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Tornos Swiss GT:
Versatility
and performance
at the forefront

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**When it comes to
Swiss-type lathes,
it's Tornos only
for Premier Swiss**

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AFDT:
Because together,
we're stronger

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Schrub Industries:
A success story of
innovation and
growth with Tornos

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"The key to our success has always been our ability to fully understand our customers' needs."

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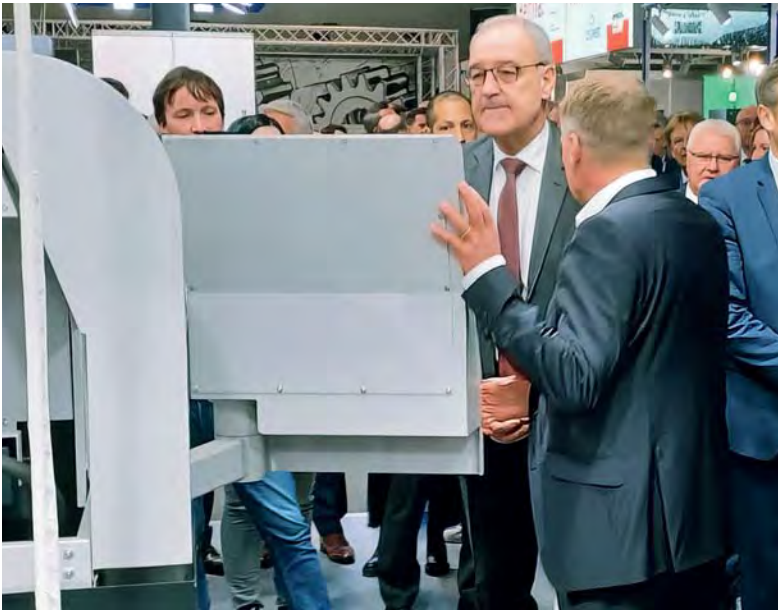
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“At Tornos, it is always a team effort. I deeply believe in the collaboration and commitment of each individual to build our future success.”

Jens Thing CEO of Tornos

Stepping forward to write the next chapters in the Tornos story

Jens Thing CEO of Tornos

As the new CEO of Tornos, I am honored to address you for the first time in this role. My role as CEO allows me to closely monitor our innovations and your expectations, demonstrating our ongoing commitment to offering you solutions that meet your exact needs.

This year promises to be rich in events and new developments. We invite you to mark your calendars for SIAMS, to be held in Moutier, Switzerland, in April. This event is the ideal opportunity for you to discover our product range up first-hand, particularly our Swiss XT, which perfectly embodies the Tornos hallmarks of innovation, precision and reliability.

The brand-new Tornos Swiss XT stands out in the field of precision machining thanks to its innovative design and versatility with its eight or nine axes, offering significant advantages for manufacturing complex parts. The range includes models for different bar diameters, 16, 26 and 32 mm. The machine is equipped with powerful spindles and ceramic bearings, ensuring efficient cutting at speeds of up to 12,000 rpm and guaranteeing power and precision in a variety of machining applications.

The Swiss XT also stands out for its ability to perform five-axis simultaneous machining thanks to the plug-and-play B axis, significantly enhancing machining possibilities for complex shapes. Its double-gang configuration accommodates up to 40 tools; the Swiss XT's compatibility with tools from our Swiss DT and Swiss GT machines offers great flexibility and streamlined tool selection, reducing nonproductive time and boosting productivity. The integration of advanced technologies such as

Active Chip Breaker Plus (ACB Plus) and the ease of use provided by the TISIS system simplify machining management, optimize production processes, and ensure a smooth transition to the Swiss XT for users of existing Tornos machines.

The Tornos Swiss XT ensures precision machining thanks to its advanced design combining flexibility, power and precision. Its adaptability to various configurations, multi-axis simultaneous machining capability, and compatibility with existing tooling make it ideal for a wide range of industrial applications, including automotive, hydraulics/pneumatics, medical, the watchmaking industry and aeronautics. With the addition of features such as a B axis, our ACB Plus technology, and TISIS software support, the Swiss XT promises to dramatically improve the productivity and efficiency of machining processes. Our Swiss XT positions you to shape your company's future with machines that are as powerful as they are reliable.

The future holds many challenges but—above all—immense opportunities. We intend to seize them together with you in a spirit of collaboration and innovation. Your trust and loyalty have always been the pillars of our success, and this will continue. The strategy we have developed over the last few years remains as relevant as ever, and I am committed to pursuing it, with the whole Tornos team, ensuring that it is continuously adapted to market developments and your specific needs.

At Tornos, it is always a team effort. I deeply believe in the collaboration and commitment of each individual to build our future success. We rely on our

“Together, with boldness and confidence—let’s continue to shape the future of the manufacturing industry.”

team, which is our greatest asset, to continue to innovate and excel. Together, we aim to exceed expectations and create exceptional products while offering the quality service you deserve.

I look forward to seeing you at SIAMS and sharing with you our passion and vision for the future. Meanwhile, please do not hesitate to contact me directly at thing.j@tornos.com with any questions or suggestions.

Together, with boldness and confidence—let’s continue to shape the future of the manufacturing industry.



High Performance Tool ACE Spot Drill

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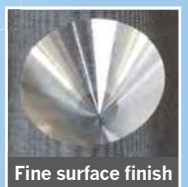
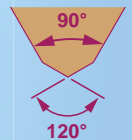
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Fine surface finish

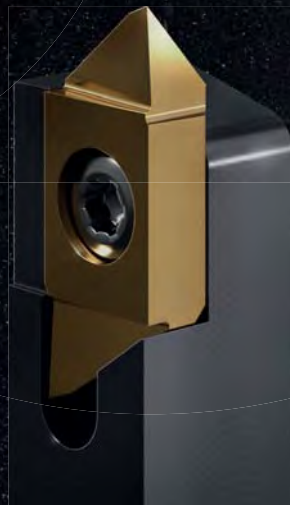




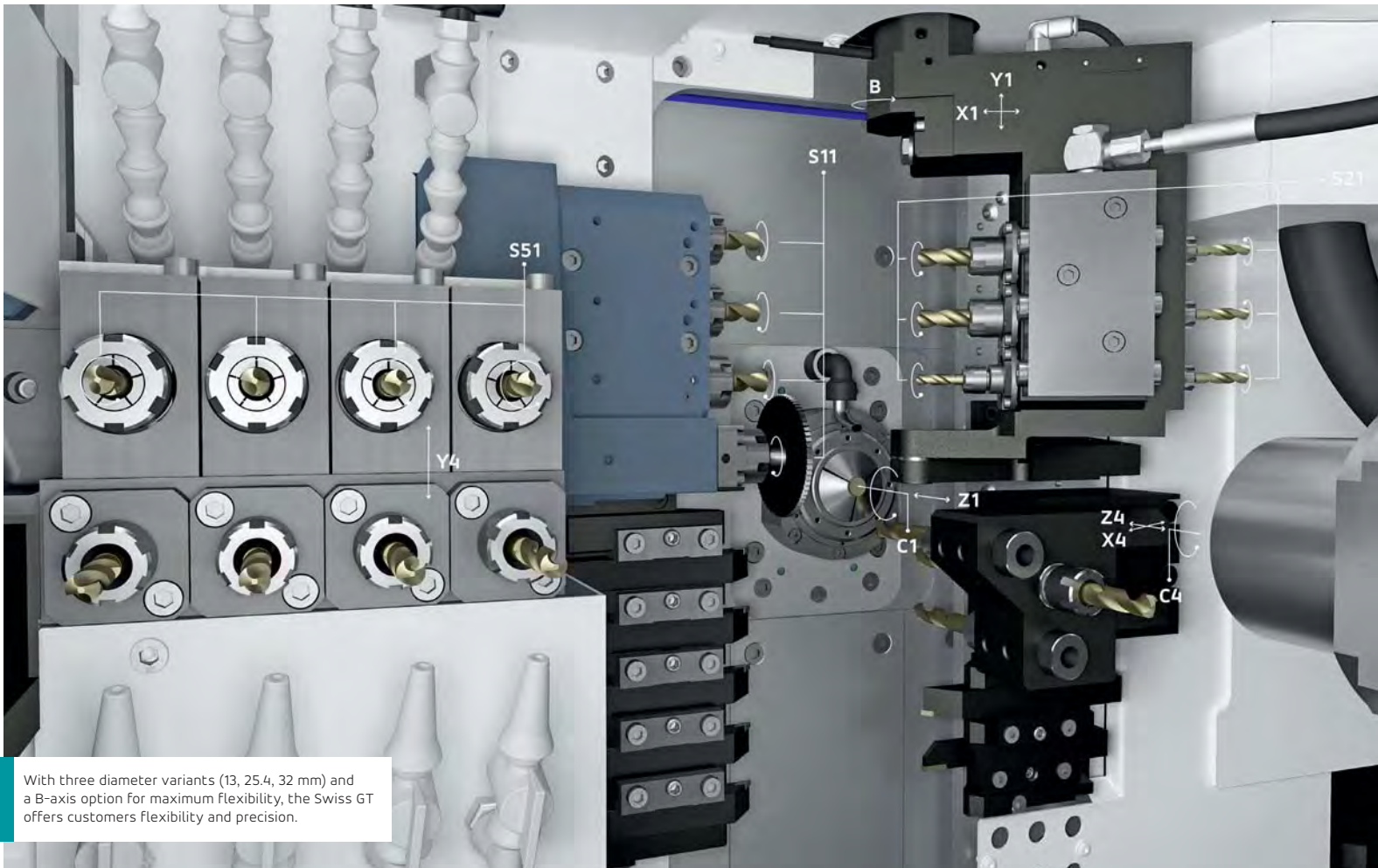
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With three diameter variants (13, 25.4, 32 mm) and a B-axis option for maximum flexibility, the Swiss GT offers customers flexibility and precision.

