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magazine

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*The best solutions
at your disposal*

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*Joseph Martin:
a strong partnership
with MultiSwiss*

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*Swiss DT 13:
even more flexibility*

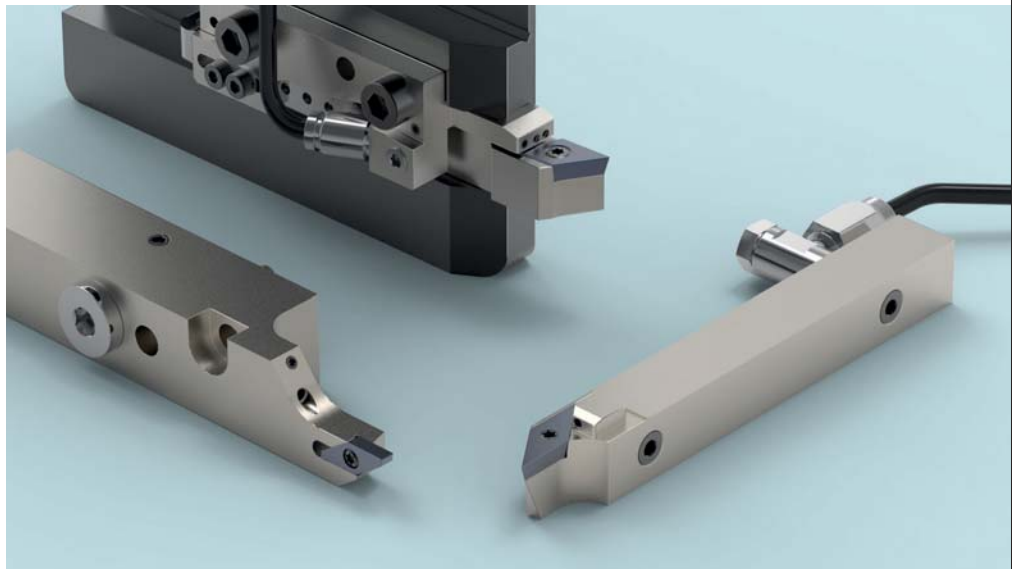
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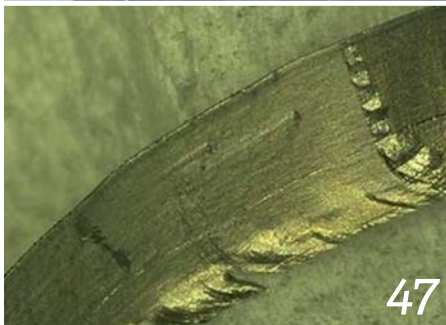
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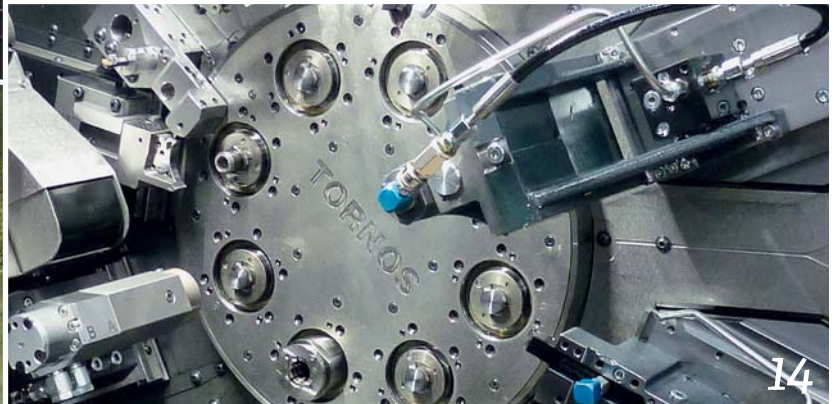
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“The era of multispindle lathes exclusively designed for large-scale production is well and truly over!”

Bruno Allemant Head of Sales and Marketing

The best solutions at your disposal

Bruno Allemand Head of Sales and Marketing

In this latest edition of our decomagazine, which is presented to you in a totally revised format, you will have the opportunity to discover a whole range of innovations and success stories from our customers and users of all of our product lines. This stretches from the simplest machines to the most advanced technology available. With this editorial, we would like to provide you with the latest news regarding our MultiSwiss and EvoDeco ranges.

MultiSwiss – productivity and flexibility

We've done it! Tornos now offers a comprehensive line-up of MultiSwiss machines ranging from MultiSwiss 6x16 and MultiSwiss 8x26 to the MultiSwiss 6x32. Today, we are able to provide you with an extremely interesting solution that boasts the flexibility of a conventional Swiss-type lathe with one spindle, yet it's just as easy to be set up in virtually no time.

Apart from increasing the machining capabilities with its larger bar capacity of up to 32 mm, the new MultiSwiss models improve the overall machining capacity especially thanks to the fact that they can be equipped with up to six Y-axes. Furthermore, an additional axis on the counter-spindle expands the back machining possibilities since four tools can now be mounted to enable rear-end machining of the workpiece. With its ergonomics, that have proven to be successful on the MultiSwiss 6x14 model, the new machine is a valuable alternative that can easily replace up to five single spindle machines for similar production tasks. The era of multispindle lathes exclusively designed for large-scale production is well and truly over!

With our new multispindle lathe series, you can both enhance the responsiveness and improve the quality of the produced parts. This is due to the hydrostatic features of these products. If you want to learn a bit more about the MultiSwiss machines, please read the

interview with Mr. Laurent Martin from the company of the same name. On page 15, the CEO of this large specialist in multispindle technology provides full details of their latest Tornos machines.

Moving on to state-of-the-art single spindle technology

This year, we celebrate the 20th anniversary of the delivery of our first Deco machine. On the occasion of this event and as a way of thanking our loyal customers, we offer an exchange program for your Deco machine. This service allows you to replace the machine with a modern EvoDeco on very favorable terms.

In this way, you quickly get state-of-the-art single spindle technology without having to change your habits. The attachments and tool holders are compatible while the kinematics of the machine – well-known and proven – are the same. Your operators can resume their work straight away while having abundant advantages of the new technology at their disposal. In particular, high acceleration and deceleration rates, increased rigidity and further improved thermal stability, to name but a few of the benefits.

Do not hesitate to contact your nearest Tornos representative, if you want to get detailed information on our new MultiSwiss machines, our EvoDeco offer and our other production solutions.





Martin Ruegg, Production Manager,
and Richard Steulet, CEO.

