various medical fields.



Advanced manufacturing techniques

Bien-Air's success is rooted in its ability to adapt and integrate advanced manufacturing technologies. Recently, the company has significantly enhanced its production capabilities through a strategic collaboration with Tornos, a leader in multispindle technology. This partnership has been pivotal in introducing the MultiSwiss machine, which has revolutionized Bien-Air's manufacturing process.

The MultiSwiss machine from Tornos offers exceptional flexibility, enabling Bien-Air to produce small and medium series of complex dental components efficiently. This machine is equipped with numerous tools and axes, allowing for rapid tool changes and minimal setup times, which are crucial for handling the diverse and intricate parts needed in dental equipment.

Bien-Air Production Manager Michaël Paschoud highlighted that their approach with the MultiSwiss 8x26 was somewhat unconventional compared to typical uses of such machines. While most Tornos customers focus on long production runs, Bien-Air needed a flexible solution to handle shorter, varied production cycles.



This required the MultiSwiss 8x26 to manage complex parts with numerous specifications and tight tolerances, a challenge that the machine met successfully.

"Thanks to Tornos' advanced multispindle machines, we've achieved significant time savings and improved the quality of our products," Paschoud said.

The collaboration between Bien-Air and Tornos involved extensive testing and customization. Initial trials were conducted to ensure the MultiSwiss could meet the high precision standards required. The success of these tests led to the full integration of the MultiSwiss into Bien-Air's production line, significantly improving efficiency and precision.

Innovation beyond the machine

The investment in the MultiSwiss 8x26 goes beyond just the machine itself. Bien-Air now owns the most complex MultiSwiss ever sold by Tornos, capable of accommodating up to 42 tools. This remarkable capacity is unique in the industry.

"Thanks to Tornos' advanced multispindle machines, we've achieved significant time savings and improved the quality of our products."

Michaël Paschoud

Bien-Air Production Manager





From left to right: Maurizio DiNuzzo (Setter-Operator), Gwenaël Voumard (Quality Engineer), Michaël Paschoud (Production Manager), and Martoccia Rocco (Head of Product Management MultiSpindle at Tornos) in front of the MultiSwiss 8x26, a symbol of the successful collaboration between Tornos and Bien Air Dental.

The complexity of the parts manufactured by Bien-Air, with numerous tolerances, necessitated maximum automation of the production process. The speed and complexity of the MultiSwiss make it nearly impossible for humans to monitor the production manually, requiring advanced computer support. To achieve this, the MultiSwiss is equipped with an Artis tool breakage monitoring system, capable of detecting anomalies by monitoring the torque of each motor. However, for very small tools, this system alone was insufficient.



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Therefore, Bien-Air collaborated with Tornos' specific development department to design a robotic cell. This cell allows for the palletizing of parts and facilitates statistical control. It is also equipped with an ultraprecise balance that detects anomalies in the process, even with small tools. This balance, coupled with the MultiSwiss Artis module, feeds data into the company's Ellistat software. Based on these results, the machine can self-correct, a process known as "closed-loop manufacturing." This integrated system ensures both precision and flexibility in production, continuously improving efficiency and quality.

Innovation and quality control

Innovation at Bien-Air extends beyond manufacturing processes. The company has heavily invested in metrology and quality control to ensure the precision of each component. Advanced 3D measurement systems and a robust statistical control framework have been integrated into their processes, ensuring each product meets the exacting standards expected in the dental industry.

Looking to the future

Bien-Air's dedication to quality, innovation, and in-house manufacturing excellence has solidified its position as a leader in the dental equipment industry. With a strong heritage and a forward-looking approach, Bien-Air continues to set benchmarks in dental technology, ensuring dental professionals worldwide have access to the best handpieces for their practice.