TORNOS SWISS GT:

Versatility and performance

at the forefront

The Swiss GT excels in the manufacture of conventional and complex parts. This is a credit to the B-axis available on the Swiss GT 13, Swiss GT 26 and Swiss GT 32 models.

This technology enables efficient production of long or short parts, with a maximum capacity of 40 tools, including 14 turning tools. This makes it easy to carry out a wide range of tasks with unrivalled precision.

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Tornos emphasizes ease of use with its TISIS programming software and the Tornos Machine Interface (TMI), simplifies programming and settings. The Swiss GT incorporates features such as a high-capacity chip tray and a spacious machining area, making operation and maintenance easier than ever.

Designed for Industry 4.0

Ready for Industry 4.0, the Swiss GT ensures high productivity and performance with powerful motorization and an integrated motorized revolving guide bush. This enables rotation speeds of up to 15,000 rpm. This speeds up precision machining, reducing cycle times and improving surface quality.

Unprecedented flexibility with the Swiss GT

The Swiss GT sets new standards in machining flexibility thanks to its modular design, enabling a smooth transition between machining with and without guide bushes. This versatility, combined with the ability to convert the machine in less than 15 minutes for specific configurations, propels the Swiss GT to the pinnacle of machining solutions for manufacturers seeking maximum operational performance. What's more, the interchangeability of specialized devices with the Swiss DT, Swiss ST, and Swiss XT series amplifies this flexibility, considerably reducing investment costs and accelerating adaptation to varied production requirements, making the Swiss GT an unrivalled platform for efficiency and versatility.

Towards new horizons

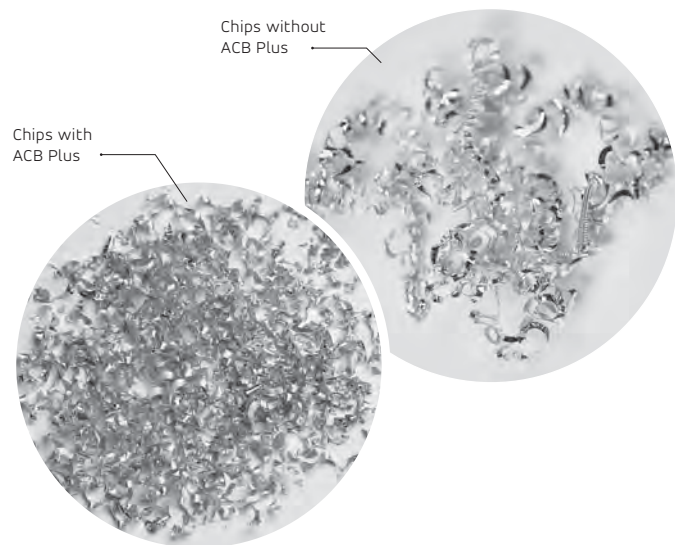
The Swiss GT range stands out for its ability to adapt to diverse production requirements thanks to three different bar diameters. The Swiss GT 13 for diameters up to 13 mm, which is ideal for small, high-precision parts; the Swiss GT 26 handles diameters up to 25.4 mm, offering exceptional versatility for a wide range of parts; and the Swiss GT 32, is designed for diameters up to 32 mm to suit jobs requiring greater cutting capacity. This diversification puts the Tornos Swiss GT range in a privileged position to respond to all production configurations, guaranteeing optimum quality and efficiency every time.

The Swiss GT range is the ideal partner for conquering new markets and working with innovative materials. It reflects Tornos' commitment to providing advanced machining solutions that skillfully combine technology, performance and ease of use, propelling its customers' production capabilities to new heights.

Innovation and flexibility: the B-axis in the Swiss GT range

The integration of the B-axis throughout the Swiss GT range, available for the Swiss GT 13 B, Swiss GT 26 B, and Swiss GT 32 B models represents a significant advance in terms of machining capabilities, enabling continuous 5-axis machining to produce complex and sophisticated parts. The Swiss GT 13 B stands out as the only machine in the world to combine 6 linear axes with a B-axis,

demonstrating Tornos' commitment to developing state-of-the-art machining solutions. This feature considerably enhances the versatility of the Swiss GT, enabling unrivalled precision and complexity in the design and manufacture of parts.



Optimized machining with the ACB Plus system

The Swiss GT range incorporates the ACB Plus (Active Chip Breaker Plus) system, a major Tornos innovation for chip splitting. This revolutionary system improves machine efficiency by facilitating chip evacuation and minimizing interruptions. This is essential for maintaining smooth, continuous production and plays a crucial role in securing the machining process. By ensuring efficient chip splitting, the ACB Plus prevents blockages and interferences that could compromise production continuity.

In addition to optimizing machining, the ACB Plus system makes a significant contribution to environmental sustainability. Generating smaller chips enables better compaction in the chip bins, thus reducing the frequency of cleaning and the need for transport. This reduction in truck movements helps to reduce the carbon footprint associated

with chip evacuation, underlining Tornos' commitment to innovations that promote both industrial efficiency and environmental protection.

Energy saving with Eco Mode on Swiss GT models.

Swiss GT models are also equipped with Eco Mode, a feature designed to optimize energy consumption. This mode significantly reduces the machines' energy footprint by adjusting consumption to the actual needs of the machining process. The integration of this option underlines Tornos' commitment to sustainable development and responsible innovation, offering users a solution that is both high-performance and environmentally friendly.

Accessories and peripherals for enhanced productivity

Finally, the Swiss GT stands out for its compatibility with a wide range of peripherals, further enhancing its versatility and productivity. These include chip conveyors, oil mist extractors, extraction systems for long parts, and high-pressure pumps. These additional options enable users to customize their Swiss GT to meet specific needs, optimizing machining processes and enhancing the working environment.

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



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TORNOS SWISS XT:

Revolutionizing precision

and efficiency in bar turning

The dawn of a new era of machines with compact footprints, innovative chip management and advanced counter spindle operations has arrived

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In the world of bar turning, efficiency and precision are the buzzwords. Today, we're on the cusp of a revolution with the introduction of the Swiss XT, a machine that redefines industry standards.

Compact footprint, big impact

One of the Swiss XT's greatest assets is its compact footprint. With a width of just 1.32 m, it allows shops to optimize their production space by installing an additional machine every 11 m. This means more productivity in less space, a revolution for shops looking to maximize their operations without compromising quality.

Chip management reinvented

Chip management has long been a challenge in the industry. The Swiss XT tackles this problem with an innovative solution - an off-machine filtration concept. This approach not only facilitates chip removal but also contributes to better maintenance and longer machine life.

Unprecedented counter-spindle operation

The counter spindle of the Swiss XT is a technological marvel. With independent radial and frontal motorization, it offers unmatched flexibility and power for complex operations. This feature makes it possible to produce more complex parts with extreme precision, opening up new possibilities for manufacturers.