STEULET MICROTECHNIQUE SA:
a motivated team aiming
 at high
 performance!

In 2014, shortly after Steulet Microtechnique SA had been established in Delémont in the Swiss Jura region, we presented the company in our decomagazine. The company's CEO Mr. Steulet had told us that they had trusted the Tornos EvoDeco 10 machines for the production of high-end watch components for the major watch manufacturers.



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 www.steulet-microtechnique.ch

Two and a half years later, we now come back to get an idea of the development the company has undergone and to check whether the choice of this machine has paid dividends.

Real teamwork

Since its foundation, Steulet Microtechnique SA has been growing exponentially. Right from the start, the company has had a very clear position. The extremely responsive and professional company has rapidly gained recognition for the quality of its work. Based on this positive development, the company is now working with no less than ten EvoDeco 10 machines that have been installed in its workshop in Delémont. This workshop has also doubled its floor space while the staff is now up to 8 employees. According to CEO Richard Steulet, this success is primarily credited to a young and extremely dynamic and motivated staff. "This is the key to our success". The company employs only highly qualified





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colleagues that are difficult to find in the market. Furthermore, the management decided to bank on vocational training. So, today, a 3rd year apprentice is being trained in the Delémont-based company. The CEO explains: "I consider myself fortunate to be able to work with such a team. It enables us to quickly respond to any customer request within deadlines that can hardly be met by any other company."

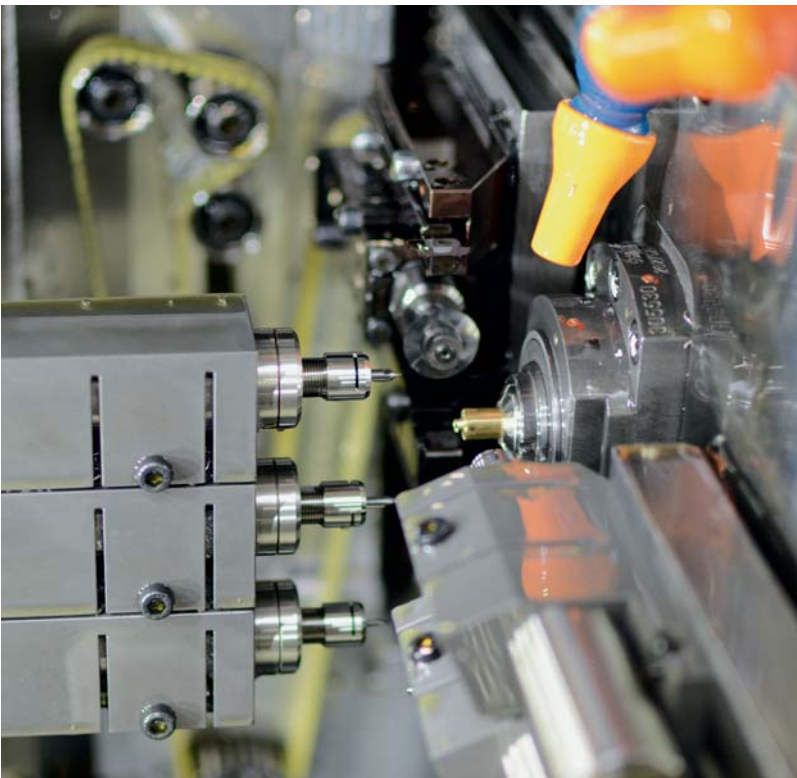
Rock-solid technical expertise

Richard Steulet explains: "Right from the start, we have been focusing on the manufacture of complex parts. Our mission statement is quite simple. We want to finish the workpiece on the very same machine, even if we have to push the machine to its limits. One of our machines is equipped with 5 high-frequency spindles and, when looking at our machine inventory as a whole, we have 18 additional high-frequency spindles at our disposal. We are doing our best to find solutions for every challenge we are presented with by our customers."

"Sometimes, our machines are not even used for turning. In fact, the EvoDeco 10 machines can be converted into real milling centers that can be used to machine even the most complex parts, which is simply amazing. For us, gear cutting on the machine with one or several gear hobbing devices is simply a standard operation. We can also perform decoration processes such as sunray brushing, snailing, circular graining or even burnishing (surface polishing of ferrous metals) on all our machines. The real challenge is to unload the workpiece without damaging it."

An ultra-modular machining platform

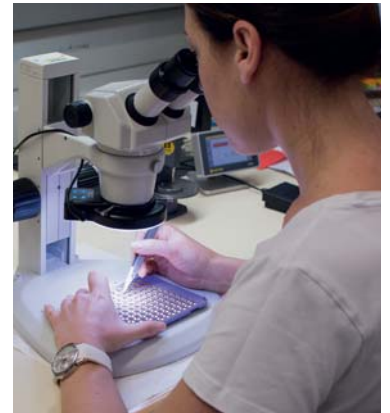
Steulet Microtechnique owns 4 EvoDeco 10 machines, each of them having 10-axes and 7 EvoDeco 10 machines having 8-axes each. According to the Delémont-based company, the machine has numerous advantages, its modularity being the most splendid of them. It is actually possible to mount various types of tool holders on the gang tool posts depending on the requirements of the part to be machined.



A young and dynamic team prepared for mastering the most demanding productions.



The PC integrated in the machine, the self-cleaning filter and the huge and easily accessible machining area make the machine very ergonomic. In addition, the machine requires very little maintenance. "For us, the major advantage of the EvoDeco resides in its high flexibility. It provides us with a lot of possibilities we actually need given the large range of workpieces we produce in our workshops," Production Manager Mr. Ruegg explains.



“We are used to working with tolerances of +/-2 microns”

Support by the manufacturer

He continues: "Tornos provides a most welcome support and we are dealing with true professionals who know their job inside out. The service offered worldwide is very good and stands out due to its high responsiveness. In case of programming problems, we get quick and helpful advice via the software hotline."

A vast range of workpieces

Steulet Microtechnique SA manufactures all types of movement parts for watches from any material (steel, stainless steel, CuBe 380HV, brass). The hobbled, decorated or pierced gear train and oscillator components such as balance, barrel hook or balance-spring stud holder are nothing new to the young company. Mr. Steulet explains: "The tolerances demanded by our customers are extremely tight. We are used to working with tolerances of +/-2 microns or even less. Most of the parts manufactured by us are intended for luxury watches; the visual aspect is thus essential. To guarantee perfect quality, we acquired a Quick Control system. We are now able to ensure the repeatability of our processes in line with the control standards."