dental.bienair.com



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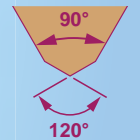
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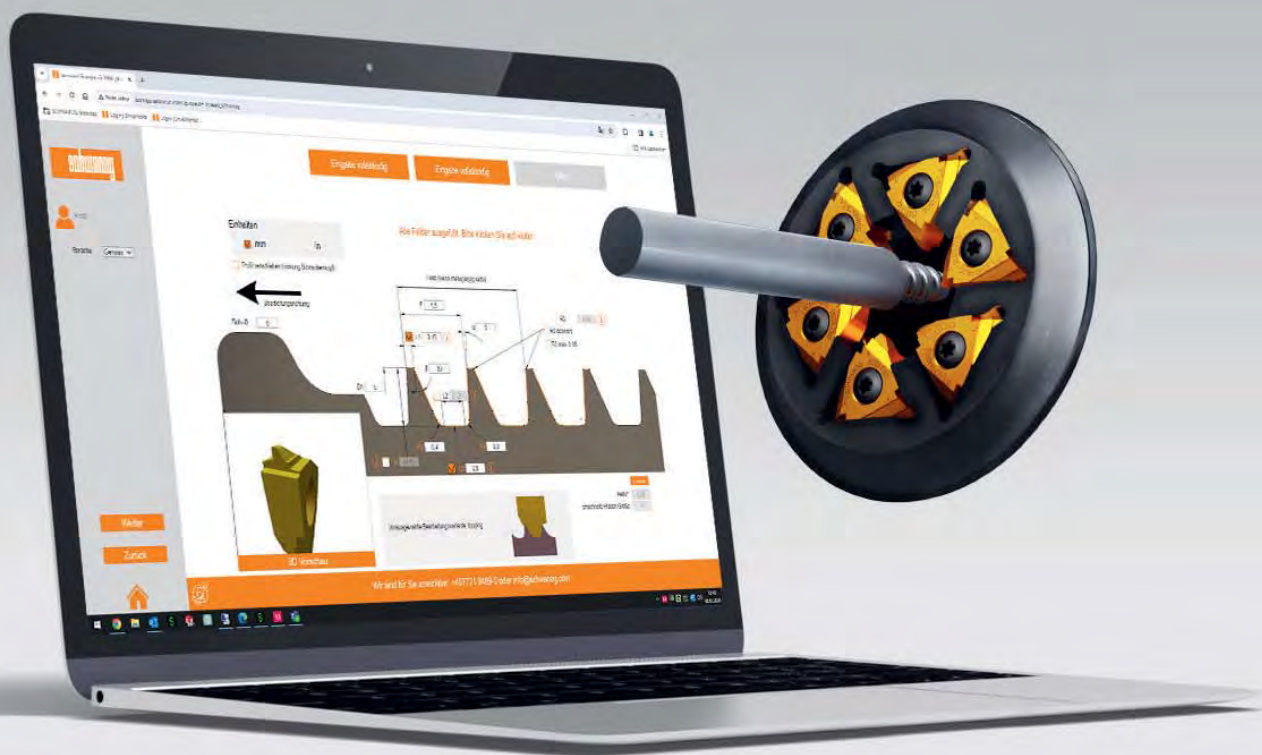
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It is symmetric, it reduces the lateral force.



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Tornos and Bumotec: strategic partnership to revolutionize precision machining in MedTech and dental industries.

TORNOS AND BUMOTEC:

joining forces

*to revolutionize MedTech and
Dental industries*

In the ever-evolving MedTech and Dental industries, precision and reliability are paramount. Tornos and Bumotec, two industry leaders, have now combined their expertise to offer comprehensive coverage of all application needs, delivering cutting-edge technology and exceptional customer support. The bundling of Tornos' MedTech and Dental know-how with Bumotec's advanced milling technology aims to enhance capabilities in these sectors.



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This collaboration leverages Tornos' Swiss-type and multispindle machines, along with Bumotec's high-precision machining centers, to provide a comprehensive solution for manufacturers seeking precision, efficiency, and versatility in their production processes. Together, the two companies offer unparalleled machining solutions for complex medical and dental components, ensuring exceptional quality and precision.

Tornos: precision and innovation in MedTech applications

Tornos has long been synonymous with precision engineering. The SwissNano and Swiss DT ranges are pivotal in manufacturing intricate components required in medical devices. The SwissNano 7, known for its exceptional precision, is capable of handling a

“The partnership between Tornos and Bumotec is set to transform the MedTech and dental industries.”



maximum diameter of 7 mm with spindle speeds up to 15,000 rpm, making it ideal for producing small, complex parts like dental implants and surgical instruments. Its unique kinematics enable turning, drilling, cutting/deburring, and roughing/finishing operations, offering the highest precision on the market. The machine also boasts excellent accessibility

for easy setup and can operate with a fixed or rotating guide bush or without a guide bush altogether. With horological-standard precision and a minimal footprint of 1.1 m in front of the machine with a bar feeder and a width of 0.65 m, the SwissNano combines high performance with efficient use of space, making it a favorite in the industry.