Efficiency and simplification of rotating tools

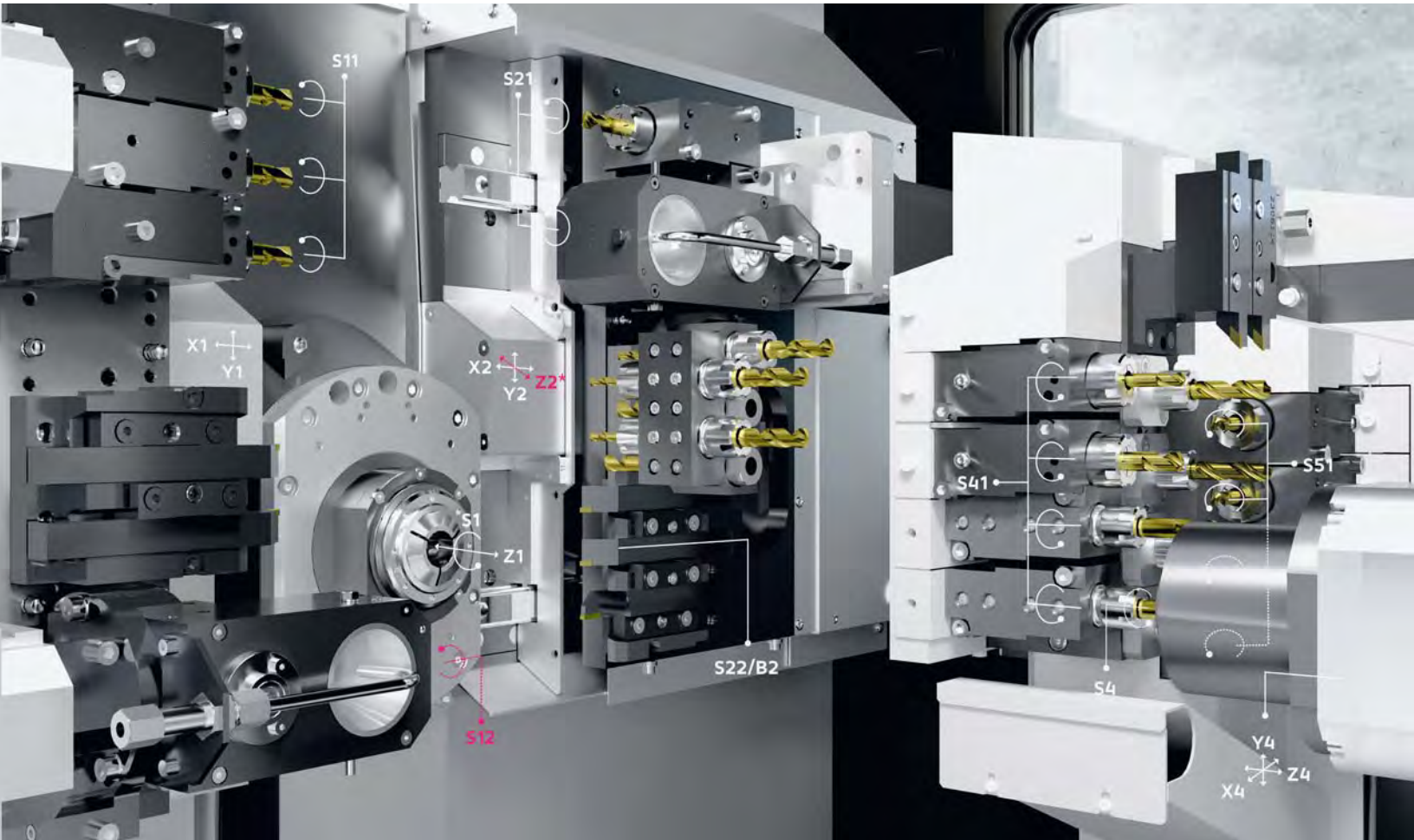
One of the remarkable innovations of the Swiss XT is the ability to use the same rotating tool for different operations, whether radial in main operation (OP), radial in counter operation (COP) or frontal in COP. This versatility is made possible by a sophisticated counter-operation motorization that not only increases the flexibility of the machine but also significantly reduces the need for different types of driven tools.

Multiple advantages

Cost reduction: The use of a standard rotating tool for several types of operations reduces the need to invest in complex, specific tools. This translates into significant savings in both tool purchases and inventory management.

Simplified production: By eliminating the need for complex tools for specific operations, the Swiss XT simplifies the production process. Operators can now perform tasks previously considered complex with greater ease and efficiency.

Increased flexibility: The ability to use standard tools for a wide range of operations provides unrivalled production flexibility. Manufacturers can quickly adapt to changing production requirements without having to reconfigure equipment or purchase new tooling.





A competitive edge

The motorization of the Swiss XT's rotating tools is a real competitive lever, enabling shops to respond with agility to diversified demands and to produce complex parts with greater efficiency. This feature, together with the savings generated by reducing the number of driven tools, positions the Swiss XT as an essential solution for companies wishing to optimize their bar-turning operations.

Open environment for maximum flexibility

The Swiss XT's commitment to flexibility and easy integration is demonstrated by the machine's open environment with Profinet Fieldbus. This feature allows users to easily connect external devices, making the machine adaptable to a variety of production needs.

The Swiss XT is not just a machine, it's a vision of the future. With its compact footprint, innovative chip management, advanced counter-spindle operations and open environment, it's ready to transform shops into high-precision production centres. For those looking to evolve their operations, the Swiss XT is a promise of efficiency, flexibility and uncompromising quality.

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



Premier Swiss founder and president Dulio Arellano has built his business on Tornos Swiss-type lathe technology.

When it comes to Swiss-type lathes,
it's Tornos only
for Premier Swiss

Ask Premier Swiss founder and president Dulio Arellano the secret to his success as the owner of a growing machine shop providing Swiss turning services, and he'll quickly point out that his business uses only Tornos Swiss-type automatic lathes, enthusiastically declaring, "We love Tornos machines."



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Dulio Arellano, who founded Premier Swiss in 2018 in Addison, Illinois (United States), is a machinist through and through—passionate about every detail of transforming a piece of metal into something useful.

'My passion'

"Seeing the object take shape, making something great, and being of good service: This became my passion. I wouldn't just go to work and then come home and forget about work. When I got home, I would research how to do this or that, and the next day I would go to work excited about what I had learned," said Dulio Arellano, who worked as a computer numerical control (CNC) machinist before joining Tornos Technologies US (TTUS) in 2014 as an application engineer specializing in multispindle technology.

“More than other automatic lathe manufacturers, Tornos builds machines with the machine operator in mind.”

Dulio Arellano

Founder and president, Premier Swiss

It was at TTUS that Dulio Arellano honed his skills under the tutelage of Swiss-type, multispindle lathe, service, and parts experts Paul Cassella, Mike Callahan, Roland Schutz, Donato Notaro, and Jennifer Bryk. Over the course of four years at TTUS, Dulio Arellano nurtured the idea of starting his own business.

“I’d had this idea in my mind for years—to make YouTube videos of how to do simple programming, repairs, or applications, because at the time there was very little information online about how to use Tornos equipment,” he explained. “Over the years, I would throw the idea back and forth, but for a long time, I felt like I wasn’t prepared to do it—that it had to be the right moment, because I wasn’t in the position to buy new equipment, which is very expensive.”

‘A kid in a candy shop’

Knowing that used machines would likely be his starting point when he was eventually able to start his own business, Dulio Arellano taught himself how to repair Tornos machines.

“I had the machine programming and operating knowledge but no knowledge about repairs. When the opportunity came for me to work at Tornos—

although I was doing programming training and more application work—I always volunteered to do service work when customers needed it,” he said. “Most of the time, application engineers don’t want to get dirty repairing a machine but for me, servicing Tornos machines was a huge learning opportunity. I was like a kid in a candy shop.”



The business currently owns seven DECO 10s, six DECO 20s, two Deco 26s, one DECO 13 and one Swiss GT 26.

During his four years at Tornos, with his idea of a starting an educational YouTube channel picking up steam, Dulio Arellano took the plunge: He found a building and bought a used Tornos Deco 10 Swiss-type lathe, which he overhauled to running condition. As luck would have it, a Tornos customer gave Dulio Arellano his first parts production order.

“They mentioned that they were really struggling to keep up with production and without even thinking, I said, “Well, maybe I can help you,”” he recalled. “They took it seriously and started asking me more about the machine—and from there I started producing parts. I was still working at Tornos full-time and working part-time in my shop—every evening and on weekends, too—producing parts in low but consistent quantities and quality.”