Rigorous management

Besides a first-class control system, the company installed an ERP management system that enables the fully centralised management of the business processes. So the identification of the materials and tool inventories is realised completely using bar codes. To guarantee full upstream traceability, the production is recorded as well. ERP also includes real-time management of the machine inventory: the workshops are equipped with screens and the workload is clear and easy to analyze for everyone. Each employee has his own tasks clearly assigned to him.

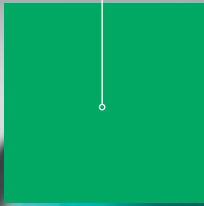
Planning is updated in real time and, consequently, you can see at any time when it is possible to squeeze in an urgent series or you can confirm the delivery schedule upon the customer's request. "We are able to track 100% of our activities to each machine, to each batch, to each material. This system enables us to precisely manage our capacities and to guarantee full consistency in the performance of our tasks. We sell parts of very high added value, we simply cannot afford to make mistakes," Mr. Steulet concludes.

Do not hesitate to visit the website of Steulet Microtechnique to discover some of the parts produced by the company or to watch the company's video and to see the Tornos EvoDeco 10 machines in live cutting action.

steulet-microtechnique.ch

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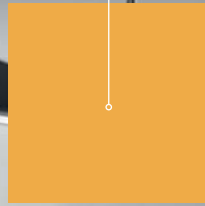
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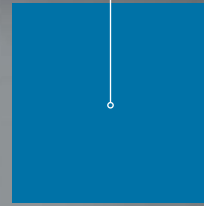
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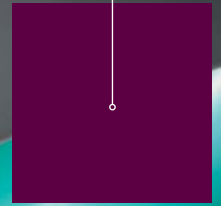
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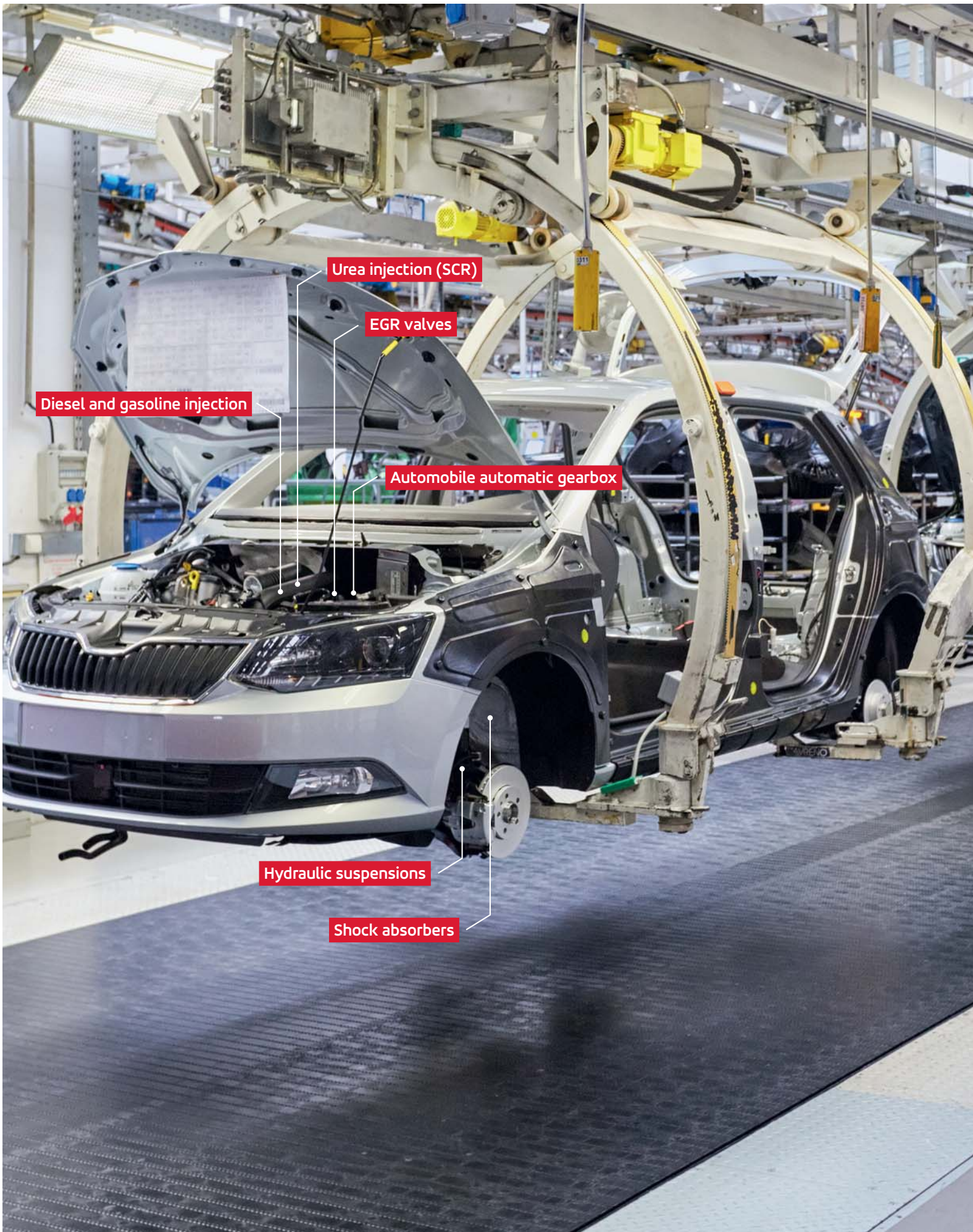
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JOSEPH MARTIN:

a strong partnership with

MultiSwiss

The company Joseph Martin is a regular in both the decomagazine and its purchase of Tornos equipment. Since 1969, the year Joseph Martin got its first Tornos multispindle machine, the workshops has actually filled with machines of all generations of the Swiss machine builder.



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The company that played a major part in the development of the MultiSwiss 6x14 machine and its successor MultiSwiss 6x16 soon showed interest in a MultiSwiss-type machine capable of machining material with a larger diameter. Several months later, it received the first MultiSwiss 8x26.

A company specialized in automotive and fluid regulation technologies

Joseph Martin was founded in 1946 and has been specializing in bar turning and high-precision sub-assemblies ever since. The family-owned enterprise has 2 sites in Vougy and Bonneville in the Arve valley. The company produces mainly for the automotive industry and has specialized in the field of fluid regulation technology for pressures between 10 mbar and 3000 bar. In particular, their parts are used for fuel or diesel injection systems, transmission modules, emission control systems (EGR, SCR) or suspension systems. The company has 200 employees and in 2016, it generated a turnover of more than €26 million Euro.

