

deco magazine

Medical & Dental

SPECIAL ISSUE

01-2026 ENGLISH

*Medical and dental:
when industrial
precision shapes
the health
of tomorrow*

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*Elos Medtech:
success built on
trust*

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*Pushing the limits
of medical
machining, even for
the longest parts*

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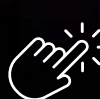
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191^{neo}

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Medical
& Dental
SPECIAL ISSUE

At the Mérignac workshop, EvoDECO machines handle the machining of inserts used in Acteon® ultrasonic devices.

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"The medical market requires a deep understanding of regulatory and quality standards. Process validation, full traceability, rigorous documentation and proven repeatability are part of everyday operations."

Brice Renggli, Marketing & Competitive Intelligence Manager, Tornos

A commitment to precision in medical manufacturing

Brice Renggli, Marketing & Competitive Intelligence Manager, Tornos

The medical sector is strategic for our industry. Every component produced—implant, bone screw, surgical instrument or part for an implantable device—has a direct impact on patients' quality of life. Behind every micron, there is responsibility.

At Tornos, medical sector is not simply a growth opportunity. It is a field where precision is absolute, where reliability allows no compromise, and where technological mastery must stand the test of time.

Expertise built on rigor

Medical bar turning demands some of the highest standards in manufacturing: tight tolerances, flawless surface finishes, demanding materials such as titanium or cobalt-chrome alloys, and complex geometries including threads and micro-drilling. Our solutions are designed to meet these challenges. Thermal stability, rigidity, axis repeatability and machining quality are at the core of our developments. Our Swiss-type sliding headstock machines, multispindle solutions and high-precision centers integrate multiple operations in a single setup while ensuring measurable and fully documented performance.

In this sector, process control is as critical as the machine itself. That is why we continuously invest in programming simplicity, reduced setup times and stable serial production.

Quality and compliance: a comprehensive approach

The medical market requires a deep understanding of regulatory and quality standards. Process validation, full traceability, rigorous documentation and proven repeatability are part of everyday operations.

Our role goes beyond supplying equipment. We support our customers from feasibility studies all the way through to secure industrialization. This close collaboration helps anticipate regulatory constraints and strengthens technical robustness—now a true competitive advantage.

Innovating to meet market evolution

Miniaturization, new materials and increasingly integrated devices are reshaping the industry. Innovation is not optional—it is essential.

We develop modular platforms, enhance connectivity and leverage production data intelligently. The objective is clear: enable our partners to produce better, faster and with the highest level of reliability.

A committed vision

Medical sector represents a strategic pillar of our future development. Its demands drive our entire organization forward.

Strengthening our presence means intensifying dialogue with industry stakeholders, anticipating regulatory evolution and building strong, long-term partnerships. We aim to be a committed technology partner, supporting our customers throughout their growth and transformation.

In medical manufacturing, excellence is the standard. Together, let's make precision a sustainable strategic value.



The medical and dental sectors require high-precision components that meet very strict quality and reliability standards.

MEDICAL AND DENTAL:

when industrial precision shapes the health of tomorrow

Medical and dental are among the most demanding and dynamic industrial sectors. At the crossroads of health care, technology and high-precision manufacturing, they operate in an environment shaped by powerful, long-term global trends. For medical device manufacturers, this evolution represents both a tremendous opportunity and a constant industrial challenge.

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Strong and lasting structural drivers

Growth in the MedTech sector is primarily driven by major demographic factors. Increasing life expectancy is a global reality. Over just a few decades, life expectancy at birth has risen from around 65 years in the early 1990s to more than 71 years today, with projections exceeding 77 years by 2050. At the same time, the global population aged 60 and older is growing faster than any other age group and is expected to double by 2050 and triple by 2100.

This aging population is accompanied by a significant rise in age-related conditions: orthopedic disorders, cardiovascular diseases, the need for dental implants and functional support devices. Medical devices are therefore essential to preserve mobility, autonomy and quality of life.

These trends are reinforced by rapid urbanization. Today, more than half of the world's population lives in urban areas—a figure projected to approach 70% by 2050. Urban lifestyles are associated with a higher incidence of certain chronic diseases, further increasing demand for reliable, standardized and widely accessible medical solutions.

A growing yet increasingly complex market

In this context, the global medical device market continues to expand. Worldwide sales are expected to reach approximately US \$800 billion by 2030, with a compound annual growth rate exceeding 5%.

In Europe, the sector now operates under a significantly strengthened regulatory framework with the implementation of the EU Medical Device Regulation (EU MDR), which imposes stricter requirements in terms of traceability, documentation and clinical validation throughout the product life cycle.

Manufacturers must demonstrate the performance and safety of their devices across their entire life cycles. Traceability, process repeatability and quality control have become decisive criteria—not only for original equipment manufacturers (OEMs) but also for subcontractors and industrial partners.

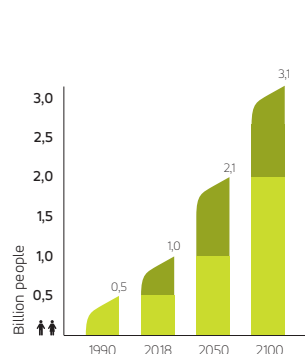
In a sector comprising roughly 34,000 medtech companies in Europe—around 95% of which are small and medium-sized enterprises—the ability to manufacture reliably, cost-effectively and in full compliance has become a key differentiating factor.

Innovation, miniaturization and personalized care

Technological innovation is profoundly transforming the medical and dental sectors. Device miniaturization, minimally invasive surgery, medical robotics and personalized medicine are driving demand for increasingly smaller, more complex and highly functional components.

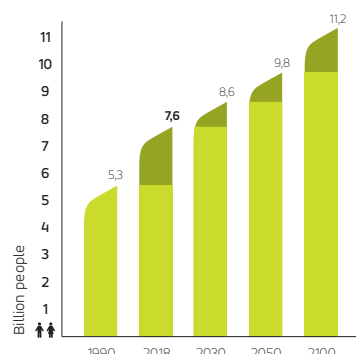
Aging population

Projected global population aged 60 years or over



World population

Projected world population until 2100



Orthopedic implants, long nails, cannulated screws, dental implants and surgical instruments must withstand high mechanical loads while meeting extremely tight tolerances. Surface finish, burr-free machining and process repeatability are essential, as every component is directly linked to patient safety.

At the same time, materials are evolving. Alongside established biomaterials such as titanium and stainless steel, manufacturers are integrating newer materials such as cobalt-chrome, polyether ether ketone (PEEK) and biodegradable materials like magnesium. Each requires specific machining strategies, whether dry machining, thermal management or strict contamination control.

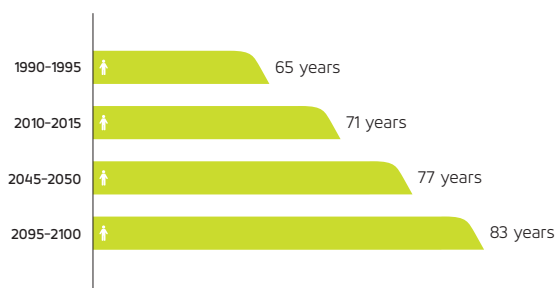
Medical machining: a discipline in its own right

In medical and dental manufacturing, machining is never standard. It requires a precise balance between machine kinematics, cutting strategies, tooling, automation and material expertise. Manufacturers must be capable of producing increasingly small batches with fast setup times and maximum flexibility, while maintaining uncompromising quality.

Global life expectancy

Projected global life expectancy at birth*

* Life expectancy data from the *World Population Prospects* are average values referring to five-year periods.



Requirements are particularly demanding for complex applications such as spinal implants, very long parts, micro maxillofacial screws and components for medical electronics. In these areas, geometric precision and process stability are critical.

Tornos: a recognized partner for medical and dental manufacturing

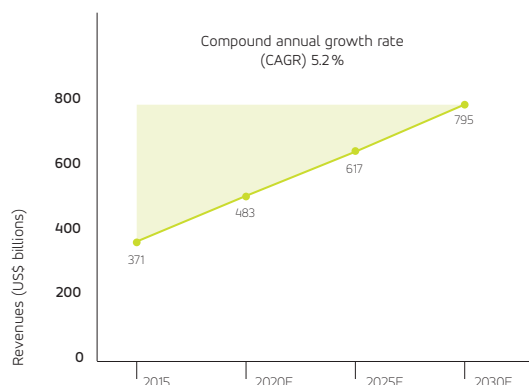
For more than 30 years, Tornos has supported medical and dental manufacturers worldwide. This expertise is built on deep application knowledge developed through close collaboration with medical device manufacturers and their suppliers.

Tornos solutions are based on:

- Rigid, thermally stable machines designed to meet the tightest tolerances
- Advanced kinematics, including B-axis technology, enabling complex machining in a single setup
- Proven mastery of thread whirling, ideal for sharp, high-precision medical screws
- Dedicated solutions for sensitive materials such as dry machining of PEEK
- Software and automation tools that enhance quality, traceability and productivity

Global medical device sales

Forecast to 2030



This holistic approach enables Tornos to deliver machine configurations tailored to the specific needs of medical and dental applications, whether for microcomponents, long parts or highly complex geometries.

A future-oriented sector that requires strong partners

Medical and dental markets will continue to grow, driven by demographic shifts, technological innovation and evolving health-care systems. However, this growth will also bring increasing complexity in parts, materials and regulatory requirements.

In this environment, partnering with an experienced technology provider capable of understanding applications and delivering practical, reliable solutions becomes essential. By combining industrial expertise, Swiss precision and application-driven solutions, Tornos sustainably supports medical and dental device manufacturers in meeting today's and tomorrow's challenges.

tornos.com



The history between Tornos and Acteon dates back several decades. Here, is one of the first parts from the origin of the collaboration.

ACTEON:

the specialist

in high-power ultrasound for conventional dentistry and surgery

Acteon® is a large international group particularly active in the manufacture of ultrasonic dental and surgical equipment. These unique solutions have required years of development. The many turned parts, in particular inserts, accessories that are inseparable from the machines, are all manufactured in Mérignac, using Tornos machines right from the start.