Built on Tornos

In 2018, armed with expertise honed at Tornos and his innate affinity for long hours and hard work, Dulio Arellano left Tornos and opened Premier Swiss. In a very short time, production volume made it possible for him to move to a new building and purchase two preowned Tornos machines: a nine-axis DECO 13 and 10-axis DECO 20.

"We love Tornos machines and use them exclusively. More than other automatic lathe manufacturers, Tornos builds machines with the machine operator in mind. This is obvious when you work on the machines: the ergonomics, access, programming, tool setting," Dulio Arellano said, offering the SwissNano and MultiSwiss as a perfect example of the engineering genius behind Tornos' machine design. "Normally with automatic lathes, it's very complex to get your hands into the machine, but the SwissNano and the MultiSwiss, for example, offer full access.

Premier Swiss shop lead Miguel Jaimes packs parts for dispatch to a customer.





Machined on the Tornos DECO 10: 420 stainless steel medical instrument components

These things make a big difference: Tornos machine design considers so much more than the workpieces they will produce.”

Today, Premier Swiss—which started in a 1,500-square-foot (140-square-meter) building with himself as the only employee—occupies an 8,500-square-foot (790-square-meter) facility, employs eight people, and is in the process of gaining ISO 13485-2016 certification, the global standard for medical device quality management systems. As Dulio Arellano’s business grows, so does his Tornos machine fleet that he fondly refers to as his arsenal in a highly competitive manufacturing environment. In 2019, Dulio Arellano invested in three more Tornos

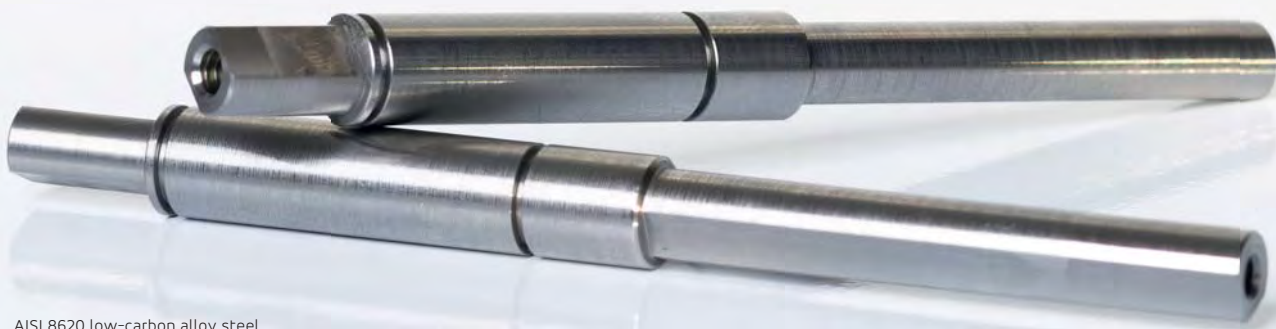
machines: a 10-axis DECO 13 and two seven-axis DECO 10s. In 2020, he purchased a Swiss GT 26 to help him tackle more precise, tight-tolerance parts.

Dulio Arellano pointed out that Premier Swiss today serves a wide range of industries producing hydraulic components for agricultural machinery as well as components for the defense, medical, automotive, and electronics industries. From prototyping and short runs to batches of 250,000 parts ranging from 0.010 inches (0.254 mm) to 1 inch (25.4 mm) in diameter, Dulio Arellano’s Tornos machines give him a solid foundation for future success.

Looking to the future

As if running a business machine shop were not enough, Dulio Arellano also has his eye on the future: This year, he began researching the next additions to his Tornos “arsenal.”

“I still have plans to add more Tornos machines. I’ve researched replacing one of my DECO 20s with a Swiss GT 26 or replacing two DECO 10s with two Swiss GT 13s,” he explained, adding that he has also considered Tornos DECO 10 Plus program, which transforms workhorse DECO 10 machines into completely refurbished, thoroughly tested, and fit-for-the-future DECO 10 Plus machines with the latest generation FANUC CNC.



AISI 8620 low-carbon alloy steel automotive components machined on the Tornos Swiss GT 26



Premier Swiss founder and president Dulio Arellano (right) collaborates with Premier Swiss shop lead Miguel Jaimes.

Personalized service

Just as Dulio Arellano feels that Tornos machines are designed especially for their operators, he aims for his business to function as an extension of his customers' business.

"Our success is due to a combination of good communications and our commitment to personalized service. My first approach is to ask the customer, 'Have you made this part before? What issues did you run into? What quality problems have you had?' The answers tell me what I need to focus on what I need to find a solution to," he said. "And sometimes I don't have to ask. Sometimes the customer tells me right from the start, 'We've tried to make this part and we're struggling.' I want our customers to feel that Premier Swiss is an extension of their own business, not only for producing parts but for providing support and exchanging ideas."

premierswiss.com

Also on his wish list is a Tornos MultiSwiss.

"The MultiSwiss could fill a gap in the business. It's a very complex machine and it was kind of my 'baby' when I worked at Tornos. I think I worked on more MultiSwiss machines than anyone else at TTUS: setups, training, prototypes," he said.



Titanium components for medical instruments, expertly machined on the Tornos DECO 20



AISI 1215 carbon steel industrial hydraulics components machined on the Tornos DECO 20



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As easy to program and operate as a single-spindle lathe, the MultiSwiss is five times more productive, enabling significant increases in quality, consistency and output.

TITANS OF CNC AND TORNOS:

Unlocking the secret features of the MultiSwiss

Just as renowned computer numerical control (CNC) education leader and Tornos' partner TITANS of CNC is revolutionizing technical education with its free, online-based TITANS of CNC Academy, Tornos' MultiSwiss range of solutions is driving a revolution in multispindle turning. TITANS of CNC's Donnie Hinske—an accomplished machinist with more than 20 years of experience—says the Tornos' MultiSwiss “is on a whole other level” when it comes to features.

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Unlocking the secret features of the MultiSwiss, Hinske recently led a walk-through of this solution that represents a link between multispindle and Swiss-type lathes. As simple to program and operate as a Swiss-type lathe, the MultiSwiss is five times more productive, enabling significant increases in terms of quality and uniformity.

“The MultiSwiss has several features that I’ve never seen on any CNC machine and I want to walk through a few of my favorites,” said Hinske. “The first thing is the journey of the oil. It’s way crazier than you’re thinking. I’m super happy that Tornos’ MultiSwiss filters as much as it does. If you already have a Swiss machine, you’re used to looking at a setup like this. Most Swiss-made coolant tanks are only 50 gallons [190 liters] and they have one or two pumps and one or two filtration systems.”

The MultiSwiss, Hinske said, takes coolant capacity “to a whole other level.”

“The MultiSwiss has several features that I’ve never seen on any CNC machine.”

Donnie Hinske

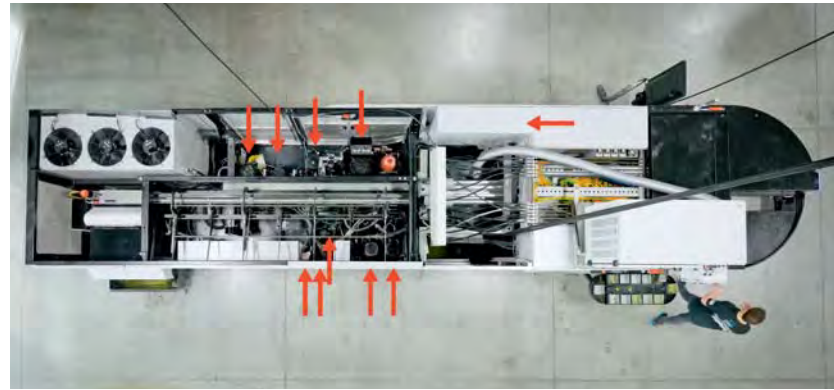
Swiss-type machining supervisor,
TITANS of CNC

“This machine’s got over 2,000 liters of coolant in it, which is about 540 gallons,” said Hinske, clearly thunderstruck, adding, “[It] has 10 pumps and several different filtration systems on it because when [it’s] running, we have a bunch of metal chips bouncing around in here, mixing with the oil and getting contaminated, and all of that has to go down into one spot in our chip conveyor tank.”

At the back of the MultiSwiss is the first filtration system.

“This paper filtration system filters down the oil to 50 microns or fewer,” Hinske pointed out. “It’s a really simple device; it just uses gravity. Now what is 50 microns? It’s about the size of a human hair—so, that means nothing bigger than a human hair is going to get through this paper filter, which is pretty impressive.”