It produces cutting-edge technology and is one of the leading companies in the market. To defend its leading position, Joseph Martin has invested in

advanced high-performance machinery ranging from single-spindle and cam-type machines through to CNC-type multispindle machines. Today, the company Joseph Martin has the 40 cam-type multispindle machines of the AS14, SAS 16.6 and BS 20.8 types, 25 CNC multispindle machines, 4 of them being MultiSwiss 6x14 machines and one a MultiSwiss 8x26 and also 16 CNC single-spindle lathes.

“The MultiSwiss 6x14 has become an essential part of our workshop”

Being capable of machining any type of material including the toughest stainless steels (304L, 316L, heat-resistant steels), bearing steel (100Cr6), titanium, FeNi, FeSi and much more, Joseph Martin exports its products worldwide (Western Europe, Czech Republic, Poland, Romania, Turkey, China or even South Korea and India) to supply the various subcontractors of the automotive industry with components.

Tailor-made solutions...

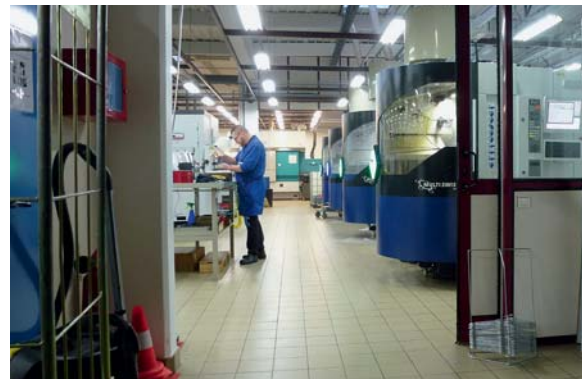
Through its methods department, the company can give its customers expert advice to ensure optimum customer satisfaction at the time new projects are launched. This enables the customers to optimize the production of their parts. The Research and Development Department of Joseph Martin designs specific attachments for its machines to meet even the most complex challenges. Such specific devices are also machined on 5-axis machining centers. Two MultiSwiss 6x14 machines, for instance, are equipped with a billet loading system using a vibratory feeder, the so-called “Chucker” solution.

... to ensure smooth production

Since the company is attaching importance to high flexibility and autonomy in its production, it purchased only machines that are able to machine the tools the company needs for its own purposes. Joseph Martin warrants the cleanliness levels requested by

its customers by adopting meticulous part machining processes and customized part deburring and multi-stage washing procedures. The company offers solutions for complete monitoring and controlling by means of cameras or other equipment that have specifically been designed for the current part requirements.

Besides its machining capabilities, the company provides assembly and sub-assembly services as well as laser welding and drilling processes for its customers. In other words, Joseph Martin is an innovative and customer-oriented company that realizes the fluid control projects of their customers in close collaboration with them while guaranteeing maximum cost efficiency.



MultiSwiss 8x26: a most welcome extension of the MultiSwiss range

"The MultiSwiss 6x14 machine has inspired us right from the start. It has become an essential part of our workshop. With its intelligent design and good accessibility as well as its ease of operation and high performance, it is an excellent machining solution that perfectly meets our requirements. However, we were looking for a machine that could do even more. When the MultiSwiss XL project comprising the two machine types 6x32 and the 8x26 was presented to us, we were immediately attracted to it, especially by the MultiSwiss 8x26 with its 2 supplementary spindles and a machining capacity that came closer to our product requirements than the 32 mm machine

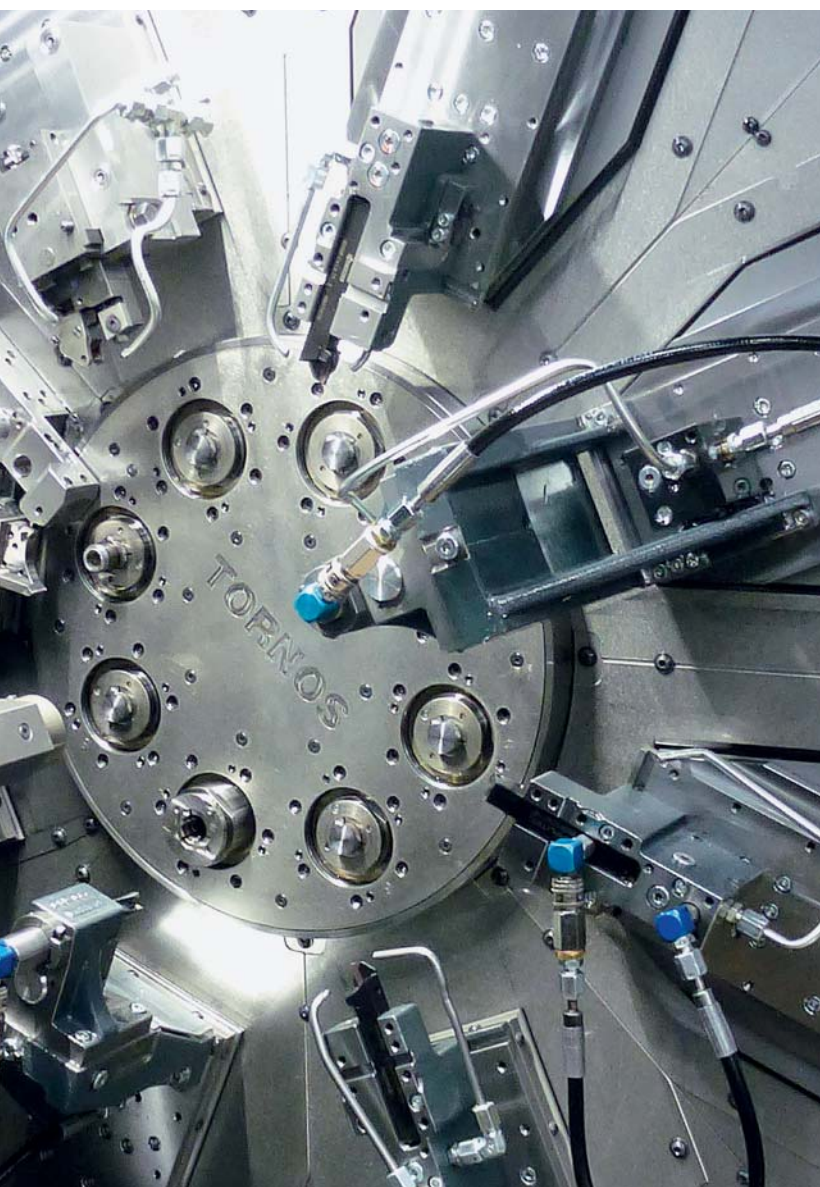
version. It was an obvious choice for us. The hydrostatic bearing technology provides us with undeniable benefits as regards tool life and surface quality. With the MultiSwiss, we are able to reach very attractive levels of surface finish. For us, the prospect of benefiting from this advantage on a machine designed for large diameters was very interesting as well. On the multispindle lathes, the TB-Deco software really works wonders. With this system, it is extremely easy to program the operations on this new lathe," CEO Laurent Martin explains.