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A multinational company with unique expertise

The company's mission is to provide complete solutions for the daily operations of practitioners, delivering the most effective, practical and comfortable care to millions of patients around the world.

Acteon®'s history began in 1970 with the first generation of ultrasonic devices designed for dentists. Today, Acteon® provides complete solutions not only for dental surgeons, but also for cosmetic surgeons in rhinoplasty and veterinarians.

Thanks to their precision, these ultrasonic devices, originally designed for dentistry, became popular for bone surgery operations. For example, in rhinoplasty procedures, Acteon® technology makes it possible to literally sculpt bone with great precision. Patient recovery takes only a few days, in contrast to traditional surgery using manual instruments.

The use of this type of system in bone surgery represents a true revolution in the field, where Acteon® is the market leader. The first system for this application was unveiled in 2006 and, since then,

“The Swiss DT 13 has become the ideal training partner for young technicians. This little machine is very efficient.”

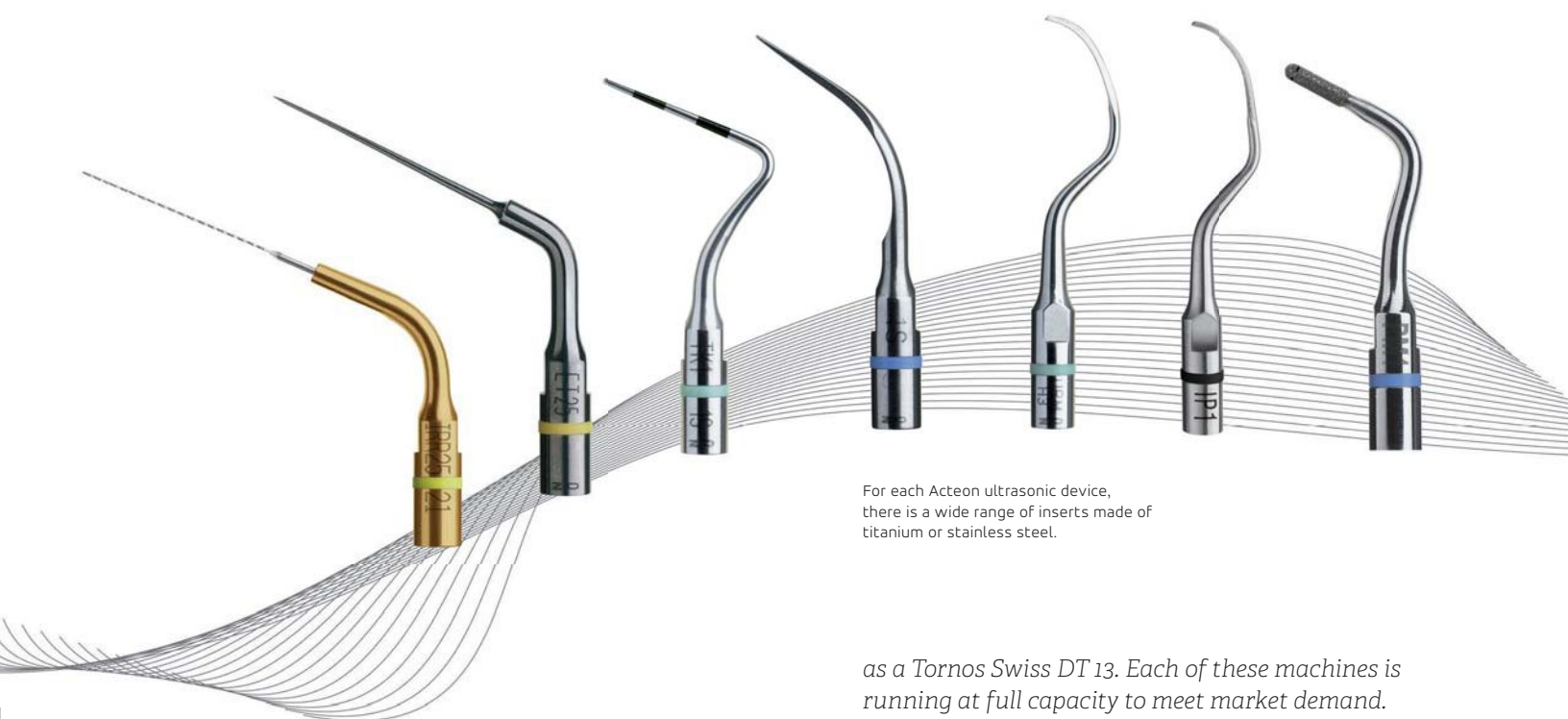
the company has enjoyed exponential success with this product range, which fits perfectly with the current trend toward non-invasive surgery.

A comprehensive approach

The Group's philosophy is to provide practitioners with the possibility to control all stages of a procedure, from diagnosis through treatment and follow-up within the same workflow. This approach has a vast scope and therefore requires significant investment. That is why the company operates several research centres, proving once again that innovation has been at the core of its objectives for almost 50 years. The Group also actively develops relationships with many universities and international experts who share the same vision as Acteon®. These relationships allow the company to remain closely aligned with market realities.

At the Mérignac workshop, EvoDECO machines handle the machining of inserts used in Acteon® ultrasonic devices.





For each Acteon ultrasonic device, there is a wide range of inserts made of titanium or stainless steel.

Acteon® supports practitioners in all phases of treatment, as the company's expertise is not limited to surgical and conventional ultrasound, but also includes digital imaging solutions, software, pharmaceuticals and precision manual instruments.

The same technology for two sectors

Ultrasonic tools and generators enable a wide range of treatments in dentistry, from descaling to complex surgical procedures such as implantology.

The ultra-precise equipment, and especially the inserts manufactured by Acteon®, enable highly accurate and minimally invasive procedures for patients.

The inserts at the core of the Acteon® system

For every Acteon® ultrasonic device, there is a vast range of inserts available in titanium or stainless steel, depending on specific and clinical requirements. These inserts are primarily machined on Tornos machines at the Mérignac workshop.

Recently, the company has invested heavily in production equipment and has acquired several EvoDECO 10 and EvoDECO 16 machines as well

as a Tornos Swiss DT 13. Each of these machines is running at full capacity to meet market demand. In the workshop, Acteon®, like many companies in the sector, faces the thorny issue of workforce shortages. As a result, particular emphasis is placed on training.

"The Swiss DT 13 has become the ideal training partner for young technicians. This little machine is very efficient," notes a mechanical manager at Acteon®. "Initially, the Swiss DT 13 was intended for the production of simple parts in order to free up the DECO and EvoDECO machines. But very quickly, we were surprised by the capabilities of this compact machine. We now also produce relatively complex parts on it. It is easy to operate and allows younger generations to learn the trade with confidence, without taking major risks."

"The vast majority of our machine inventory consists of EvoDECO 16 and 10 models, as well as DECO 10 and DECO 13 machines. They are fast, precise and modular — reliable machining partners that allow us to manufacture any type of part, regardless of complexity. Year after year, they continue to perform as they did on day one. These machines are of outstanding quality."

Shared values

The relationship between Tornos and Acteon® goes back several decades. At the time, the company was looking for the right partner to manufacture

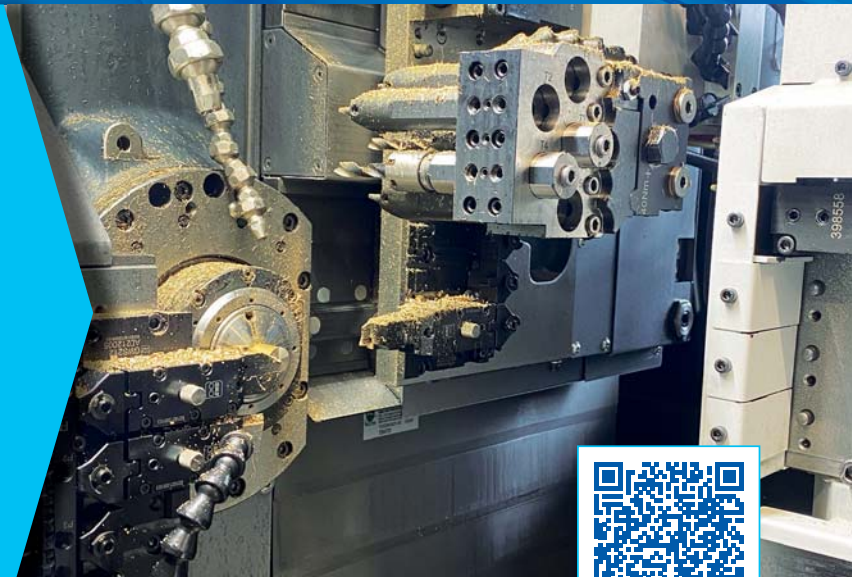
HIGH SPEED LOW DOWNTIME



GWS-COLUMN GUIDE FOR ULTRA-FAST TOOL CHANGE

While other machines are still being set up, yours will already be up and running again. With the GWS-Tooling System for swiss-type machines, you save time where it is most expensive: during downtime.

Tool holders are preset outside the machine, precisely positioned, and changed in seconds – without compromising repeatability or stability. Thanks to integrated coolant supply up to 100 bar, a modular drill block, and easy handling, the system is not only fast but also smart.



WATCH VIDEO NOW:

its inserts. Very quickly, Tornos stood out from the competition thanks to the quality of its products and the expertise of its teams.

"Our contacts at Tornos have always been qualified and able to resolve even the most complex machining challenges," notes an Acteon® representative. "Whenever an issue arises, we can rely on the Tornos France after-sales service, which is extremely responsive and competent. The machines themselves are also highly reliable. A DECO 13a machine has been running since 2008 producing titanium parts exclusively, and it continues to deliver full satisfaction."