But the MultiSwiss gets even more impressive.



“After the oil goes through the paper filter, it goes through four more 50-micron metal filters [which] catch anything the paper filters don’t get,” he said.

The oil in a MultiSwiss travels on several journeys, Hinske pointed out.

“It all starts at the centrifuge. This spins the oil and gets all of the finger, paste-like chips out of the oil using just centrifugal force,” he said. “After that, the clean oil goes through a hose and is picked up by a pump, which then sends the oil to the 5-micron filters on the other side of the machine.”

Fast forward: At the other side of the machine are those 5-micron filters.

“Like I said earlier, 50 microns is the size of a human hair, so 10 times smaller than that is what these [5-micron filters] are going to catch, then they go into what’s called the cold tank, which is for the spindles only,” Hinske explained. “This is the oil that runs through the spindles for the hydrostatic effect. This is chilled down to 26 Celsius. The rest of the oil in the machine is inside what’s called a hot tank, kept at 30 Celsius.”

If the coolant in the cold tank becomes too warm, a pump is activated to send the oil to the 26 Celsius chiller—and the MultiSwiss has two chillers.

“Once the oil is chilled and filtered to an extreme level, this kicks on and is what makes the hydrostatic effect in our spindles happen,” Hinske noted.



As the oil is pumped to the spindles, it goes through a backup 20-micron filter, and is subject to an additional check that restrains pressure in case of an emergency, and then exits through the front of the MultiSwiss.

High-pressure pumps

The warm tank has two sets of pumps, Hinske said.

“The first is the pump for high-pressure coolant for 30 bar and another is the pump for 80-bar high-pressure coolant,” he explained. “These two pumps shoot the oil at your tool while it’s cutting to keep the tool cool and the chips off of the tool.” So [you can use] 40 bar or 80 bar on your tools. I mainly use 40 bar and that’s good for most instances. [But] I always like to have a lot more pressure on my cutoff tool because that’s the most critical operation in a machining process: If your cutoff tool fails, everything that happens after that is pretty bad.”

Other astounding features

Hinske turned his attention to another next-level MultiSwiss feature: the machine control.

“The only difference between this and a FANUC control that you’re probably working with is the custom menus,” he said. “If I go ‘custom’ here, I have tons of different menus—so many menus.”

For example, at the simple press of a button, a probe can be deployed to catch all bar remnants when executing a cutoff, and adding a live tool holder is a snap, too.

“If you go through the menu, it’ll show you everything you need to add holders, take them out, whatever,” said Hinske. “I really like that. This way, you don’t have to go to a manual all the time to figure things out.”

Easy programming

Another “secret” MultiSwiss attribute is its easy TB-DECO programming.

“The MultiSwiss is wildly easier to program than you’re thinking,” Hinske said. “This machine automatically calculates so much for you when you create

Watch the TITANS of CNC video



a new part. Right out of the gate, I have 90 percent of the program written for me. All I have to do is fill in the blanks—material diameter, speeds and feeds, part profile—which is super nice. The fact that Tornos makes this easier is super.”

Hinske also praised the software’s 2D simulation of the part it’s running.



“If I click on my turning operation and go to ‘view outline,’ I can actually say ‘next code’ and go through each step, one at a time,” he said, noting that a blue line represents the current line, “which is really, really convenient because I can see what made code is going to do before I press ‘start.’ This is, by far, one of the most amazing things on this machine because it makes me feel a lot safer about pressing ‘start’ when 35 axes are all about to go flying into each other.”

tornos.com

FOCUS ON PRODUCTIVITY



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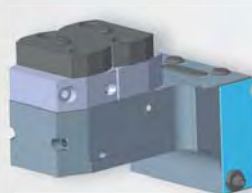


THE GWS-TOOLING SYSTEM:
INNOVATION MADE BY GÖLTENBODT!

The GWS-tooling system: Innovation made by Göltenbodt!

Göltenbodt driven tool holders provide solutions for practical needs geared to highest standards of quality and precision.

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- GWS80 interface for static tool holders for axial machining in conjunction with hydraulic expansion clamping facilities
- Coolant supply with max. 80 bar



GWS-change holder static
2 hydraulic expansion units,
Ø 20 mm (reducible)



GWS-change holder VDI25
1 driven ER16



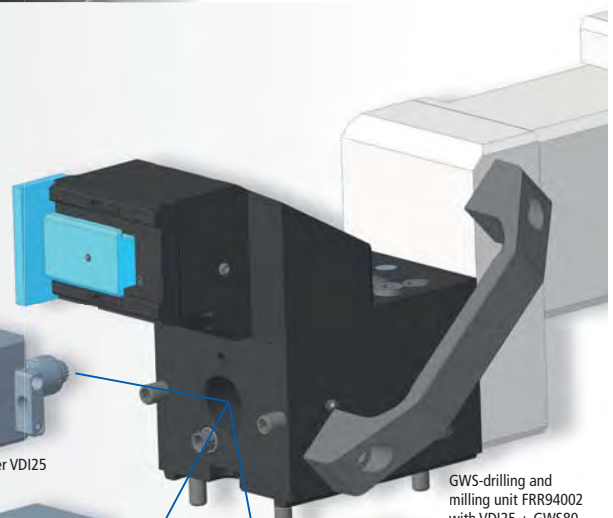
GWS-change holder
VDI25 2 driven ER16



GWS-change holder VDI25
3 driven ER8



GWS-base holder
AD88001



GWS-drilling and
milling unit FRR94002
with VDI25 + GWS80

Because together, we're stronger

AFDT (Association des fabricants de décolletages et de taillages) is a trade association founded over 75 years ago. Today, it has 80 member companies (including Tornos) and covers the whole of French-speaking Switzerland.



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This association was launched as an initiative of several regional screw-cutting companies that, at the time, proved indispensable in defending the interests of the screw-cutting industry - an industry born in the Jura Arc region and linked to the advent of watchmaking.

While the parts making up a watch were manufactured by hand on small bench lathes, the development of the watch market rapidly necessitated the mass production of ever more precise parts. The answer came in 1872 when the first automatic lathe with a 'sliding headstock' was invented to manufacture watch screws. Bar turning was born!

The invention of the screw-cutting machine led to the creation of several screw-cutting companies, which in turn formed a professional association. The AFDT was born! This professional association laid the foundations for the bar-turning profession and all the regulations associated with this new industrial activity.

Over the years, AFDT has evolved and set itself the following objectives:

- *Promote the bar-turning industry as a key industrial player in French-speaking Switzerland*
- *Present the important role of bar turning in the micro-technology production supply chain*

- Provide the region's bar-turning industry with an image that attracts young people's interest in choosing a career in the sector
- To ensure that the training of young professionals in the screw-cutting sector meets the needs of member companies.

To achieve these objectives, AFDT has given itself a more ambitious remit that is needed to carry out such a demanding program of activities. Two years ago, Ms Joëlle Schneider took up her post as Director of the Association. A trilingual personality, she is an expert in the bar turning industry, having worked for Swissmetal Industries SA and Greatbatch Medical. She is also the administrative manager of the CIP Technologie bar turning training center.

A new president has been appointed, Mr. Gregory Affolter

Following a selection process initiated in 2021, the AFDT Committee presented its candidate at the Annual General Meeting on June 20. The candidate, Grégory Affolter is the Managing Director of the Affolter Group in Valbirse. Grégory Affolter, 39, is married with four children. He has a degree in micro-technology from the EPFL. As for his professional background, after 3 years at Stadler Bussnang AG in project management and 3 years at LNS in Japan as an Operational Director, he has been running the Affolter Group company since 2016 with his brother Vincent and brother-in-law Nicolas Curty. Grégory Affolter is very involved in the economy and politics of the Jura Arc region and has shown great enthusiasm in taking on this new challenge. Grégory Affolter took over as President of AFDT on January 1, 2024.

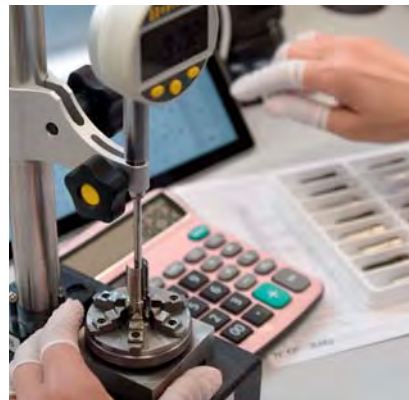
A few examples of recent AFDT activities carried out with its partners:

A bar turning open house

- Organizing a day at a bar turning company for young people and their parents to discover manufacturing as a career

Trade fairs

- Present and promote the bar-turning profession to young people of career-choice age and their parents, with a stand staffed by young apprentices.