Selection of 3-meter bars

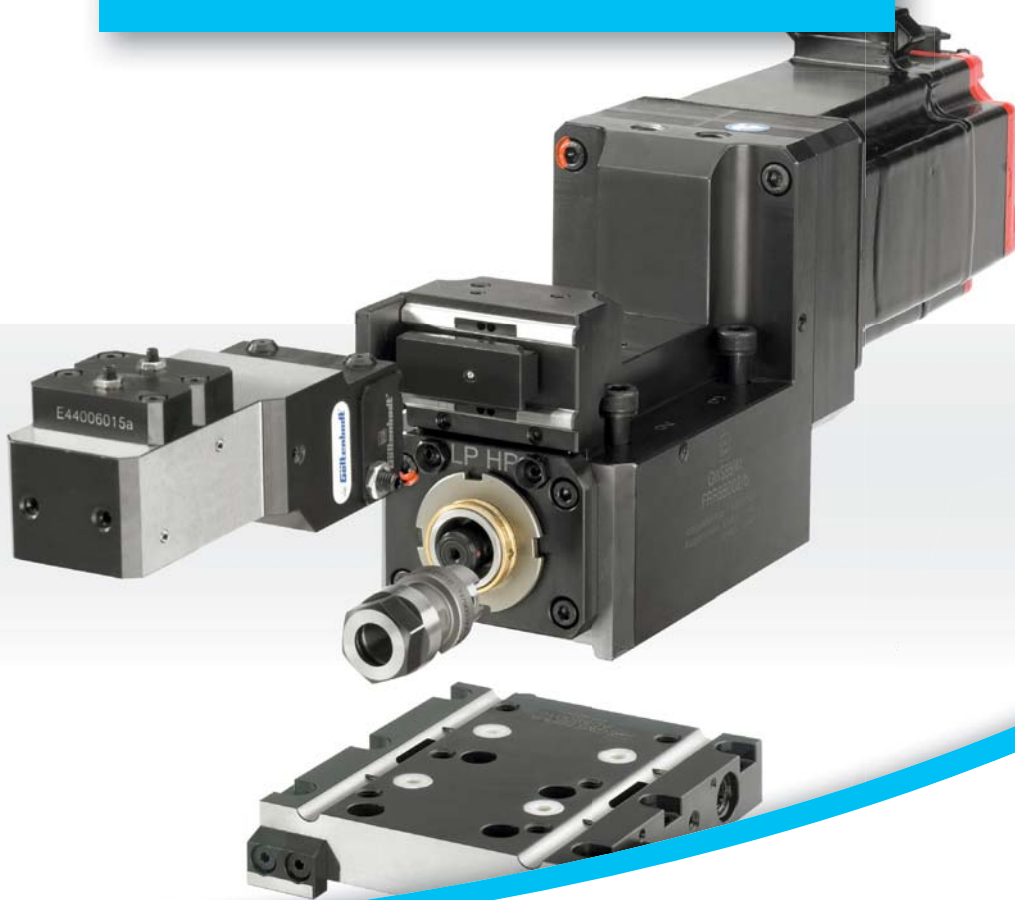
For its smaller machine, Tornos opted for the use of bars with a length of one and a half meters to minimize the effect of vibration and to reduce the remnant length. As to the larger model, Tornos decided in favor of the bar feeding option for 3m bars, not least because this was demanded by its customers who had become true MultiSwiss fans. Therefore, the machine was equipped with a 3m-bar loader "which makes sense in terms of cost effectiveness," Laurent Martin explains and he adds: "Even if, normally, it is more expensive to cut 3m bars with large diameters, this machine option is a very intelligent solution." On the other hand, the short bars for MultiSwiss 6x14 have real advantages such as a high ease of loading or the smaller footprint of the machine that doesn't impair the machine autonomy. The loading time remains 2 times faster than on a classical system and, thanks to the very short remnant lengths; material loss is avoided, contrary to what might be feared by certain customers.

A well-designed machine!

Meanwhile, the machine has been running for 3 months without interruption and its performance definitely comes up to Joseph Martin's expectations. To date, everything has worked very well: "We weren't unpleasantly surprised," the company's CEO explains and he continues: "The machine is sturdy and powerful. Just as on the MultiSwiss 6x14, the accessibility is simply excellent! It is much better than on other machines, be they machines of other manufacturers or MultiSigma or MultiAlpha machines. The operator can enter the machining area. We opted for a quick-change tooling system to further accelerate the tool changing process that is already very fast due to the use of standard tool holders." The driven tools are operated through a motor that is integrated in the tool holders; no belts or gears are required and



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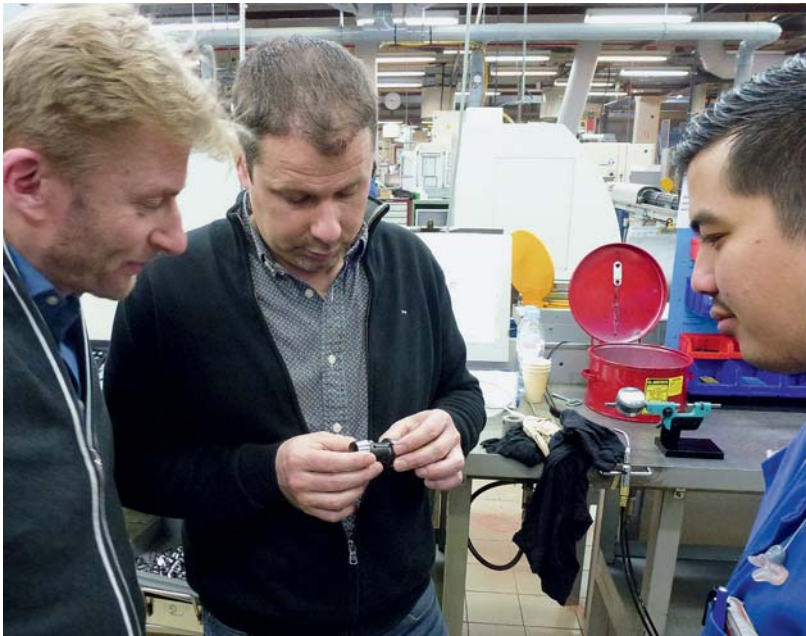


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P. Armeni, head of Tornos France, with L. Martin, CEO and Tony, Machining operator.



a simple socket enables reliable tool loading. With its tool blocks, the machine can be equipped with up to four tools, two of them being driven tools. The machine offers excellent back-machining capabilities.