Acteon® pays close attention to practitioner feedback and regularly develops insert prototypes to meet market needs and keep pace with ongoing developments in the dental, medical and veterinary fields. For example, certain morphologies

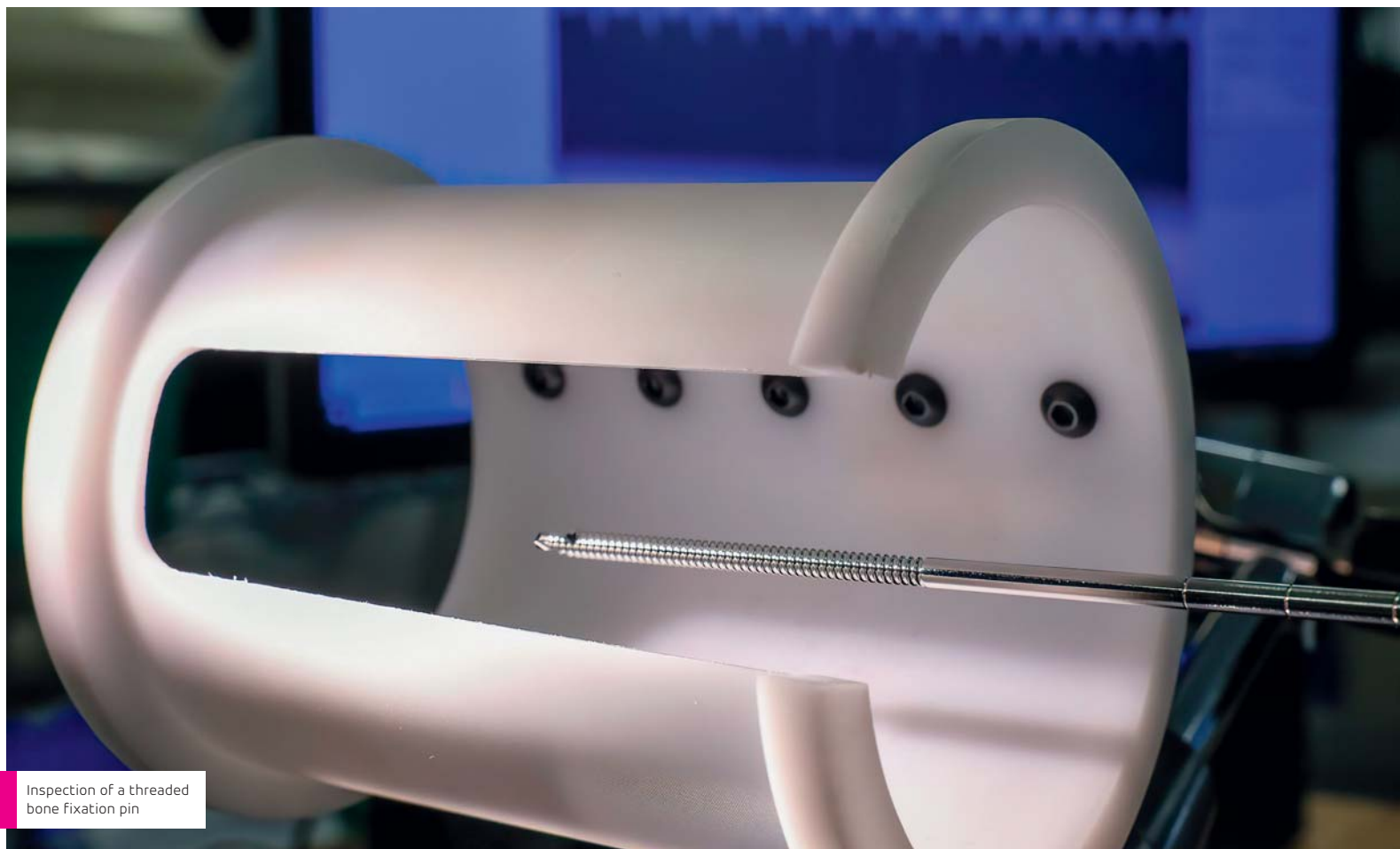
specific to different regions of the world require particular insert shapes. As Acteon® is also active in veterinary medicine, inserts with specific shapes and lengths have been developed for this field as well.

For almost every requirement, there is a dedicated insert. This demands exceptional flexibility — and to meet this challenge, the EvoDECO range proves to be the perfect solution.

acteongroup.com

Opus® – Original air Polisher and Ultrasonic Scaler, flagship product of the Acteon Group.





Inspection of a threaded bone fixation pin



Jodie Gilmore, president of Elos Medtech's orthopedics division, and Chris Weeden, manufacturing engineer at the company's Memphis (United States) site.

Success built on trust

Just as patients put their trust in the tools used to treat their bodies, the creators of those tools put their trust in their suppliers. And when it comes to the production of highly precise, high-value drills, taps, reamers, wires, and a variety of pins and screws for global orthopedic companies, global medical device developer and manufacturer Elos Medtech puts its trust in Tornos Swiss-type lathes.



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Elos Medtech's strong commitment to quality excellence was clearly paying off: The company had reported a 13.6 percent increase in net sales in the first quarter of 2022. Active in three primary markets—orthopedics, dental, and diversified life sciences—Elos Medtech has a particularly strong position in orthopedics and high technical competence in that market. Foresight, flexibility, responsiveness, and meticulous attention to detail are absolutely essential to the company's continued growth—and Elos Medtech is passionately committed to being the partner that goes above and beyond to meet these needs.

Its Tornos machine fleet makes a valuable contribution to that effort. At the time, the Gothenburg, Sweden-based publicly traded company owned 60 Tornos Swiss-type machines and had two more—plus a new Tornos MultiSwiss multispindle machine—on order. Elos Medtech's Tornos machine

“We wanted to make sure that we consistently stayed ahead of the curve and employed the best and latest machine technology.”

fleet is spread globally across three of the company's five sites: Memphis (United States), Timmersdala (Sweden), and Tianjin (China). Jodie Gilmore, president of Elos Medtech's orthopedics division, explained that the growing company was laser-focused on staying at the forefront of technology.

“We never compromise on quality and are committed to quality excellence in everything we do. We want to make sure that not only in the competence of our

people but also in the machine technologies we're using, we have the very best. That was our goal for the years ahead,” she said, noting that Elos Medtech's five-year strategy included the purchase of a significant number of Swiss-type lathes.

“We were growing significantly, and across the company we were investing to maintain that momentum—and orthopedics was definitely no exception,” Gilmore explained.

Made in Memphis with Swiss-type technology

At Elos Medtech's second-largest site in Memphis, which typically produces 3 to 4 million orthopedic parts per year in batch sizes averaging 500 parts each, Tornos solutions play an important role. The majority of those parts are at some point machined on a Tornos Swiss-type lathe.

Chris Weeden, manufacturing engineer at the Memphis site, has relied on Tornos' Swiss-type lathes—today including two DECO 13s, a DECO 13 bi, seven DECO 20s, and 10 Swiss GT 26s—for more than 20 years.





Those machines are put to the test daily in the production of precision products that must perform in a rigorous biological environment where they are subjected to significant loads.

"Most everything we make cuts, pierces, or fixates bone, and it's incredibly important that every part we make performs well, works the first time, and doesn't break," Gilmore emphasized. "Of course, anytime you're in the medical device industry, customers want you to have significant expertise—not just saying, 'Oh, we can do this,' but demonstrating the capability we have built over decades."

Medical device companies want to work with suppliers that are best-in-class experts—and Elos Medtech more than meets that criterion.

"A company, for example, focuses on the total joint implant—the development and creation of the joint, essentially—and other key systems. Then we come alongside and support them in our areas of specialty," Gilmore said.



Coming of age with Tornos

Weeden came of age using Tornos machines—and he swears by them.

“I’ve been around Tornos Swiss-type machines for my whole career and I’ve always really liked them. They seemed to be way ahead of the curve early in the game. When I first started back in 2003, the Tornos machines had so many more capabilities than some of the others on the market at the time, which drew our attention,” Weeden said. “The DECO 20s and DECO 13s allow you to support your work on the front while you are working on the last part on the back.”

The DECOs’ capabilities make a big difference, he added.

“The DECO gives you so many options. It has so many capabilities that we can support parts while we thread and while we work because the machine

“I’d been around Tornos Swiss-type machines for my whole career and I’d always really, really liked them.”



has independent access and gangs that allow us to do that. Since we run so many long cylindrical parts, supporting them is key for us,” Weeden explained, noting that most of the parts machined in Memphis are stainless steel and range from 150 to 460 mm in length and up to 0.39 mm in diameter. “The DECO machine has met every need we’ve ever had. I’ve always liked the TB-DECO programming. You can write one program and the TB-DECO software allows you to create variations, so one program can cover multiple part numbers within the same family.”

Weeden is also a fan of Tornos’ modular tooling.

“You mount your tool, and there’s an external pre-setter in the holder,” he said. “That reduces operator error because the operator doesn’t have to set each individual tool every time. It can even be done offline before bringing it to the machine.”

There is a special place in Weeden’s heart for one particular DECO machine at the Memphis site.

“It’s a DECO 20, and it was here when I started in 2003—we call it Big T,” he said, laughing as he noted that “Big T” and the DECO 13s that greeted him in 2003 are still running today.

And as much as he loves the Tornos DECO machines, Weeden is also impressed with the Swiss GT line.

“We’ve bought several of those machines, and they have performed very well,” he said.

Relationships count, too

While the capabilities of Tornos machines are impressive, relationships also make a difference. Although Elos services its own machines at the Memphis site, Weeden knows he can turn to Tornos’ technical experts when he runs into a problem he cannot solve alone.

“Tornos Service Manager Roland Schutz is absolutely outstanding. We didn’t often need to call Tornos Service because we handled much of the work ourselves, but he was the one to call when needed. Roland knows the Tornos machines inside and out—every bolt on the DECO 20,” Weeden said. “I knew that if I could reach Roland, the issue would be resolved.”



Gilmore noted that from a corporate perspective, it was important for Elos Medtech to have attentive and proactive suppliers. She was always looking to increase dialogue with customers as well as supply chain partners.

“It was our hope that we could continue to work with companies like Tornos to truly understand the path forward and where technology was heading,” she said. “We wanted to make sure we stayed ahead of the curve and employed the best and latest machine technology.”

elosmedtech.com



Pedicle



Screw



Facial screw



Implant



Pulley

With the MultiSwiss 6x16, screws, implants and medical components can be produced at high output with consistent precision.