Tornos round table at the AFDT press days

SIAMS TV DAYS

- Organize TV programs with bar-turning company managers to present the bar-turning industry to the general public.

Press days

- Organize company visits for the technical and economic press, radio and television, and the regional press, followed by a discussion reserved for journalists, to promote the industry.

Après-midi du décolletage

- To offer networking opportunities to the management of bar-turning companies, through exclusive meetings. This year: Manufacture de montres OMEGA

Screw-cutting Rendezvous

- Offering technical executives from bar-turning companies networking opportunities at technical conferences in partnership with CIP-Technologie.

AtelierDéfi

- Collaborate in the creation of a connected bar-turning micro workshop using modern hardware and software developed by a dozen regional companies, including Tornos.

Screw-cutting platform at SIAMS

- Provide financial and logistical support for the presence of bar-turning companies. This is conducted in particular through the 'Plateforme décolletage' joint stand.

Technology Rendezvous

- Organize high-tech company visits for bar-turning company managers and executives.

afdt.ch



In 1921, under the direction of Fernand Turrettini, the Managing Director of SIP, the MP4 jig boring machine was created and was considered a very important piece of work: with the extreme rigidity of the portal frame and its precise slide rails, it set standards about a century ago that the company still uses as a guide.

160 years of the Société Genevoise
d'Instruments de Physique (SIP)

Precision as *a sole focus*

Auguste de la Rive and Marc Thury from Geneva had no knowledge of control electronics, artificial intelligence or computers. Nevertheless, 160 years ago, when they founded the Société Genevoise d'Instruments de Physique (SIP), the scholars and scientists dared to do something unimaginable at the time: build scientific instruments that could measure accurately to hundredths of a millimetre. The company, which is now a Starrag subsidiary, entered the global machine business in 1921 with the introduction of their “Machine à Pointer” jig boring machine, which, according to Wikipedia, was not only the world’s first mass-produced machine tool, but also the first production machine capable of boring to micrometre accuracy.



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“SIP has lived precision since the very beginning,” says Jean-Daniel Isoz, Managing Director of the Ultra Precision Machining Centers Business Unit at Starrag, looking back. From the very beginning, a special role was played by botany professor and physics teacher Thury, who developed many instruments and apparatuses that were already capable of measuring to an accuracy of ten micrometers. As early as 1865, a dividing machine was created that precisely subdivided measuring rulers to within a few micrometers.

Shortly thereafter, the young company presented a special masterpiece at the World Fair in Paris: a telescope with a high-precision clockwork drive that moved parallel to the Earth’s axis of rotation and

thus made it possible to track the path of a star. This innovation from Geneva caused a sensation in the French capital, and de la Rive and Thury received a medal for this mechanical masterpiece.

Precision work with a rare copy of the standard metre

Proud of their medal, the scientists return from Paris to produce tachometres, water motors, gas ovens, refrigeration machines, electricity metres and precision rulers with the same meticulousness. But the two scholars made a name for themselves with high-precision apparatus and instruments. In 1899, de la Rive and Thury were awarded one of the twelve platinum-iridium copies of the third version of the standard metre for their precision work, which was usually only granted to state calibration institutes.

Thus exclusively equipped, over the next few years the Geneva-based company took their next steps in the field of high-precision: its achievements in precision are in demand, for example, by the Swiss Navy, for which a gigantic artillery target is being built. But SIP became famous in 1921 with the introduction of the “machine à pointer” jig boring machine,

“The quest for precision requires practical know-how and theoretical knowledge.”

SIP-100th Anniversary publication

which, according to Wikipedia, was the world’s first machine tool to go into series production. Its Technical Director, Fernand, Turrettini, described it as a “grand oeuvre”; an important piece of work for SIP. With the extreme rigidity of the portal frame and its precise slide rails, it set standards around a century ago that the company still follows. At the heart of this is a departure in machine production from the empirical process that was customary up



Recognising the importance of Geneva as the place where SIP was founded, Starrag also revived an old logo from 1915. Geneva is represented by a stylised G that encloses SIP.





The Geneva-based company developed an artillery sighting device for the Swiss Navy.

to that point. Turrettini transferred the principles of scientific metrology to industrial production without compromising the precision in any way.

Jig boring machine : first mass-produced and most precise machine tool in the world

In keeping with the tradition of the famous watch-making factories in his hometown, Turrettini relied on manual labor. Without compromising on manufacturing costs, he has specially trained experts scrape all the machine elements that are essential for precision - from the machine bed, linear guideways and ball screws to the spindle heads and axes. This elaborate manual work and the precise assembly of all the elements is possible thanks to the 1921 launch of the jig boring machine. According to Wikipedia, was the first production machine that was capable of drilling to the micrometre.

But even in the age of electronics, SIP has maintained their century-long focus on mechanical accuracy; a primary reason for the “long-term accuracy” of machines from this manufacturer of precision machine tools, which is now a subsidiary of the Swiss Starrag Group. “If the geometry of a machine deteriorates over time because of changes in the tensile stresses created during assembly, then no amount of laser measurement accuracy will benefit a user”, explains Jean-Daniel Isoz, Managing Director of the Ultra Precision Machining Centers Business Unit at Starrag. “Only when we have achieved the perfect geometry we do worry about compensating for the last few micrometres with electronics, for example.”

The Machine à Pointer was so well received, especially because of its “long-term accuracy”, that by its 100th anniversary in 1962 SIP had been able to sell 6,000 ultra-precise drilling machines with the abbreviation MP worldwide.

“We manufacture very precise machines because it is a passion for us. Yes, we are proud of it.”

Adriano Della Vecchia
Head of Product Line SIP



Ford's Detroit plant (1930). The car manufacturer was the largest customer at the time.

The company remains loyal to precision through solid mechanics at its new site in Vuadens in the Swiss canton of Fribourg. “Our predecessors developed the constructive basis for mechanical design in the 1920s, which still proves to be the best way for high-precision engineering,” Managing Director Jean-Daniel Isoz notes in retrospect. “That’s why senior mechanical engineers keep telling us ‘If you want to continue to offer top precision, please don’t change anything!’”

Geneva honors SIP with exhibition

However, the city of Geneva is also proud of the former metrology manufactory. In 2005, the Geneva Office of Cultural Heritage and Sites honored the technical and industrial heritage of an important company to which many Geneva residents still have a positive emotional attachment with the exhibition “SIP, from microscope to machine tool” at the Museum of the History of Science. The importance of Geneva for SIP was also recognised by Starrag a year later: after the

SIP 7000 jig boring machine inclusive palletiser unit.



takeover in 2006, the new owner revived an almost century-old logo, with a stylised G for Geneva once again enclosing the SIP lettering.

The company's founders would certainly be proud of the fact that SIP machines now rank as top products for the very highest quality standards within the Group's portfolio. Indeed, the spirit of the famous watchmaking metropolis of Geneva lives on after the relocation to the new Vuadens site in the Swiss canton of Fribourg, where Starrag Vuadens SA has been manufacturing the Bumotec and SIP product ranges since 2017.

Within the portfolio of the entire Starrag Group, both product ranges are among the top products for the very highest quality demands, yet it is not just the many years of expertise of the SIP team that is important. Adriano Della Vecchia, Head of Product Line SIP: "We manufacture very precise machines because it is a passion for us. Yes, we are proud of it."

starrag.com



Starrag in Vuadens, production site of the Bumotec and SIP product ranges.



View of the Starrag production hall in Vuadens where the 191 series is produced.

Listening to customers' needs for 50 years

Founded in 1973, Bumotec SA specialises in the development and manufacture of machine-tools dedicated to the complete machining of high precision micromechanical components. Since its creation, Bumotec has focused on the watchmaking market and the luxury goods industry, offering machine-tools adapted to the increasingly stringent requirements of these markets. Now celebrating 50 years of expertise, the Fribourg-based company was acquired in 2012 by the Starrag Group.



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Under the name Starrag Vuadens, and based in the Swiss municipality of the same name since 2016, the entity brings together two flagships of the Swiss machine-tool industry. At opposite ends of the spectrum, Bumotec, the micro-machining specialist, rubs shoulders with SIP, an expert in ultra-high precision mechanics. However, these two historical manufacturers share the same philosophy, the quest for the last few microns thanks to manually scraped surfaces, SIP's field of expertise for 160 years.