A compact turnkey solution

The machine is 9 meters long, but thanks to the concept of housing the peripherals in a container on the rear side of the machine, it perfectly fits into every workshop. Contrary to other machines, everything in the machine such as the oil tank, chip conveyor, water chiller, bar loader, stacker, high-pressure units and filter units are contained in the basic footprint. In the end, the machine is less bulky than its competitors. Furthermore, each peripheral unit has been defined for the machine, that means the machine is a real turnkey machining solution.

*A future "chucker" for working with billets
The machine has definitely been thought out with the operator in mind, but, what is more, it offers undeniable advantages for the company as a whole as well, thanks to its outstanding access to the machining area and its high ease of maintenance.*

In the market, the demand for secondary machining on various workpieces is becoming increasingly important. Due to the free access to the machining area, the machine will undoubtedly permit the easy set-up of a future loading module and, while waiting for this new challenge, the company is intending to fully take advantage of the benefits offered by its new MultiSwiss 8x26.

If Tornos offers an interim solution to increase the production capacity in the months to come, there is no doubt that the company Joseph Martin will acquire a supplementary machining solution based on the MultiSwiss technology.

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MGB:

60 years of success

It all started for MGB in 1956 when Marcel and Gustave Burnier founded the company in Marnaz, a region of France known for being one of the hotspots of the European bar turning industry.



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Ever since, this family business has developed exponentially. Today, MGB employs more than 100 staff at 3 sites (France/USA/China). For many years now, the company has been relying on Tornos for its development and this has been the basis of the company's success story that spans over 60 years.

Beginnings in the world of watchmaking

Gustave Burnier started his activities in the bar turning business with the production of pinions that primarily were manufactured for the Swiss watchmaking industry. In the beginning, production was performed on cam-type machines with a feedback function. In the course of 60 years, MGB has come a long way! MGB celebrated its 60th anniversary on December 16th, 2016 and the company is currently boasting an annual growth of nearly 15% and a turnover of €13 million in 2016. Little by little, MGB has diversified its activities while going beyond its initial market and finally leaving it behind. Today, MGB is focusing on three business areas: the aerospace and

“Due to the hydrostatic bearings of the machine, we are able to achieve an excellent surface finish”

defense industry that makes up 60% of the company's turnover, the connector business (30%) and the medical industry (10%). The company is able to offer its customers any type of workpiece, regardless of material type. The company currently machines copper, stainless steel, aluminum, titanium, PEEK, ULTEM and Teflon to name a few materials.

Unique know-how...

MGB's know-how is not limited solely to the production of workpieces; the company benefits from the most advanced finishing, control and monitoring technologies. Above all, MGB is able to offer its customers a unique and extensive service, ranging from design through to assembly. Based on its vast

Valérie Burnier, Financial Manager, Yves Roda, Technical Manager, and Véronique Roda, CEO.



experience, MGB can give its customers target-oriented advice on the manufacture of their parts. The company is working hand-in-hand with its customers to jointly design fully functional and cost-efficient sub-assemblies. Such design collaboration had been implemented first in the telecommunications business and was then extended to other products for the aerospace market, especially for the Airbus A350. Drawing on this expertise in the aerospace industry, MGB intends to triple its capacities in the United States. With 12 Deco machines, the company will

soon produce workpieces in the USA! Based on its unique expertise, the company that has been in the US market since 2008, managed to take part in major projects such as the new Boeing 787.

... close to the markets and focused on the demand

MGB is intent on producing close to the markets where its customers are active and the business is making every endeavor to make its production meet the demand. After the establishment of sales agencies in Germany and Great Britain, MGB has thus set up a production subsidiary in China in 2005. This subsidiary has the aim of supplying the telecommunications market. The US market followed with a production site in Boston. These two production sites are joined in a fully family-owned holding company. The company has undergone quite an impressive development. Today, MGB has more than 100 CNC Swiss-type lathes, 75 of them being installed at the French site in Marnaz, close to Cluses.



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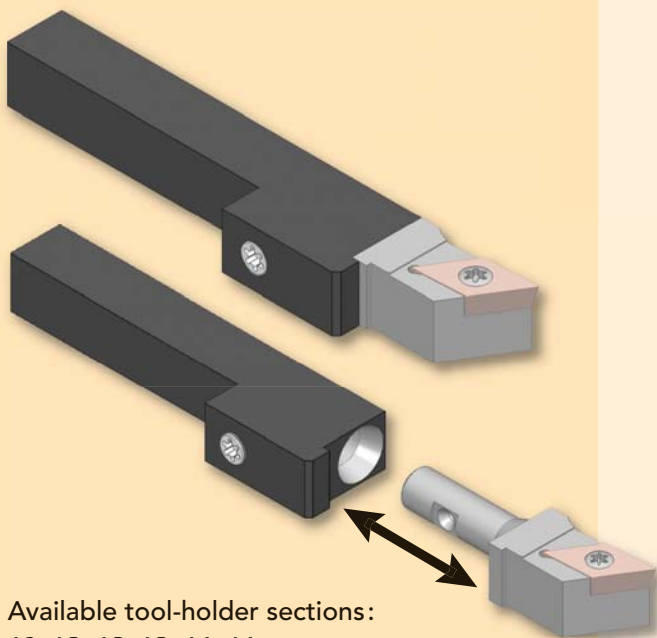
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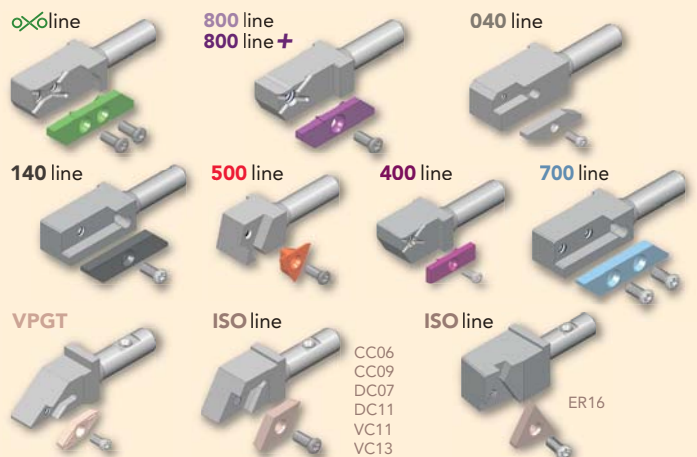
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MGB has been certified to EN/AS: 9100, ISO: 9001, ISO: 13485 and ISO: 14001. Lately, the family-run enterprise also entered the field of 3D printing through the company Additech that was founded by MGB and the companies Lathuille Hudry and Pezet in the last year.