MULTISWISS 6x16:

a compact multispindle platform

for medical and dental applications

The MultiSwiss 6x16 is a six-spindle machine designed for bar machining from 4 to 16 mm in diameter—a segment highly representative of medical and dental applications. It is intended for manufacturers producing small-diameter components with demanding requirements in terms of precision, surface quality and repeatability, while maintaining high industrial output rates.

TORNOS

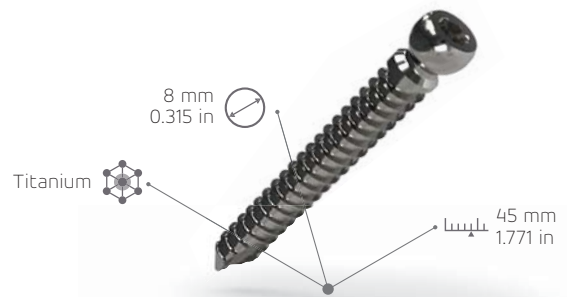
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Positioned between a Swiss-type lathe and a traditional multispindle machine, the MultiSwiss 6x16 combines a modern multispindle architecture with operating logic like that of a Swiss-type lathe. It features six independently motorized spindles indexed by torque motor and can accommodate up to 18 tools, enabling multiple operations to be consolidated on a single machine. This configuration makes it particularly well suited for standardized or semi-complex medical components produced in medium to high volumes.

With a maximum part length of up to 40 mm and the capability to machine demanding length-to-diameter ratios, the MultiSwiss 6x16 covers a broad range of medical applications, from dental implants and screws to selected orthopedic and implantable components.



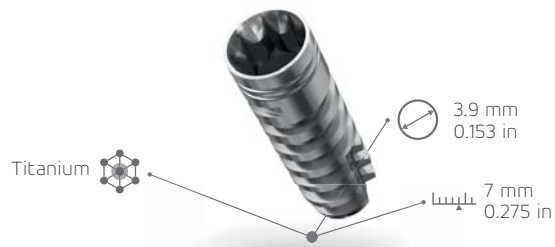
Swiss-type 110 sec
MultiSwiss 6x16 31 sec
 +71% productivity



Swiss-type 245 sec
MultiSwiss 8x26 44 sec
 +82% productivity



Swiss-type 80 sec
MultiSwiss 6x16 15 sec
 +81% productivity



Swiss-type 150 sec
MultiSwiss 6x16 35 sec
 +77% productivity



From the outset, the machine was designed to deliver high productivity within a compact footprint while ensuring machining quality aligned with the regulatory requirements of the medical sector.

A multispindle architecture optimized for precision

In medical and dental manufacturing, machining is not simply about achieving a nominal dimension. It requires long-term dimensional stability, consistent surface quality and perfect repeatability—all while maintaining high output rates. These constraints become even more critical in a reinforced regulatory environment where process control is central to compliance.

At the heart of the MultiSwiss 6x16 is a drum equipped with six mobile spindles indexed by torque motor. This technology enables extremely fast indexing—under 0.4 seconds—without mechanical locking mechanisms. The result is twofold: significant time savings on each cycle and high angular repeatability, essential for machining complex medical geometries.

The spindles are mounted on hydrostatic bearings, a technology particularly relevant for medical applications. High damping reduces vibrations when machining demanding materials such as titanium or certain stainless steels, improves surface finish and extends tool life. This mechanical stability directly contributes to consistent results over long production runs—a key requirement for validated medical devices.



Floor space

Swiss-type

Swiss-type

Swiss-type

Swiss-type

Swiss-type

Swiss-type

Swiss-type

Swiss-type

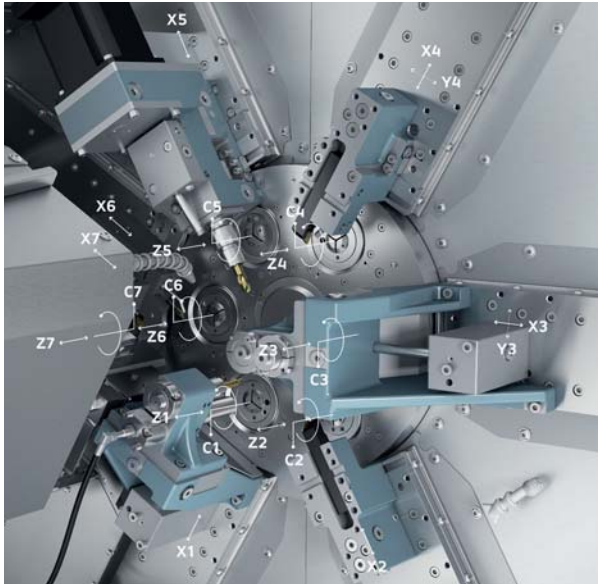
Swiss-type

120 m²

MultiSwiss

MultiSwiss

25 m²**-79 %**



MultiSwiss 6x16

Thermal stability and control of dimensional drift

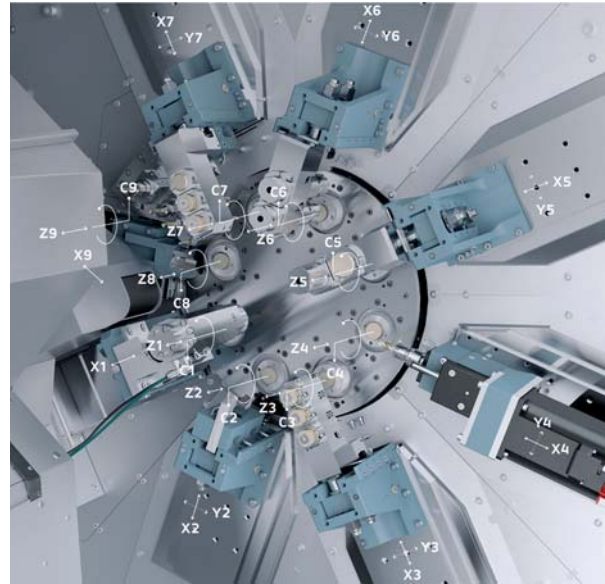
In medical manufacturing, precision cannot be separated from thermal behavior. The MultiSwiss 6x16 integrates comprehensive thermal management based on cutting oil temperature regulation, maintaining the core of the machine at a constant temperature with variations limited to ± 0.5 degrees Celsius.

This approach minimizes dimensional drift, including during production stops or batch changes. For medical device manufacturers, such thermal stability secures process repeatability and reduces in-process adjustments.

High productivity without compromising the process

The MultiSwiss 6x16 achieves productivity levels that are difficult to match with Swiss-type lathes. By distributing operations across six stations, it enables simultaneous production of multiple parts and significantly reduces cycle times.

In high-productivity configurations, output can reach up to 40 parts per minute while maintaining excellent quality standards. This ability to combine



MultiSwiss 8x26

precision and throughput is particularly well suited to high-volume medical components such as screws, implants and standardized parts, while retaining sufficient flexibility for part changeovers.

From an industrial standpoint, the MultiSwiss 6x16 also supports workshop rationalization. A single machine can replace several Swiss-type lathes, reducing the number of operators, machine interfaces and variability between equipment.

A machine suited to demanding medical geometries

Medical and dental applications often involve high length-to-diameter ratios, deep drilling operations or complex functional shapes. The kinematics of the MultiSwiss 6x16, combined with excellent rigidity, enable the production of long, slender parts with precise machining control.

Typical applications include dental implants, maxillofacial screws, certain orthopedic components and parts for implantable devices. Surface quality and burr-free results are decisive criteria in these applications, especially when no secondary finishing operations are desired.

Flexibility and integration in a medical environment

Medical manufacturing is characterized by a wide range of part references and variable batch sizes. Despite its multispindle architecture, the MultiSwiss 6x16 maintains high flexibility. The ergonomic design and accessibility of the machining area simplify setup operations, while the all-in-one concept integrates essential peripherals within a compact footprint.

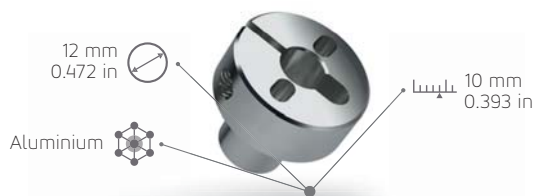
Upgrade possibilities—such as integration of a Y axis, chucker solutions and adapted part-handling systems for sensitive components—allow the machine to be tailored to specific medical requirements without altering its core architecture.

A coherent industrial solution for medical and dental manufacturing

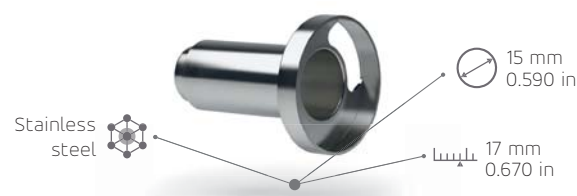
In a sector where quality, repeatability and productivity are inseparable, the MultiSwiss 6x16 represents a coherent industrial solution. It enables medical and dental device manufacturers to secure their processes, meet regulatory requirements and increase production capacity while maintaining high precision.

Built on proven technologies and supported by strong application expertise, the MultiSwiss 6x16 stands out as a high-performance, durable production platform for medical and dental manufacturing.