With the introduction of the Bumotec 191^{neo}, the latest evolution of the range's flagship 's191' model, Bumotec is setting a new milestone in terms of versatility. The path taken by Bumotec over 50 years, from a dozen employees when the company was founded to the two hundred that make up the company today, has its origins in the excellent relations that its founder had with the players in the watchmaking market. This proximity to the watchmaking world played a pivotal role in forging the DNA of the

“The key to our success has always been our ability to fully understand our customers’ needs.”



Samuel Boschung, Head of Production at Starrag Vuadens SA.

product range, ensuring it listened to its customers’ needs in order to offer specific machines perfectly adapted to the production of watch components.

Nevertheless, it was a bold gamble to start manufacturing highly specialised machines.

Jean-Daniel Isoz, Managing Director of the Ultra Precision Machining Centers business unit at Starrag Vuadens, explains how this balancing act was brilliantly executed by Bumotec.

“In the early decades of Bumotec, a large number of different machines were developed. They were adapted to certain profiles of watch parts, such as cases, bracelets and clasps. Manufacturing specialised machines are more risky without the security of mass series production. The economic risk is higher, but our predecessors had done very well. To mitigate this risk, there have always been a few bestsellers in our portfolio. The key to our success has always been our ability to fully understand our customers’ needs, which has led us to develop specific solutions. There is no better machine than the one adapted to the real needs of our customers, and we were naturally inclined towards the watch industry due to our geographical location and the network build by our founder. Today we strive to produce machines that are increasingly versatile whenever possible. To achieve this, we have focused on a portfolio of parts rather than a single type of part when developing our new machines. This allows us to offer more economical machines and facilitates after-sales service. This approach has also opened up new markets for us, such as medtech, aeronautics, and all micromechanics besides the luxury goods, because the machining challenges for these players are relatively similar to those of the luxury goods industry, which remains the core of our business. Thanks to Starrag, we have a strongly developed distribution network overseas.”



Bumotec S-92XL, 3- to 5-axis CNC in single- or multispindle configuration, produced in the early 1990s.

This has been essential to adapt to all customer needs and to overcome the language barrier in sales and after-sales services. This is another key to Bumotec's success as it is recognised within the industry and the rising reputation proves this fact. We spend a lot of time talking with our customers so ensure we can offer them a machine perfectly adapted to their needs. It is a win-win partnership, and that is the only way to move forward. The next challenges we are facing concern the digitalisation of the industrial environment, but our main priority will be reducing the environmental impact of our machines. We are working to reduce our carbon footprint during production, in particular thanks to our factory's equipment, heat pump, deep geothermal probes and the 8,300 m² of solar panels on the building's roof. Issues relating to the supply chain and the many parties involved is another area we are currently

working on. Our ongoing initiatives include the elimination of paper use by introducing digital brochures and going more and more remotely (training, technical project sessions, troubleshooting, etc.)."

LEAN transformation and how to make your company sustainable

Bumotec has been experiencing strong growth for several years now while the machines constantly increase their innovation. One of the major challenges was the implementation of a LEAN production line. This is nothing new and applied by many companies, but it becomes complex quite quickly when manufacturing highly customised machines. Despite these difficulties, and with the help of an external consultant, Bumotec successfully made the transition to LEAN production.

The new Bumotec 191^{neo} machining centre equipped with the latest generation HMI.



Samuel Boschung, Head of Production at Starrag Vuadens, looks back on this development, which began in 2014 and was fully implemented at the new production site in Vuadens.

“For the s191 we have saved between 15–20% on lead time, and up to 35% for the 191^{neo}!”

Samuel Boschung

Head of Production at Starrag Vuadens

“Our objective was to create a layout compatible with the new flows we wanted to implement at our new plant in Vuadens. Before, we used to work to order and each machine became a specific job. There was no standardisation. We couldn't find a common ground to standardise our assembly line because of the specifications of each machine. To solve this problem, we analysed the different tasks, which allowed us to “split up” the machines by station: machine base, peripherals and customer-specific features. The results of this study allowed us to identify common threads in order to implement strategies that could save us time. But we also needed to keep enough flexibility for our customers and their customisations during the built process. To structure our new factory, we divided our floor in several marked areas and we had already defined the functioning of the store. Afterwards, the implementation of the production line followed naturally by setting up specific workstations with immediate great success. This is a new way of working that has saved us a lot of lead time. This success encouraged us to deploy this philosophy also on other machines than the 191. We then focused on phases 2 and 3 of our LEAN transition. Reducing waste, decreasing non-value-added time, setting up employees on the stations, these were all essential

steps to gain time and increase efficiency. We have also introduced a procedure to create instructions for each machine. Things have also changed at management level. We have set up an SIM (Short Interval Management) initiative. Each department has a contact person who meets with the employees every morning at a fixed time to review the situation in order to provide information as quickly as possible. We are extremely satisfied with the results: for the s191 we have saved between 15–20% on lead time, and up to 35% for the 191^{neo}! The substantial common ground of the 191^{neo} allows us to manufacture this machine without customer orders, stock it and then customise it for future buyers within 6 to 8 weeks. It is a real change to the way we produce. It is quite a radical shift and requires a real strategy. In 2016, we employed about 30 mechanics and 15 electricians, which has now increased to 50 mechanics and 27 automation specialists. We have almost doubled our workforce!”

Bumotec 191^{neo}: Precision at every stage of its production.





Easy to use, the new human/machine interface simplifies the configuration of data parameters in production, and also facilitates the training of operators.

For half a century, Bumotec has been able to stand out from its competitors without being confined to a niche market. Bumotec's ability to listen carefully to its customers has enabled it to always offer the machine best suited to a specific type of need. Throughout its history, the company has seized the opportunities to develop innovative, high-performance machines. From the beginning to today, Bumotec machines have spread to many markets, starting, of course, with the luxury industry, but now including many others, all won over by the added value they bring.

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TORNOS
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Meeting at the summit: Florent Deroche and Sales Manager Jean-Michel Donnio in front of the EvoDECO 32

SCHRUB INDUSTRIES:

A success story

*of innovation and growth
with Tornos*

**From torch manufacturing to aerospace subcontracting,
Schrub is an evolution marked by excellence.**

Founded in 1966 in Tours, Schrub Industries started out as a copper merchant, evolving over the years to become a key player in the automotive and electrical sectors, while also developing a significant presence in the aerospace industry.

Today, with sales of Euros 6.5 million and 45 staff, Schrub illustrates a history of growth and innovation.



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The heart of Schrub's business lies in the manufacture of highly specialized parts for welding, a crucial component in automotive assembly. These parts play an essential role in ensuring the strength and durability of vehicles, reflecting the importance and complexity of their role in the industry. Schrub has established itself as a trusted partner for the major French automakers, whether direct or indirect customers, attesting to its exceptional expertise and know-how in this sector.

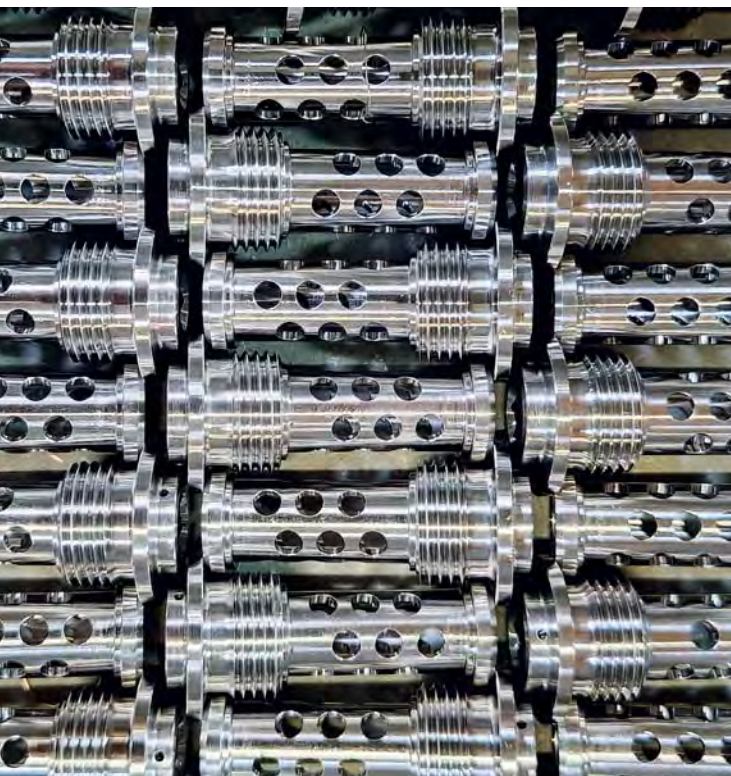
The company stands out not only for the quality of its products, but also for its ability to offer a vast range of references, adapted to the specific requirements of each type of vehicle and weld. This product diversity enables Schrub to respond precisely to the varied needs of its customers, thus strengthening its market position.