The Swiss DT range offers flexibility and efficiency, handling a wide range of materials and component sizes with maximum diameters ranging from 13 mm to 32 mm and spindle speeds up to 15,000 rpm. These machines also boast an optional, plug-and-play B axis, enabling more complex operations and allowing for the machining of intricate geometries without the need for secondary operations. This makes the Swiss DT range perfect for producing medical components such as orthopedic screws and prosthetic joints. Tornos machines ensure high repeatability and consistency, critical in the MedTech industry where quality and reliability can directly impact patient outcomes.

The MultiSwiss is another standout product range from Tornos; this line of multit spindle lathes is designed to significantly boost productivity. The MultiSwiss machines, combining the precision of Swiss-type machining with the efficiency of multit spindle technology, handle diameters from 16 mm to 32 mm, with spindle speeds up to 8,000 rpm. These machines are particularly suited for high-volume production of medical components, such as bone and maxillofacial screws, offering up to eight spindles that can work simultaneously, ensuring faster production times without compromising on precision or quality.





Bumotec: leading the way in high-precision machining for medical applications

Bumotec excels in high-precision machining of orthopedic implants, surgical instruments, and dental applications. Their 191 series, s181, and s1000C models are revolutionizing the all-in-one-setup-machining landscape.

The 191neo machining center, with spindle speeds up to 40,000 rpm and a bar diameter of up to 65 mm, is perfect for complex, multioperation parts. It is ideal for medium and small production batches, with production changeovers sometimes reduced to less than 20 minutes. This model is exceptional for producing orthopedic implants, medical instruments, and dental consumables with superior accuracy, surface finish and very stable quality, enabling MedTech professionals to provide patients with high-quality, perfectly manufactured products.



The s181 model delivers unequalled productivity for small and complex components. With a second station that includes five front live tools working simultaneously with the main spindle, productivity can increase by up to 40% compared to standard single production units. Bumotec's expertise in multitask machining and micromilling ensures precision and efficiency for the most demanding MedTech applications.



The s1000/C transfer center features eight four-axis stations and a back working station for machining the sixth surface, making it ideal for large batches from MedTech applications. It can machine complex parts from bar stock up to 42 mm in diameter, significantly increasing productivity.

Bumotec's machining centers handle bars or blanks to produce parts, including finishing operations on tough and complex raw materials such as titanium, Inconel, cobalt chrome, stainless steel, and ceramics. Their five-axis turn/mill centers operate 24/7 in automatic mode, producing parts in one setup without manpower and unloading finished components in a very well-integrated 20 pallets compact storage system.

Stronger together

The partnership between Tornos and Bumotec is set to transform the MedTech and dental industries. By combining their advanced technologies and industry expertise, they offer comprehensive solutions that meet all precision machining needs. Whether it's intricate medical devices or precise dental components, Tornos and Bumotec ensure exceptional quality, reliability, and efficiency. This collaboration marks a significant step forward, providing manufacturers with the tools needed to advance health care and improve patient outcomes.

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MultiSwiss 6x16: New 2-meter bar containers from 2025, reducing waste and optimizing machining.

MULTISWISS 6x16:

even greater autonomy

*with the integration of
2-meter-long bars*

The Tornos MultiSwiss 6x16 incorporates major new features for precision machining, including the ability to use 2-meter-long bars with its new container and a single-spindle bar feeder option as an extension. With six independent 16 mm spindles, the machine offers exceptional productivity and precision, while remaining flexible for a variety of production needs.