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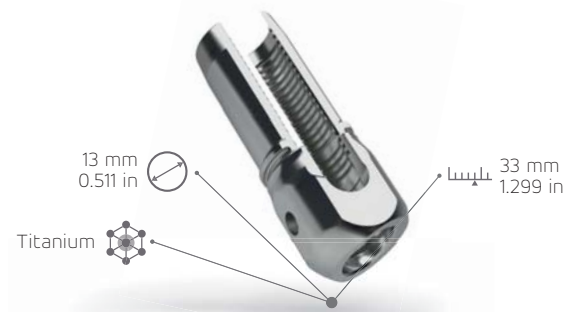
Swiss-type 83 sec
MultiSwiss 6x16 12 sec
 +85 % productivity



Swiss-type 118 sec
MultiSwiss 6x16 30 sec
 +74 % productivity



Swiss-type 87 sec
MultiSwiss 6x16 15 sec
 +82 % productivity



Swiss-type 420 sec
MultiSwiss 8x26 120 sec
 +71 % productivity



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

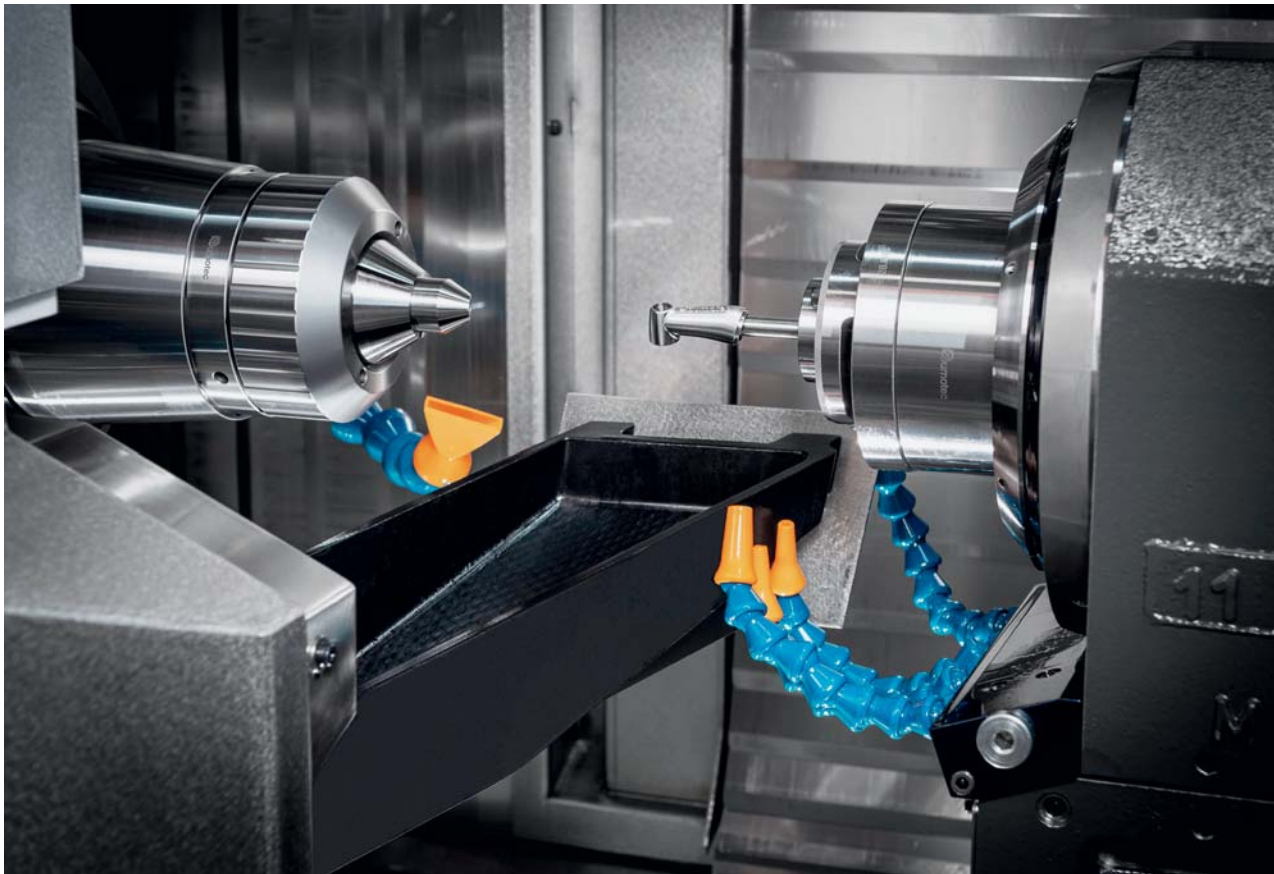
Tornos has long been synonymous with precision engineering. The SwissNano and Swiss DT ranges are pivotal in manufacturing intricate components required in medical devices. The SwissNano 7, known for its exceptional precision, is capable of handling

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



a 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 multispindle lathes is designed to significantly boost productivity. The MultiSwiss machines, combining the precision of Swiss-type machining with the efficiency of multispindle 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.



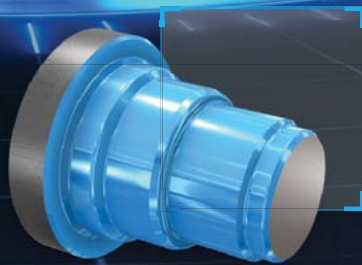
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Bumotec: leading the way in high-precision machining for medical applications

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, multi-operation 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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Orthopedic nails are among the demanding medical applications requiring outstanding geometric precision and flawless surface quality.

SWISSDECO:

pushing the limits of medical machining, *even for the longest parts*

In the medical field, certain applications go far beyond the standards of conventional Swiss-type machining. This is particularly true for orthopedic nails, long implants and complex tubular components, which combine strict dimensional requirements, sophisticated geometries and flawless surface finishes. For these critical parts, the ability to control the entire process in a single setup represents a major industrial challenge.

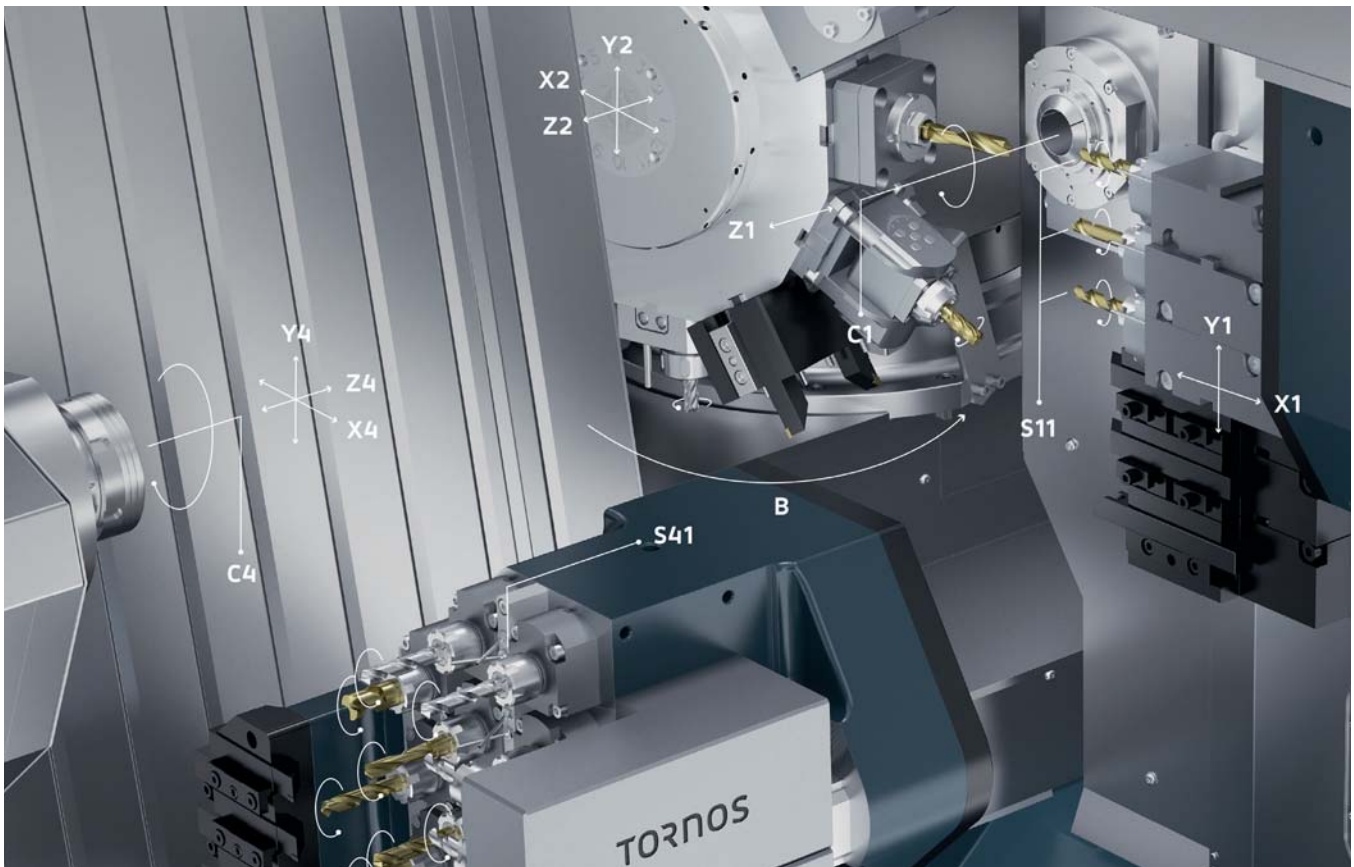
TORNOS

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Tornos' SwissDECO has established itself as a benchmark platform for this type of application, especially in orthopedics, where part length, precision and process stability are decisive factors.

A sliding headstock platform designed for medical applications

The SwissDECO is an automatic sliding headstock lathe developed for machining complex parts in small to medium diameters. Depending on the configuration, the machine can process bars up to 36 mm in diameter, or up to 42 mm as an option, while maintaining high flexibility thanks to its three independent tool systems.



This architecture allows turning, milling, deep drilling and back-working operations to be combined on a single machine while ensuring high rigidity. The SwissDECO is therefore ideally suited to materials commonly used in medical manufacturing, such as stainless steels (316L, 316LVM), titanium and certain high-performance polymers.

Orthopedic nails: a concrete demonstration of SwissDECO's potential

The orthopedic nail perfectly illustrates the capabilities of the SwissDECO. These parts typically have diameters between 13 and 17 mm and lengths that can reach up to 500 mm. Their production involves complex operations: deep drilling, multiple radial drillings, longitudinal milling, threading and finishing, all while ensuring excellent concentricity and impeccable surface quality.

Thanks to its specific kinematics, the SwissDECO enables this type of part to be produced in a single setup—an essential advantage for orthopedic applications. Eliminating intermediate reclamping reduces the risk of marking and ensures optimal geometric stability, which is critical for this category of medical device.