An inventory of high-end machines for a unique know-how

As a partner that has been attending the development of the Deco series from the moment it was launched (MGB was the first company in France to buy this machine), MGB has always stuck to the unique kinematics of this product. Today, the company's workshop has two floors with the machines used for small-diameter machining being installed on the upper floor and the machines used for large-diameter machining on the ground floor. The Deco 7, Deco 10 and EvoDeco 10 machines have thus been gathered together. Every machine has its specific equipment to ensure perfect autonomy.

The Deco 13, EvoDeco 16, Gamma 20, Deco 20, EvoDeco 32 and MultiSwiss machines are installed on the workshop's ground floor. Thanks to the modular concept of their Deco and EvoDeco machines, the company is able to meet any requirements, no matter how

complex. The machine purchased last, a MultiSwiss 6x14, opened up a new era for MGB. This era of multi-spindle technology is intended to machine relatively demanding workpieces. The Technical Manager, Mr. Roda explains: "Due to the hydrostatic bearings of the machine, we are able to achieve an excellent surface finish. And, what's more, the machine is extremely flexible: it can quickly respond to changing demands and thus offers much reserve capacity."

MGB makes a point of offering full service to its customers. Its production facilities are perfectly equipped with control and monitoring technology and the company can equally cope with complementary tasks such as deburring, thermal treatment or even assembly. Tornos feels very proud to have supported MGB for more than 60 years and the Swiss manufacturer wishes MGB every success for the next 60 years!

mgb.fr



The young
savages
have grown up

From a supplier to a system
 partner in the medical industry

Meinolf Skudlarek once had a vision when he founded his own company at the age of 23 together with a university friend. They wanted their company to distinguish from all other companies and so they focused on turned parts for the medical industry from the very beginning.

They focused on parts that no one else had the courage to produce. This passion for technological challenges can still be felt today, even after little less than 30 years. However, lately, TEBIT has developed more and more into a competent system partner. From the start, the Swiss lathe manufacturer Tornos has been a true companion and a reliable pillar in this concept.



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The roots of the company TEBIT date back to 1988. Together with his university friend Christoph Rennefeld, Meinolf Skudlarek bought the basic equipment for an enterprise: a desk, a computer, a telephone and a fax machine. They both founded the so called "TEchnische Beratungs- und Innovations-Team" or, briefly, TEBIT. At first, their core business consisted in dealing with turned parts for the photocopying and pneumatic industries. To do so, Skudlarek had been inspired by his father who dealt with turned parts and had always dreamt of having his own production facility.



Präzisionstechnik GmbH focusing on high-precision technology. At the same time, Thomas Becker joined as managing partner.

“For us, accuracy is vital”

This statement of Thomas Becker shows how the company sees itself. At TEBIT, accuracy and precision are high up on the agenda. In the first place, these features stand for manufacturing precision, process reliability and the strict compliance with the specified tolerances. This equally applies to surgical or implantable medical products and for mechanical products and electro-mechanical components for the manufacture of medical devices and equipment.

In this context, it is also interesting to look at the motivation that drives the young team. The primary motivation of the employees is not only the profit but also the awareness of being involved in the manufacture of products that help people. That’s why TEBIT invests solely in machines and equipment that meet extreme quality requirements. Tornos lathes have always been put to the acid test by TEBIT and they still are today. As the production management team sees it, Tornos are the best solution for the company’s demanding part range. Another advantage is the close collaboration with the technology specialists of the Swiss machine manufacturer that leads to results that emphasize TEBIT’s claim to be simply the best.

Henceforth, TEBIT’s development got along at a breakneck speed. Just one year later, Rennefeld retired from the business in order to enter an academic career, Skudlarek pushed on the establishment of his company with courage and determination and, in 1990, he decided to make his father’s dream come true. In 1991, the headquarters were built in Meinerzhagen, Germany, based on ideas for a modern industrial architecture. At that time, Meinolf Skudlarek established his first contact with machine tool manufacturers to create optimum production conditions. In the end, he chose Tornos as the machines of this company boasted state-of-the-art technology and because Tornos’ responsible project manager Achim Günther offered the best solution for the planned part range.

As a first step, three machines in two customized versions were purchased and set up. Nowadays, almost 40 Tornos CNC machines are being used. Altogether, the company has more than 60 CNC machines that the 100 employees use to turn and mill high-precision parts primarily for the medical industry. In 2013, this led to the establishment of the two branches of the business group: TEBIT Medizintechnik GmbH focusing on medical technology and TEBIT

“We often torment our customers”

What company can really afford such a statement? Thomas Becker smiles and explains what is behind his assertion. “We aren’t very keen on customers who want a few parts to get turned as quickly as possible. We consider it our role to be a system partner that should be involved in the engineering process or at least in the analysis of the manufacturing process. For many years now, TEBIT’s product range has been comprising various components for medical equipment e.g. for the use for dialysis, cell separation, endoscopy and surgery as well as medical products for implantology and trauma treatment. Every inquiry is individual though. TEBIT has learned to listen to the customers and to focus its attention on their special needs. That’s why every inquiry is followed by a well suited special TEBIT solution that is based on experience! At TEBIT, you do not “buy off the peg”. The higher the production demands on minimum part sizes, precision and material, the greater the challenge for the development team. Here, TEBIT

“For us, accuracy is vital”

closely collaborates with the customers. Irrespective of the project stage – be it at the time of the project idea or during planning or realization – TEBIT is always a solution-oriented, reliable partner.