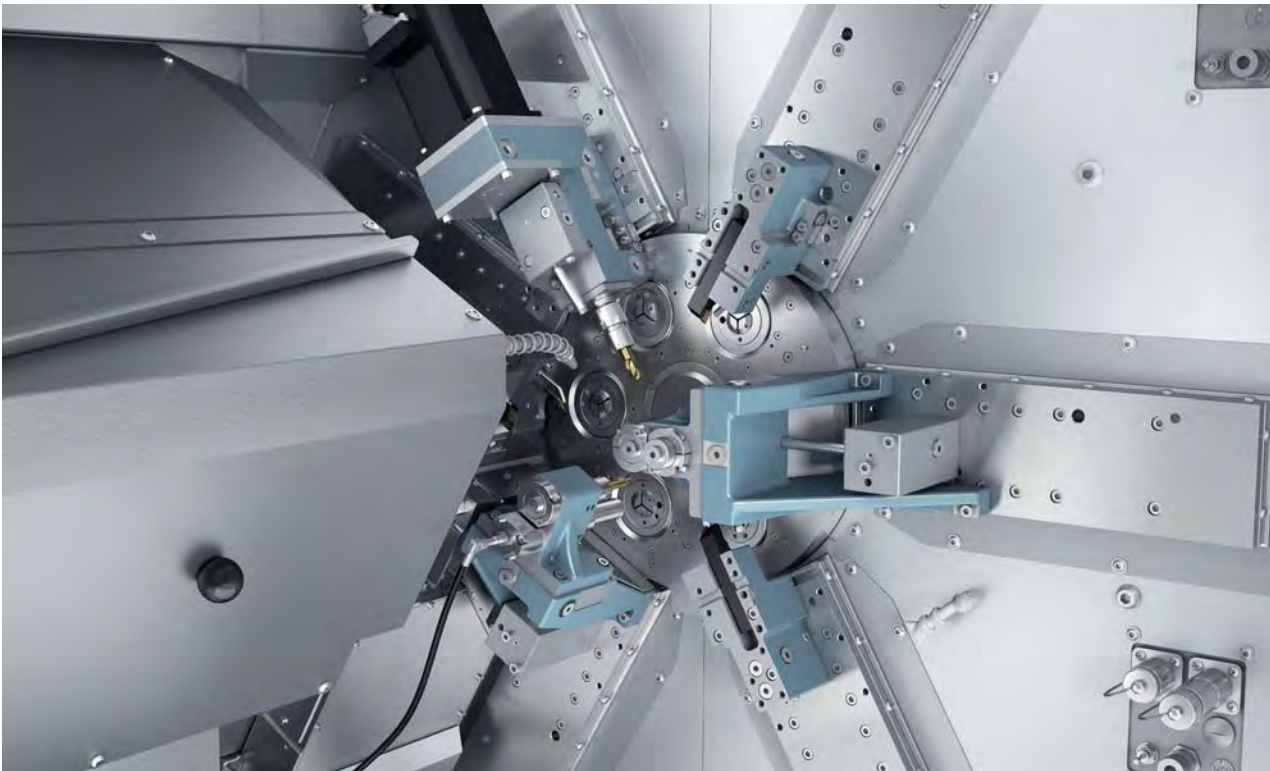
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New and improved features

From 2025, the MultiSwiss 6x16 will see the introduction of a new container enabling the machining of 2-meter-long material bars, in addition to 1.5-meter bars. At present, depending on the market, MultiSwiss customers have to cut their material bars in two or three to fit the current 1.5-meter container, which sometimes generates additional waste and setup time. With the new container, the majority of material bars can be ordered from the supplier in 2-meter lengths and used directly, simplifying the process and reducing material waste.

Maintaining the same floor space as the current 1.5-meter container is a major advantage, enabling companies to upgrade their equipment without requiring more space. Versatility is also enhanced: It will be easier to machine materials such as titanium, often produced in 2-meter bars, making the machine even more suitable for demanding industries such as the medical sector. For example, 200 meters of bar currently requires 133 1.5-meter bars



cut in half from 2-meter bars. With 2-meter bars, the customer will be able to order 100 production-ready 2-meter bars, reducing scrap by more than a third.

As an option, Tornos will offer a single-spindle bar feeder connected to the new container, capable of machining 2-meter bars and also allowing the use of 3-meter bars with this extension. To meet the specific needs of the American market, Tornos will also offer a bar feeder for 3.6-meter bars. Although this option requires more floor space, it allows 3.6-meter bars to be loaded directly into the machine, eliminating setup time, reducing material off-cuts and enabling unparalleled machining autonomy and production interruptions.

Ergonomics and flexibility

The MultiSwiss 6x16 stands out for its exceptional ergonomics. Easy access to the machine's interior enables rapid maintenance and easy adjustment of components. All peripherals are integrated, guaranteeing an orderly and efficient working environment. This machine is designed for ease of use, with an intuitive user interface that reduces the learning curve. What's more, it operates quietly and cleanly, providing a pleasant working environment. Its modern design reflects advanced technology and attention to detail. Equipped with computer numerical control (CNC) slides and motorized spindles, this machine offers impressive machining capabilities.

The Y axis adds an extra dimension to its versatility, enabling complex operations without the need for frequent readjustments.



Technological innovation

The MultiSwiss 6x16 incorporates cutting-edge innovations that enhance its performance and durability. Sliding headstocks and hydrostatic bearings ensure unrivaled precision and stability. The torque-driven turret provides smooth, precise rotation, while thermal control maintains optimum conditions for consistent, precise machining. Furthermore, this machine is equipped for Industry 4.0, enabling easy integration into smart, connected production systems, promoting automation and real-time monitoring.