Demonstrations carried out on the SwissDECO have shown the ability to manufacture some of the longest orthopedic nails ever produced on an automatic sliding headstock lathe, with deep drilling operations reaching up to 500 mm in a single pass.

A unique Z2 axis for long and complex parts

One of the key differentiating features of the SwissDECO is its Z2 axis, which supports the turret equipped with a B axis. With a stroke of up to 750 mm, this axis offers unique capabilities within the automatic sliding headstock lathe market.

This configuration enables machining operations at virtually any angle while maintaining optimal part support during critical phases such as deep drilling or longitudinal milling. For orthopedic nails, this translates into excellent tool and part stability, even at extreme lengths.

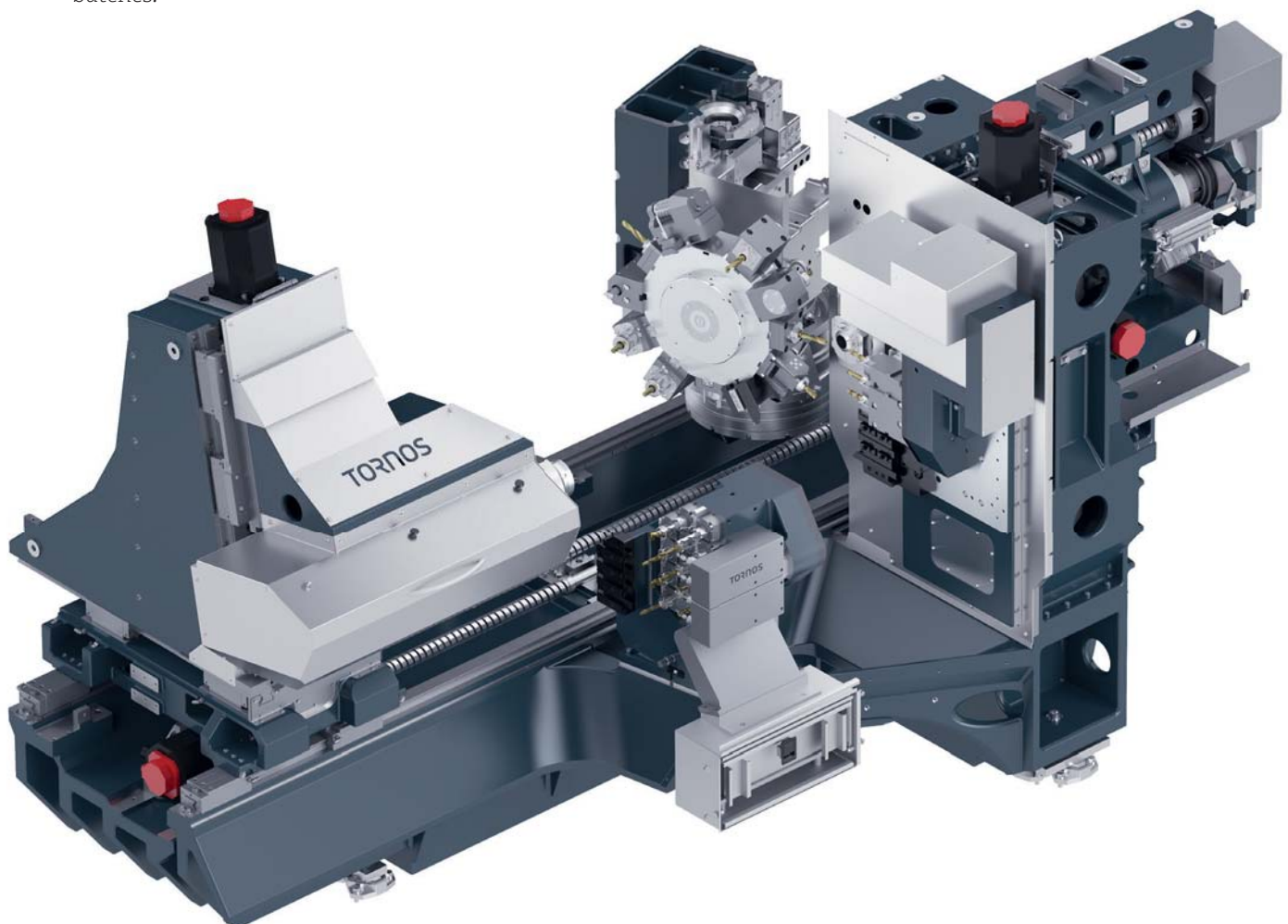
Mastering deep drilling and ensuring surface quality

Deep drilling is central to many medical applications, particularly for cannulated implants. The SwissDECO has been designed to handle these demanding operations, offering drilling depths of up to 500 mm in collaboration with specialized tooling partners. The machine's rigidity, axis precision and efficient chip management enable straight, consistent and repeatable drilling results. The resulting surface quality meets the high standards of the medical sector, helping to reduce secondary operations while ensuring part compliance across entire production batches.



Quality, traceability and process control

In medical manufacturing, quality extends beyond the finished part. It also depends on process stability and traceability. The SwissDECO integrates advanced monitoring solutions that enable close tracking of tool condition and machining parameters.



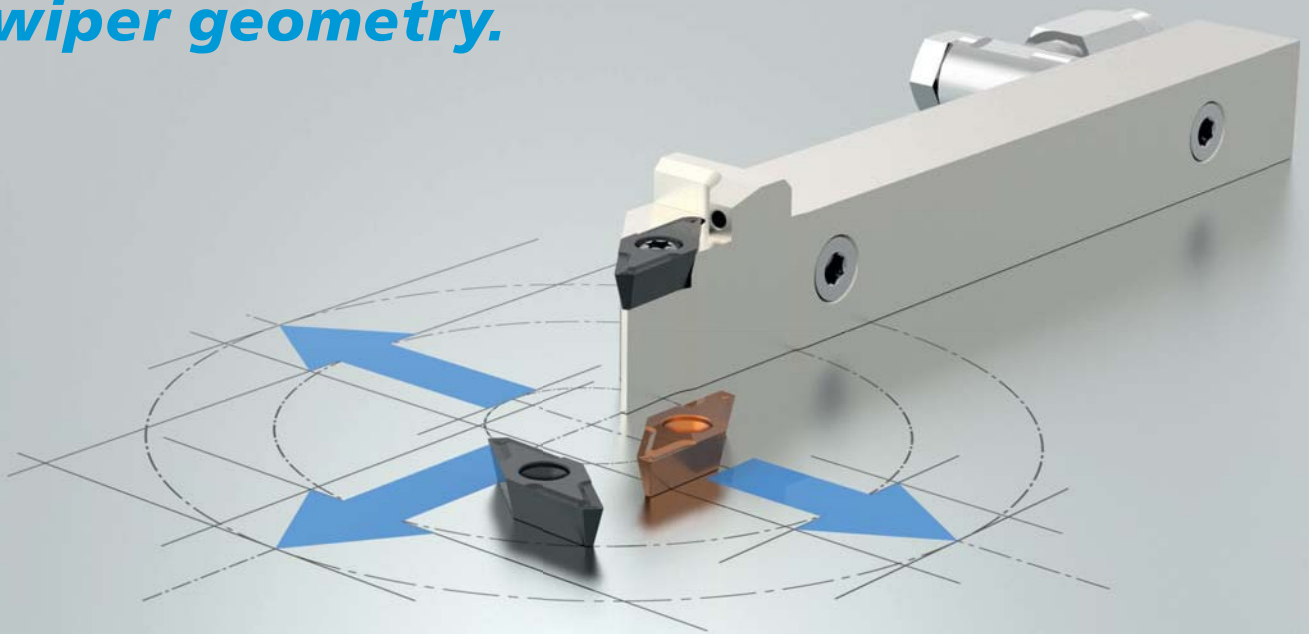
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Motor torque monitoring, tool wear management and chip control solutions help detect deviations before they affect part quality. Recorded data can be analyzed afterward, facilitating production reviews and meeting the traceability requirements of the medical industry.

A scalable solution for high-value medical applications

Beyond orthopedic nails, the SwissDECO covers a broad range of medical applications, including implants, screws, complex orthopedic components and parts for implantable devices. Its modularity, automation options and integration into connected production environments make it a scalable solution capable of supporting manufacturers over the long term.

By combining the ability to machine long parts, flexible kinematics and stable process control, the SwissDECO stands out as a preferred solution for medical device manufacturers facing the most demanding applications.

tornos.com





At Advan Implantology, four EvoDECO 16 machines ensure the machining of implant components with high precision and repeatability.

ADVAN IMPLANTOLOGY AND TORNOS:

Concrete innovation

*based on scientific research
and industrial precision*

In the field of implantable medical devices,
particularly dental implantology, innovation means
taking responsibility.



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For Advan Implantology this is not a slogan but a daily commitment summarized in its payoff, “implantology reinvented” — a promise that takes shape in simple, reliable and reproducible solutions.

“For us, innovation is not an abstract concept but a daily responsibility. Reinventing means continuously evolving through concrete and measurable choices that generate real benefits for the patient and tangible value for the professional,” explained engineer Danilo Annesi, Plant Manager, Head of Research and Development (R&D) and Technical Office.

For over 30 years, the company has been developing 100 % made-in-Italy dental implant systems, integrating scientific research, industrial expertise and continuous dialogue with the clinical world. The goal is to optimize implant procedures and ensure long-term biological and aesthetic stability through validated and rigorously controlled processes.

Research and production: an ongoing dialogue

The balance between research, design and clinical practice is one of the defining elements of the Advan model. Surgical simplicity and long-term reliability do not stem from a single design insight but from an integrated and structured system.

"The balance is achieved through constant dialogue between Research and Development, production, quality and clinical practice. Design is never an end in itself: Every solution is developed and validated with real surgical use in mind. Clinical practice is our daily testing ground and guides research decisions, while production and quality work together to guarantee fully controlled processes, fully compliant with strict standards such as ISO 13485, ensuring that every designed solution is reproducible with high and consistent standards over time," Annesi emphasized.

Research and Development does not operate in isolation but is closely connected to technical and production functions.