“Tornos Swiss DT machines, renowned for their reliability and ease of integration, are essential to meet the high demands of Schrub’s manufacturing program.”

In addition, efficient management of a substantial stock is a central pillar of the company, enabling it to respond rapidly to customer requests. This responsiveness is crucial in an industry where production and delivery times can have a significant impact on the entire automotive production chain. Schrub is committed to maintaining impeccable quality in all its processes, from design to delivery, ensuring customer satisfaction and maintaining its reputation for excellence.

To effectively meet complex production challenges and maintain its competitive edge, Schrub has invested in Tornos Swiss DT machines, reinforcing its partnership with a recognized leader in precision machining. Tornos Swiss DT machines, renowned for their reliability and ease of integration, are essential to meet the high demands of Schrub’s manufacturing program. These machines add significant value thanks to their cutting-edge technology, which enables fast, precise and high-quality production.

The integration of Tornos’ Active Chip Breaker (ACB) technology into Schrub’s machining process, particularly on Swiss DT machines, has revolutionized their production capacity, particularly in delicate operations such as drilling and deburring. Thanks





to ACB, Schrub is now able to secure and optimize its machining processes. This innovative technology effectively controls and breaks up chips during machining, reducing the risk of downtime and improving the quality of the parts produced.

The combination of ACB with Tornos Swiss DT and Dixi precision tools creates an ideal production environment for long production runs. This synergy enables Schrub to significantly increase its output while maintaining consistently high quality. The ability to carry out reliable, uninterrupted machining over long periods is essential to meet growing market demands and to ensure the profitability of operations.

Schrub Industries expands its aerospace business

Schrub Industries has undertaken a strategic diversification of its activities by entering the aerospace sector. This expansion has enabled the company to reduce its dependence on the automotive sector and open up new market opportunities. Building on the expertise acquired in the automotive industry, where compliance with specifications and high-quality standards are paramount, Schrub has successfully adapted to the rigorous demands of the aerospace sector. This sector, renowned for its stability, provides fertile ground for the company's growth and long-term future.



Schrub's successful integration into the aerospace industry was greatly facilitated by its state-of-the-art machine park, including the Swiss DT and the EvoDECO 32 from Tornos, as well as the undisputed expertise of Florent Deroche, the workshop manager. Mr. Deroche emphasizes the importance of a highly reliable machining process to minimize human intervention, a crucial requirement in the aerospace industry where precision and safety are of the utmost importance.

To meet these challenges, Schrub has invested in top-of-the-range solutions, including Dixi brand tools, renowned for their longevity and performance. These investments, in synergy with Tornos machines, renowned for their reliability and precision.

This enables Schrub to guarantee unrivalled quality standards. This level of machining excellence is essential to meet the stringent expectations of the

aerospace sector, and positions Schrub Industries as a leading player, capable of adapting and thriving in demanding industrial environments.

Strategic partnership with Tornos

The fruitful collaboration between Schrub and Tornos, established in 1987, has played a key role in Schrub's rise and expansion. Initially, Schrub's machine fleet was based on the DECO 20 and DECO 26 models, symbols of reliability and performance. In 2016, this collaboration was strengthened with the integration of the Swiss DT machines, specifically designed for the manufacture of welding tips, and the EvoDECO 32, adapted to the production of more complex parts. These machines stand out not only for their ease of use, but also for their excellent price/performance ratio, which has significantly boosted Schrub's operational efficiency and competitiveness in the market.

serge meister sa



MOUTIER, FORUM DE L'ARC

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The Tornos Swiss DTs feature 5 linear axes and are integrated with the TISIS system, offering unrivalled flexibility and precision - essential qualities for meeting the high standards of the automotive industry. The EvoDECO is also renowned for its 4 innovative tooling systems, giving it exceptional versatility. This machine is particularly well suited to the processing of a variety of materials and the production of complex parts, thus meeting the specific needs of the aerospace sector.

State-of-the-art after-sales service

A crucial aspect that further enhances the efficiency of Tornos machines at Schrub is the exemplary after-sales service provided by Tornos France. Renowned for its responsiveness and efficiency, this service plays an essential role in maintaining productivity and continuity of operations at Schrub. Tornos France stands out for its ability to resolve even the most technical and complex queries quickly and efficiently. This level of support ensures that all machines operate to their full potential, minimizing downtime and optimizing overall performance.

This responsiveness of the Tornos France after-sales service ensures that every technical challenge or unforeseen maintenance is tackled with remarkable expertise and speed.

Tornos wishes Schrub a successful and prosperous future. Building on a fruitful collaboration and a solid partnership, Tornos is proud to have accompanied Schrub in its evolution and looks forward to continuing to support its ambitions. Whether in technological innovation, operational excellence, or the conquest of new markets, Tornos is convinced that Schrub will continue to excel and set new standards in the industry. We wish Schrub every success and innovation along the way.

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

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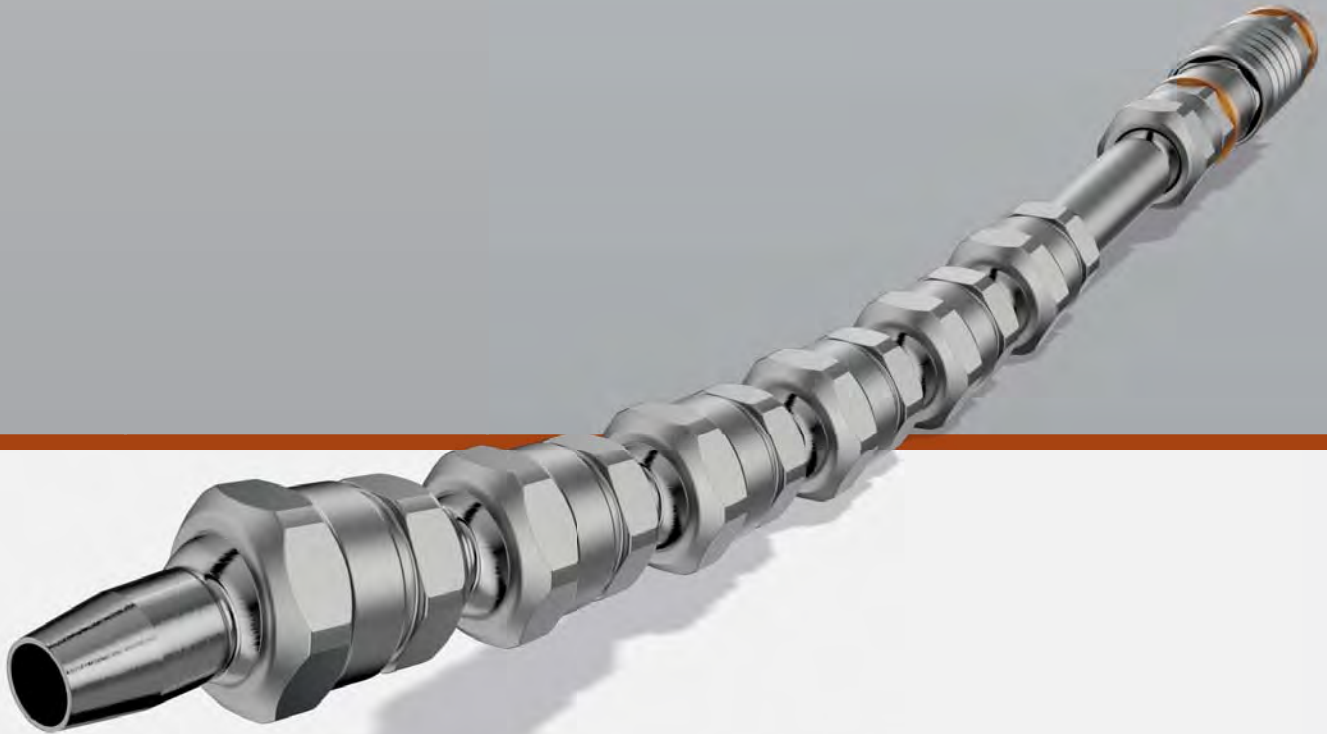
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