Cost reduction

The MultiSwiss 6x16 is also designed to optimize costs. Its compact design reduces floor space requirements. Tool life is extended, reducing replacement costs. Fewer operators are required for its operation,

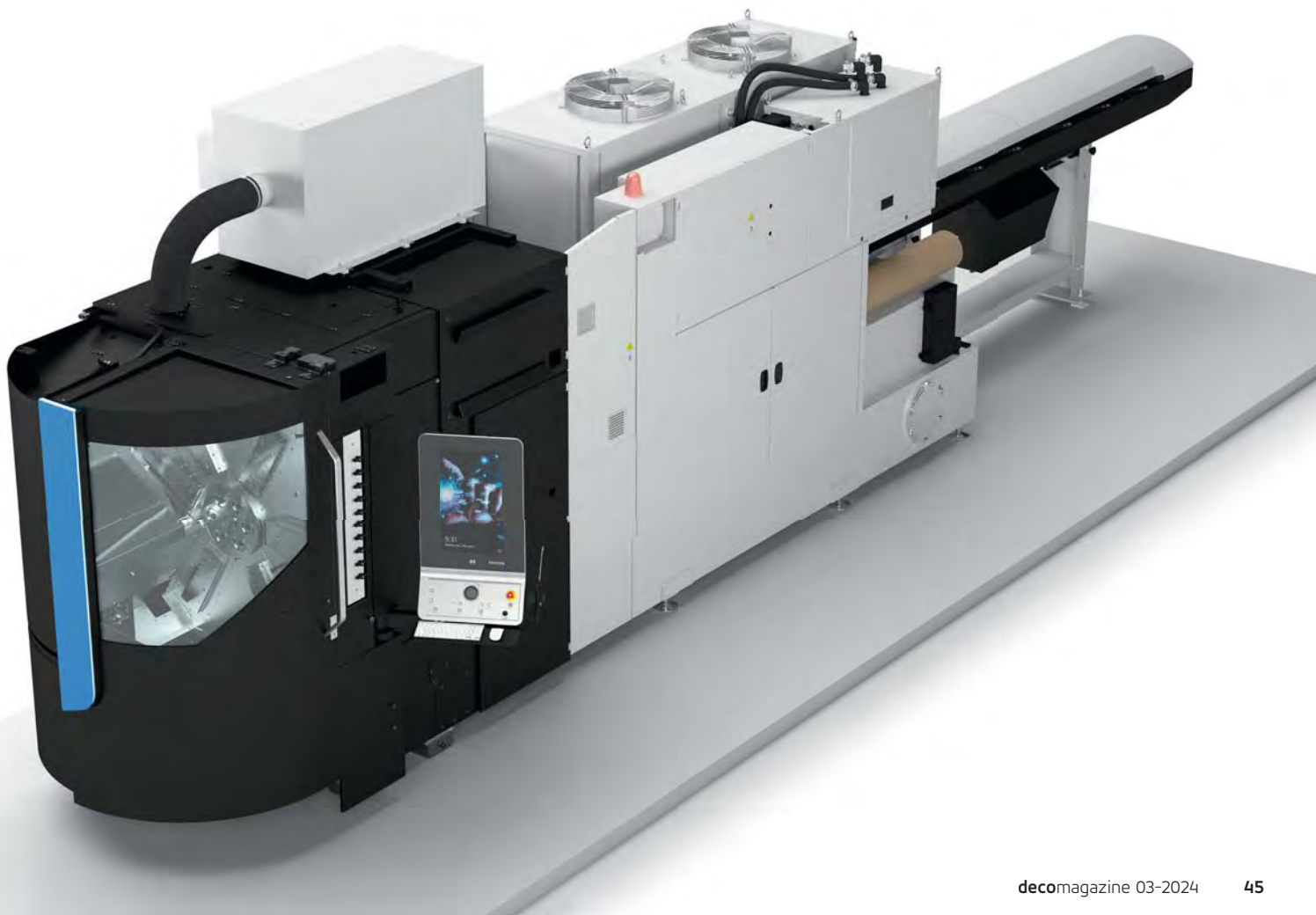
thanks to its automation and ease of use. Shorter setup times increase efficiency and profitability. Finally, it offers the best price/part ratio on the market, guaranteeing an excellent return on investment for production companies.



In short, the MultiSwiss 6x16 represents a significant advance in precision machining. It combines ergonomics, flexibility, innovation and cost reduction to meet the most demanding needs of modern manufacturers. For more information, visit the Tornos website or contact your local representative.



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With the Swiss Academy, Tornos is changing the game by creating free, credible and relevant education.