"We work on scientific validations, mechanical tests and continuous exchanges with the clinical world. The objective is to transform scientific evidence and real-world feedback into concrete, reliable and compliant solutions, without losing sight of ease of use," he said.

"With Tornos, this is not a simple customer-supplier relationship. We have built a partnership based on technical support, continuous dialogue and consistently reliable after-sales service."



This model is fully expressed in the decision to keep the entire production cycle in Italy, strengthening industrial control and process consistency.

"Producing entirely in Italy allows us total control over the manufacturing process. This means fast response times, full traceability and constant quality oversight. Moreover, the proximity between design, production and quality control facilitates continuous improvement and reduces variability risks—a fundamental aspect in the medical device sector," Annesi explained.

In the highly regulated world of such as implantology, reducing process dispersion is essential to ensure safety, compliance and long-term reproducibility.

A clear principle guides every decision: benefit for the patient and value for the professional.

"Every decision is evaluated by asking whether it generates real benefits for the patient and facilitates the professional's work. An implant with predictable clinical results, a simpler procedure and consistent quality over time reduce complications and the number of necessary visits, improving the patient experience. At the same time, greater clinical reliability allows professionals to optimize chair time and treat more patients," Annesi concluded.

Research, production and clinical practice therefore converge in a coherent system where innovation means responsibility, process robustness and the ability to guarantee long-term stability.

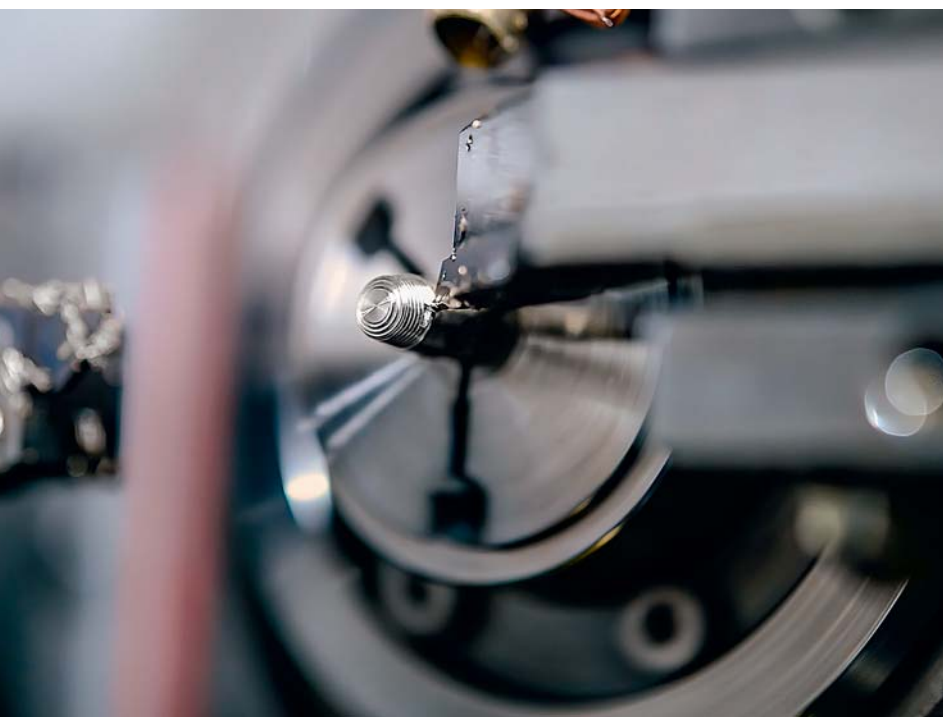
EvoDECO 16: precision and repeatability serving implantology

A strategic step in the company's growth path was the investment in four Tornos EvoDECO 16 sliding headstock lathes, two installed in 2021 and two in 2022.

"The EvoDECO 16 machines have proven particularly well suited to our implant machining operations. They offer an excellent combination of precision, stability and process repeatability. The ability to maintain extremely tight tolerances even in continuous production ensures consistent quality and a very low scrap rate," said Annesi.

In the implant sector, every geometric detail directly affects clinical performance. Surfaces, microgeometries and fit interfaces must maintain dimensional consistency and long-term stability.

"Stability and precision directly reflect on the reliability of the finished product. A structurally stable machine significantly reduces process



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variability. For a medical device, this means greater patient safety and full compliance with sector regulations,” he added.

Standardization and technological continuity

The decision to replicate the same technology across four identical machines was not incidental. In the medical field, technological continuity represents a concrete competitive advantage.

“Technological continuity is a strategic choice. It allows us to standardize processes, simplify validation activities and reduce risks related to production changes. Interchangeability between machines and operators improves operational efficiency and guarantees consistent quality,” explained Annesi.

Standardization therefore is a tool to ensure regulatory compliance, industrial efficiency and long-term production consistency.

A partnership built over time

The relationship with Tornos began even before the completion of Advan's new facility, inaugurated at the beginning of 2022. From the design phase onward, machine tools were considered a central element of the plant, conceived as a true open factory.

“With Tornos, this is not a simple customer-supplier relationship. We have built a partnership based on technical support, continuous dialogue and consistently reliable after-sales service. This enables us to face production challenges with confidence and a long-term perspective,” Annesi noted.

Sustainable growth and long-term vision

Looking ahead, Advan envisions sustainable growth, with Tornos playing a key role.

“We envision sustainable growth based on precision, repeatability and the ability to generate long-term value. Technology partners such as Tornos will continue to play a central role in our journey because they share our quality-driven approach and long-term vision,” Annesi stated.



Advan builds value over time.

“For more than 30 years, we have been developing Italian implant solutions that combine scientific research, clinical experience and industrial quality, ensuring long-lasting biological and aesthetic stability,” he concluded.

Together with Tornos, Advan is pursuing a vision shaped by passion, dedication and continuous pursuit of perfection, with a clear objective: improving patients' lives and professionals' work—today and in the years to come.

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SWISS DT:

an entry-level machine open to
**demanding medical
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Production of a dental implant on the Swiss DT 26.

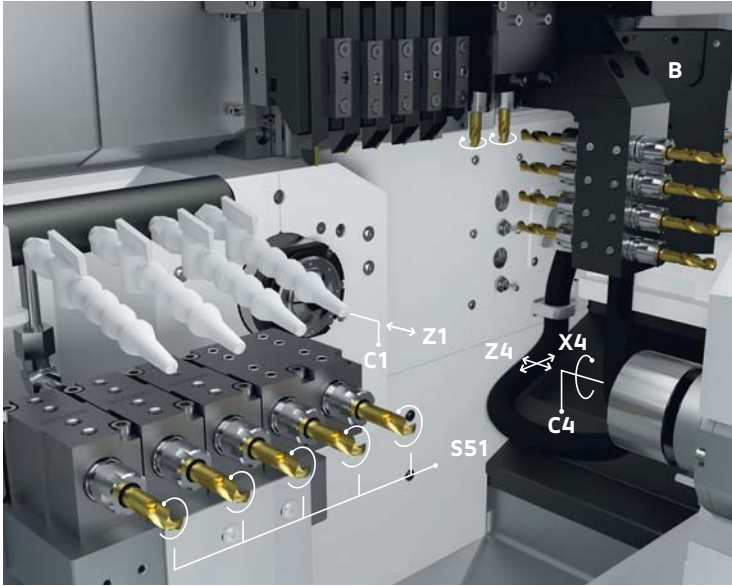
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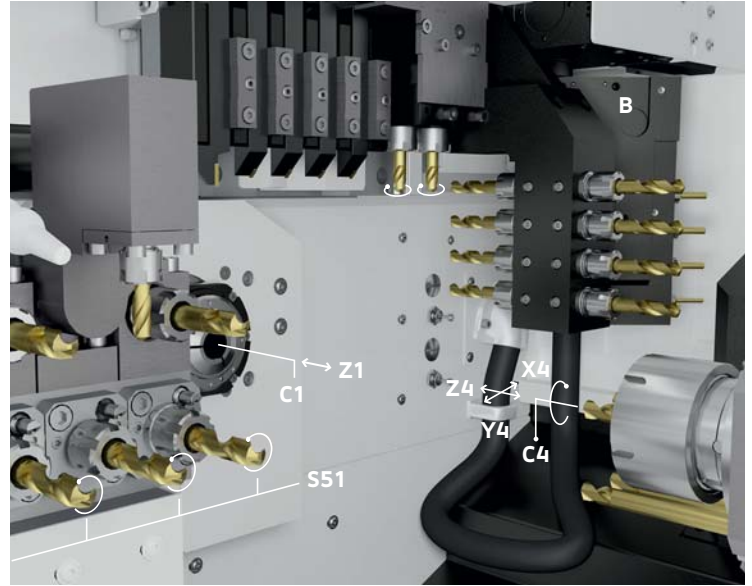
High requirements dental implant manufacturing

Manufacturing titanium dental implants places strict demands on precision, repeatability and surface quality. These components typically combine functional threads, precise support tapers and, depending on the geometry, angled drillings or complex shapes. Even the slightest dimensional variation can impact osseointegration and the clinical reliability of the implant.

The material itself adds another level of complexity. Titanium, due to its toughness and low thermal conductivity, requires stable kinematics, controlled cutting forces and excellent rigidity to ensure consistent surface finish and optimized tool life. In this context, manufacturers are looking for solutions capable of combining as many operations as possible on a single machine, while maintaining flexibility and productivity.



5 linear axis + B-axis (option) – Swiss DT 32 HP



6 linear axis – Swiss DT 26/6 HP

Swiss DT 26: an entry-level machine designed to go further

With the Swiss DT 26, Tornos offers a modern approach to the entry-level machine. Designed for machining bars up to 25.4 mm in diameter, it is built on a rigid cast-iron base that ensures excellent mechanical and thermal stability. The two spindles, identical in power and torque, are liquid-cooled to guarantee consistent cutting performance, even during demanding machining operations.

The Swiss DT 26 also stands out thanks to its fully modular machining area. It can be configured to perform turning, drilling, milling, whirling and even gear hobbing on a single machine. Available in five or six linear-axis versions, it can operate with or without a guide bush, facilitating production change-overs and reducing setup times. This positioning makes it an accessible solution without compromising machining capabilities.