SWISS ACADEMY SET FOR SEPTEMBER LAUNCH

Bringing the ‘Boom!’ *to technical education*

A global tidal wave of growth is predicted for the Swiss-type and multispindle computer numerical control (CNC) lathe market in the next eight years and a highly skilled workforce will be needed for manufacturers to keep pace with their customers’ demand for expertly turned parts. To fill that skills gap, Tornos and TITANS of CNC are joining forces to launch the free, online Swiss Academy in Tornos’ booth at the International Manufacturing Technology Show (IMTS) in Chicago, United States.

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The Swiss Academy is evidence of Tornos’ and TITANS of CNC’s keen eye to the future and a passion for problem solving: Together, Switzerland-based automatic lathe pioneer Tornos and TITANS of CNC—the global leader in educating, connecting, and lifting up manufacturing students, educators, and professionals—are launching the world’s most advanced academy dedicated to educating a workforce to meet the anticipated global demand for CNC machinists in the coming decade.

A growing market

With an estimated 2022 global market size of US \$17 billion, the global Swiss-type and multispindle CNC automatic lathe market is expected to grow at a compound annual growth rate of more than

10.4% through 2032, according to international market research consultancy Precedence Research. A highly skilled global workforce of Swiss machining experts—programmers who are effectively manufacturing engineers, as well machine operators—will be needed for manufacturers to keep pace with the demand for Swiss-machined parts.

Those parts span a range of manufacturing segments: multitask machining of complicated geometries for medical and dental implants, test probes and connector and sensor housing units for electronics, turbocharger components made from difficult-to-machine materials and automotive steering and braking system parts, as well as high-precision watch escapement parts, bridges and decorations in the micromechanics sector.

Beating the odds—with education

Few know the transformative power of technical education as intimately as Texas-based TITANS of CNC founder and CEO Titan Gilroy, who is instantly recognizable for his “Boom!” catchphrase meaning, “mission accomplished” or “problem solved.”

Born in California, Gilroy’s heritage is clearly blue collar: His maternal grandfather was a Boeing foreman who painted nose art on World War II military combat aircraft and his paternal grandfather was a Chrysler machinist. His childhood was stormy and characterized by a broken home, violence, alcoholism, and rage. Gilroy’s mother, with his sister and him in tow, fled to Hawaii, where—despite a few years of homelessness—she kept her kids in school. Hawaii presented a difficult adjustment for Gilroy

and his sister, who were bullied for being outsiders. He became a fighter—first fending off his tormenters and later in the ring as a successful amateur boxer who won an impressive 35 out of 38 amateur bouts.

Taking a new path

But outside-the-ring aggression eventually landed Gilroy in prison, where he served three years of a 16-year sentence after seriously injuring two people in a bar fight. His path took a decisive turn when a boxing promotional company intervened to facilitate an early prison release and offer Gilroy a shot at redemption. He jumped at the second chance but ultimately made the momentous decision to lay down his boxing gloves and step away from the ring.

“I had no options and no money. I moved to the [San Francisco] Bay Area, looked in a newspaper and saw a machine shop’s help-wanted ad. They put me to work in front of a \$100,000 machine, which was just wild to me,” Gilroy said. “Something just clicked in my head: ‘I can do this!’ I poured all my aggressiveness into cutting raw material.”

What began as a \$12 an hour job soon was earning \$14 per hour and then \$25 per hour as his machining expertise mounted to the point that he was running the company. In 2005, when he was just 35, Gilroy opened his own machine shop, Titan Engineering, in Grass Valley, California. It wasn’t long before the company was earning millions. It seemed he truly was living “the American dream”—that is, until the late 2000s Great Recession hit Gilroy’s main customer and, by extension, Gilroy’s business.



“With the Swiss Academy, Tornos is changing the game by creating free, credible and relevant education that closes the skills gap and solves its customers’ manufacturing problems.”

Titan Gilroy

Founder and CEO, TITANS of CNC

The moonshot that paid off

With little to lose, Gilroy decided to fight, but he used his engineering expertise rather than his fists. He reached out to SpaceX, touting his experience machining titanium components for undersea robots and, six months later, the rocket and spacecraft manufacturer began placing its initial orders, including the complete assembly for the SpaceX Dragon capsule’s thrusters. Gilroy’s company was thriving again. A SpaceX connection led to a business relationship with Jeff Bezos’ aerospace manufacturer and launch service provider Blue Origin.

In 2010, as he was rebuilding his business, Gilroy realized in talking with his customers that they—and manufacturers in general—were facing an enormous skills gap with a lack of technical training and Baby Boomer-generation machinists retiring. He launched a TV show, Titan American Built, that ran for three years, and traveled the world to give viewers a behind-the-scenes look at manufacturing.



“It started as a TV show to bring awareness to CNC machining, the process, and teaching people how to manufacture. Virtually every product in our lives has been machined or is made from a mold that has been machined. Manufacturing technology is moving so fast but vocational technology schools don’t have the resources to keep pace—to buy the machines necessary to teach advanced machining,” he said. “I realized that we have a huge problem and it’s not just an American problem.”

‘Tornos is changing the game’

That TV show led to TITANS of CNC’s YouTube channel—with nearly 1 million subscribers to date—and ultimately to the TITANS of CNC academies. Gilroy created his own academy curricula and began



putting educational videos online in 2017. Today, TITANS of CNC has 450,000 registered students in 190 countries—all working toward CNC machining mastery at no charge. Seventy percent of those learners, Gilroy said, are from outside the United States.

“With the Swiss Academy, Tornos is changing the game by creating free, credible and relevant education that closes the skills gap and solves its customers’ manufacturing problems,” Gilroy said.

The new Swiss Academy will feature six Tornos solutions—the Swiss DT 26, Swiss GT 32, SwissNano 7, SwissDECO 36, MultiSwiss 8x26, and the new Swiss XT 32—to give students an opportunity to learn Tornos technologies top to bottom.

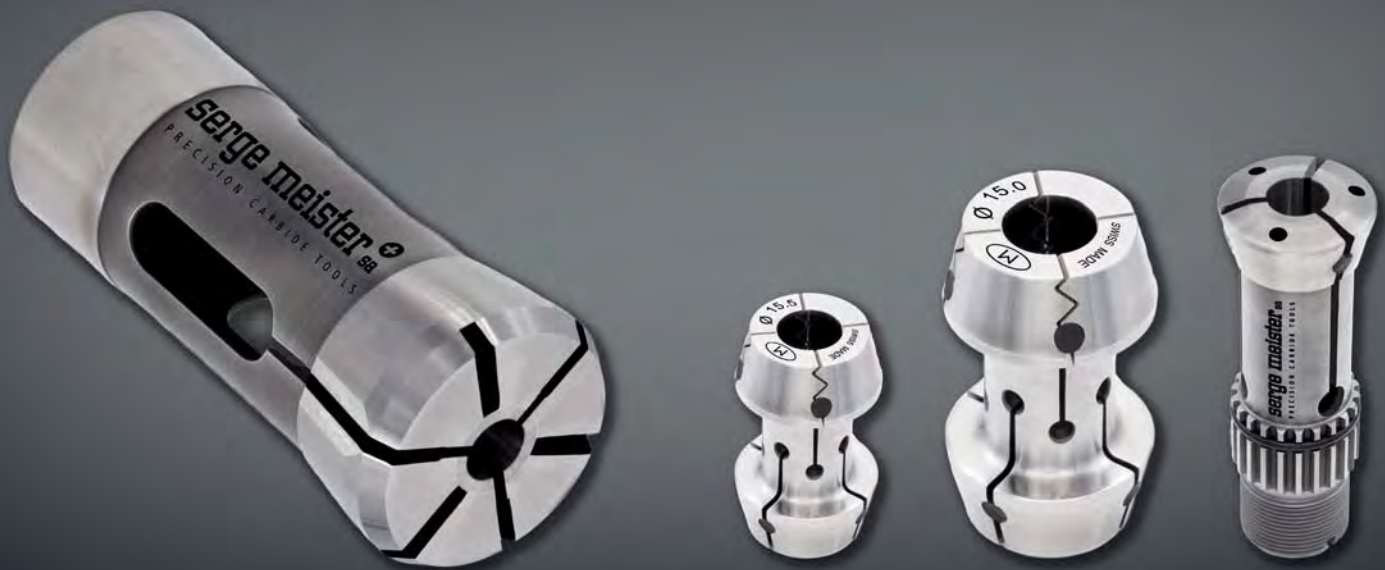
“The Swiss Academy modules are built on the foundation of Tornos machines, starting with skills as basic as how to turn the machine on to how to put the tools in, program the machine, run sample parts, and tackle complex applications,” Gilroy said.

“The Swiss Academy will be great for Tornos, its machine users and the world, and at the same time further establishing Tornos as the reference for Swiss-type and multispindle CNC machining.”