B axis designed for versatility

Dental implants frequently incorporate angled drillings, inclined surfaces or complex functional geometries. To meet these requirements, the Swiss DT 26 can be equipped with a B axis mounted on the rear tool plate.

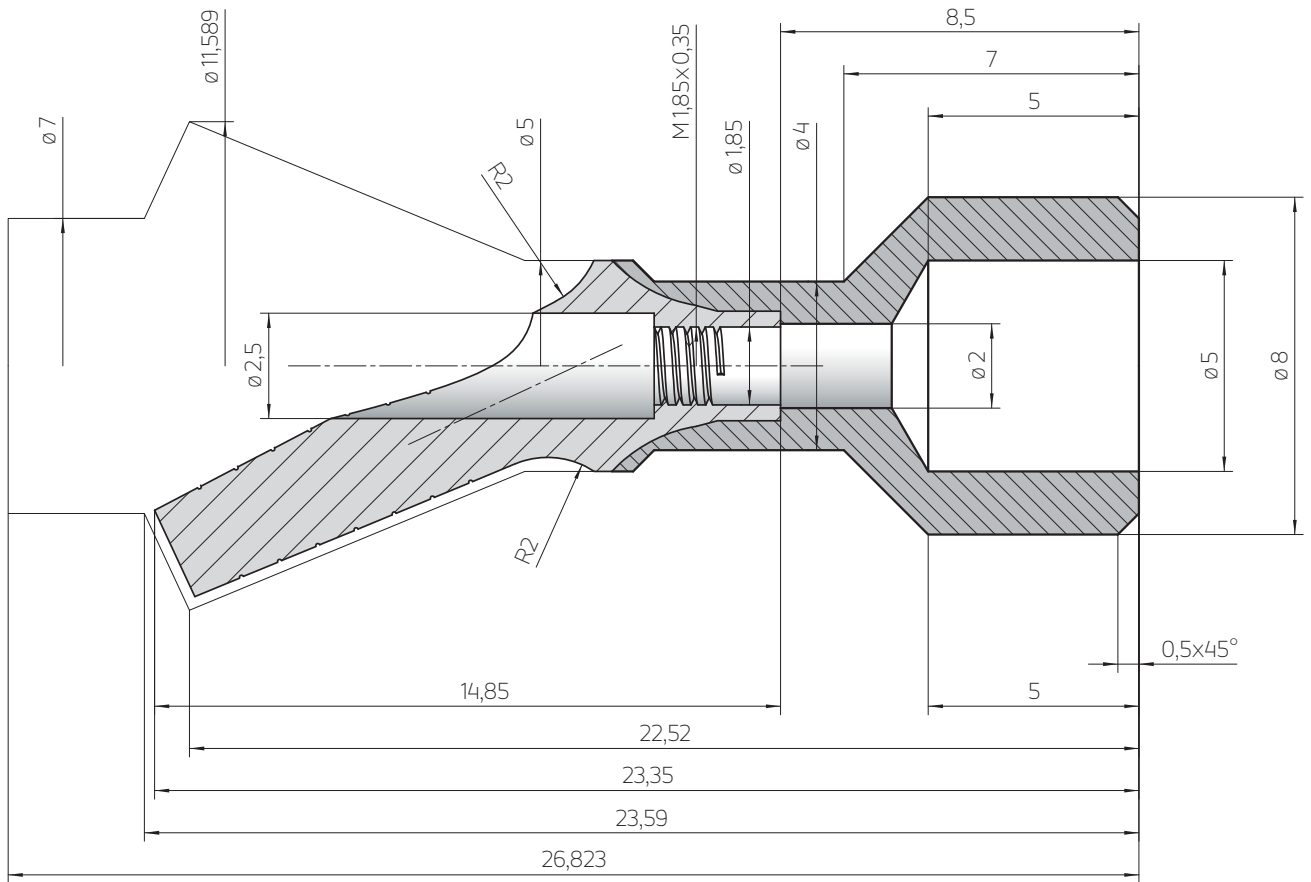
In its standard configuration, the B axis accommodates three spindles, which can be used for both main and back operations. This setup allows drilling and milling at different angles without repositioning the part, while maintaining a simple and efficient process layout.

As an option, the B axis can accommodate up to four spindles, providing additional flexibility in distributing operations and optimizing cycle time. This flexibility is particularly valuable for implants featuring multiple angled drillings or geometries requiring different milling operations.

Available in indexed or continuous versions, the B axis also enables simultaneous five-axis milling. This feature typically reserved for higher-end machines is now available on an entry-level platform—particularly relevant for producing complete implants in one setup.

All operations combined on a single machine

The kinematics of the Swiss DT 26 allow all operations required for dental implant production to be performed on a single machine. Turning generates the base shapes and threads with excellent



dimensional stability. Axial and cross-drilling operations can be performed near the counter spindle, facilitating the machining of precise internal channels.

Thanks to the B axis and available milling spindles, micro-milling of inclined surfaces and functional shapes is directly integrated into the machining cycle. The possibility of working with or without a guide bush makes it possible to adapt the machining strategy according to part length, while optimizing cycle times for short implants.

Concrete benefits for medical manufacturers

For bar-turning specialists and medical manufacturers, the Swiss DT 26 combines simplicity, versatility and scalability. Its cast-iron base ensures excellent rigidity and limits vibration, contributing directly to part precision and repeatability. The two identical spindles facilitate balancing main and back operations, with a direct impact on cycle time.

The modular machining area and flexible B-axis configuration allow the machine to be adapted to a wide variety of implants, from simple to highly

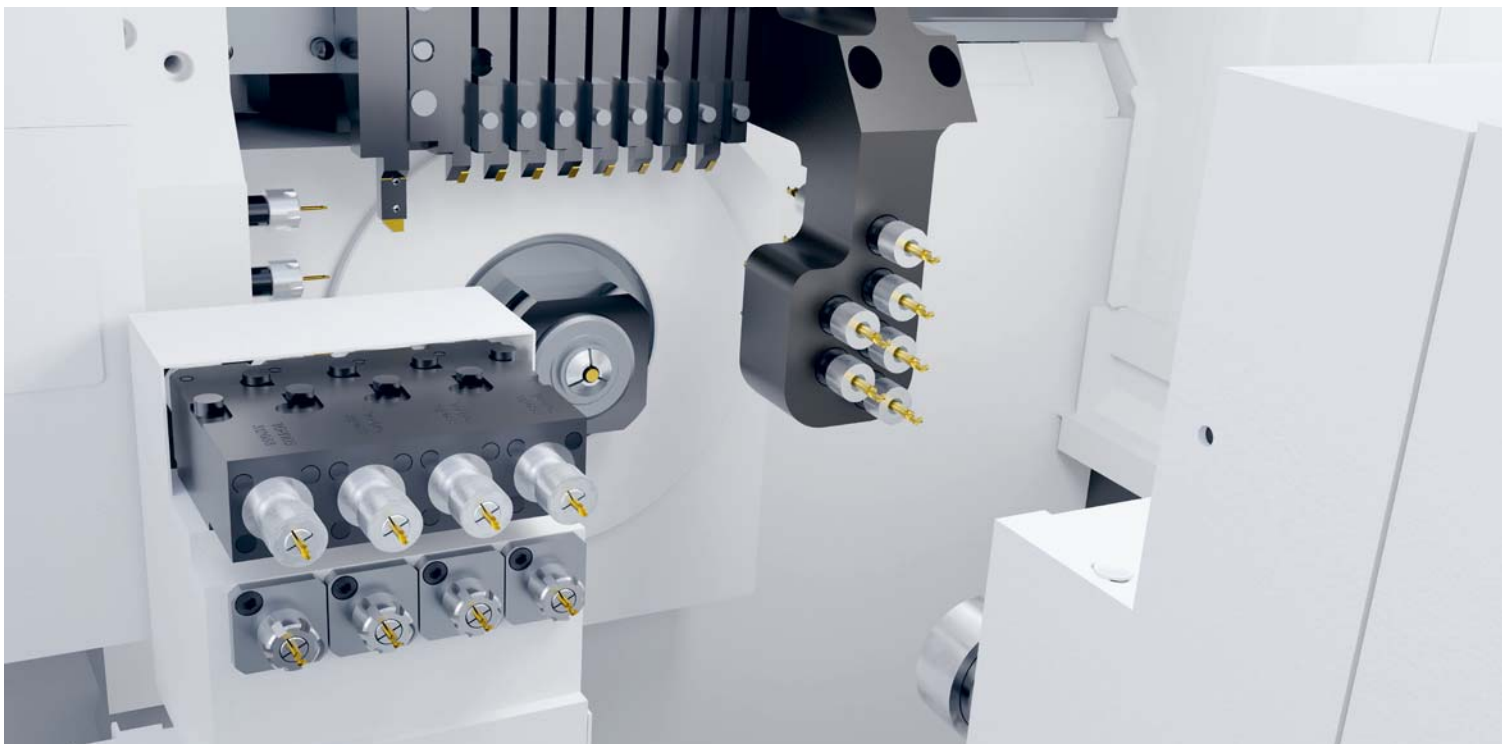
complex designs. Users benefit from an evolutive platform capable of supporting higher-end applications without questioning the initial investment.

An accessible solution for demanding applications

By combining a robust mechanical base, a modular machining area and a B axis available in indexed or continuous versions, the Swiss DT 26 blurs the line between entry-level and high-end machines. It offers medical manufacturers a complete solution for dental implant production, combining flexibility, precision and cost control.

For workshops seeking access to demanding medical applications while maintaining an excellent price-performance ratio, the Swiss DT 26 stands out as a versatile, scalable and perfectly adapted machine for today's precision bar turning challenges.

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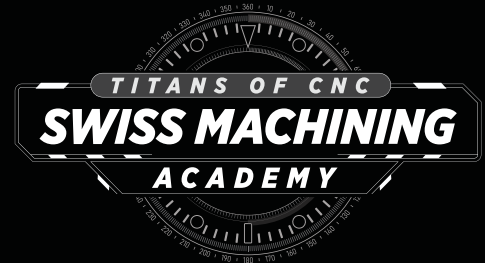
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