To meet Gilroy and his team—including YouTube-famous TITANS of CNC Swiss machining supervisor Donnie Hinske—and learn more about the Swiss Academy, visit Tornos’ booth at IMTS 2024 in the South Building, Level 3, Booth 338578, from September 9–14.

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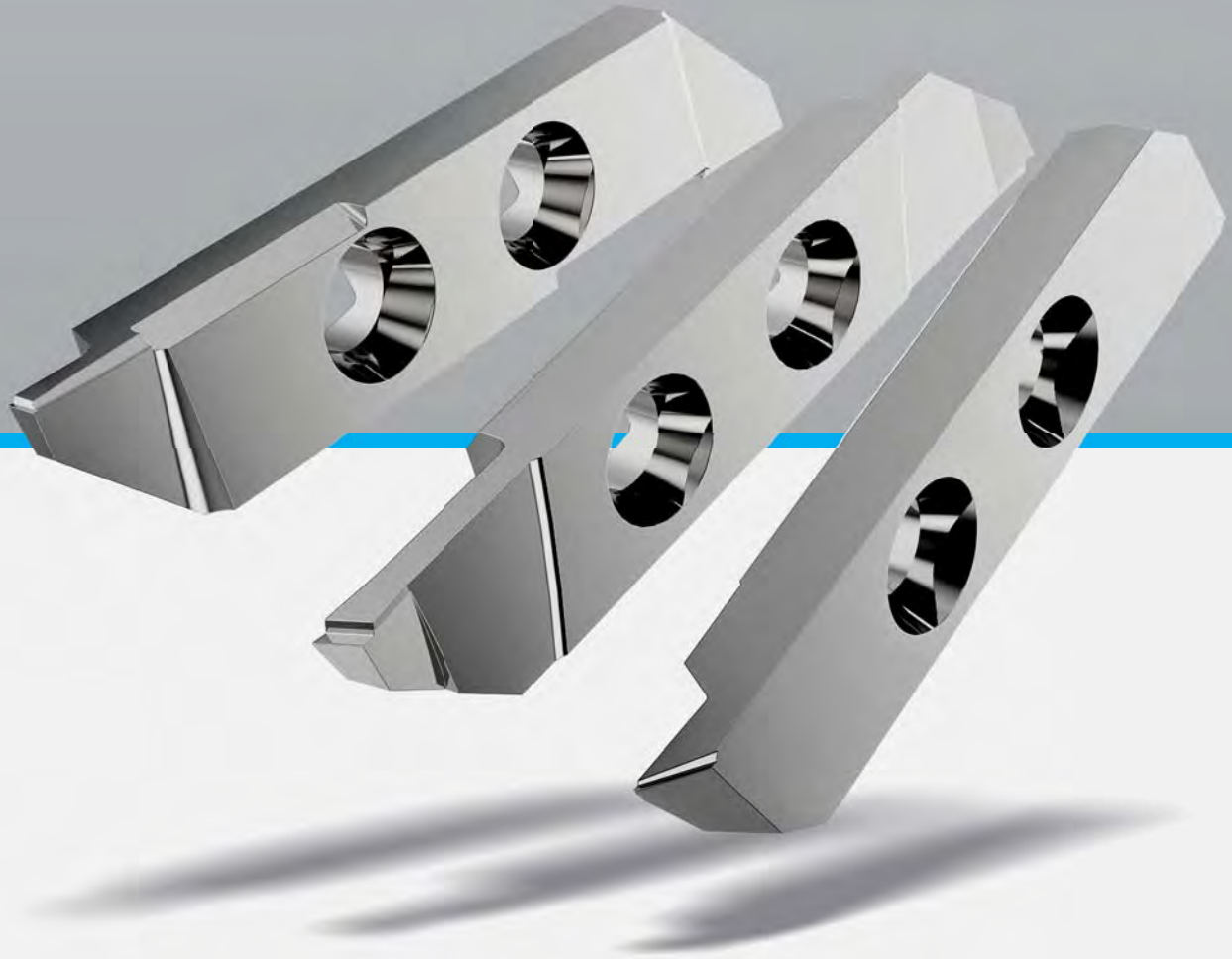


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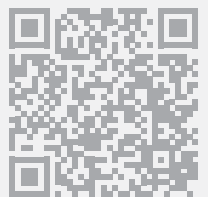
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CNC powerhouse TITANS of CNC has launched a revolution in technical education with its **FREE** online-based TITANS of CNC Academy—and Tornos is a proud partner, providing state-of-the-art automatic lathes to the academy. Together, TITANS of CNC and Tornos are lifting up students, educators, and the manufacturing workforce.

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