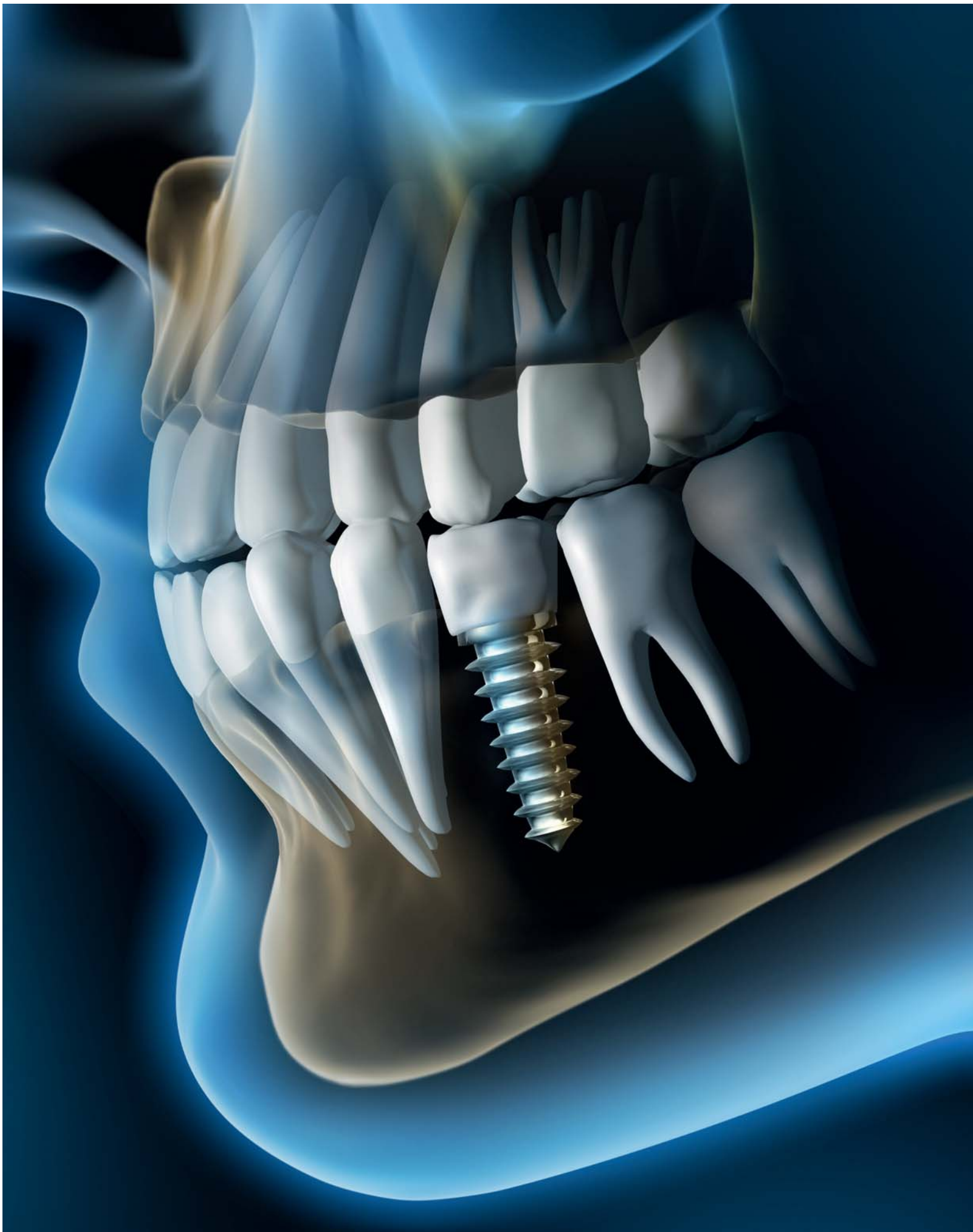
Such a meticulous analysis in the run-up may be a bit time-consuming but, in the long run, it spares time, enhances the quality and is even more profitable in

the end. That’s where Tornos’ expertise comes into the game. In close collaboration, feasibility and time studies are conducted, the critical characteristics are determined, measuring strategies are defined and suggestions for improvement are developed.

Fully networked and digitized

TEBIT produces more than 1000 different high-precision turned parts in batch sizes between 5000 and 10,000 pieces. Production planning is a huge challenge. “Due to our zero-defect strategy for small series and the demanded extreme precision that meets even the tightest tolerances, we need process-stable high-precision machines and closely coordinated planning processes. To become a system partner, the company implemented full





networking, digitizing and automation. Meanwhile, we are capable of anticipating the demand of our customers for certain components and to prepare accordingly. Our machines can communicate with each other and we have standardized and automated our processes to the highest possible degree," says Thomas Becker.

With TISIS as the key to Industry 4.0, Tornos is far ahead of its competitors here. With the sophisticated TISIS ISO code editor, the user is well prepared for Industry 4.0. Thanks to effortless programming and real-time process monitoring, TISIS enables him to reach incredible production speeds. TISIS knows the machines installed and helps the user decide which machine to use for a specific part. At the same time, the user can assess each machine's options and reduce the risk of interferences as well as downtimes, eliminate potential sources of errors and enhance productivity, efficiency and quality. In addition, information about the finished workpieces, pdf files and photos can be stored using Connectivity Pack. The user can thus create a clearly arranged database that he can easily access and browse.

No classical customer of CNC multispindle lathes

With its current product range and lot sizes up to 10,000 workpieces, TEBIT is not the classical user of a CNC multispindle automatic lathe. Therefore, one might ask what motivated the company to invest more than half a million Euros in a Tornos MultiSwiss all the same? Thomas Becker does not have to think about it a long time. "We are a dynamic company and are looking ahead. The MultiSwiss concept has convinced us from the very beginning." This machine contradicts the normal idea of a classical multispindle lathe and unites the concepts of multispindle and single-spindle lathes. Thanks to its specific technology, MultiSwiss reaches cycle times that, normally, can only be found with cam-controlled multispindle automatic lathes. Its large machining area and the good access are unparalleled under the other machines of this class in the market. In a way, the machine has an ergonomic "walk-in" design which means the operator can change the tool holder without having to bend forward into the machine.

The machining area is the largest in the market and the exceptional access to the machine provides an enormous money-saving potential for series production requiring much set-up work. As all responsible TEBIT employees are true experts in the operation of "their" Tornos machines, it was rather easy for them to change to a CNC multispindle lathe. Without any starting problems worth mentioning, they got the MultiSwiss machine under control. Thanks to short set-up times and easy programming, TEBIT can manufacture various parts in small lot sizes on the machine and thus has gained added flexibility.

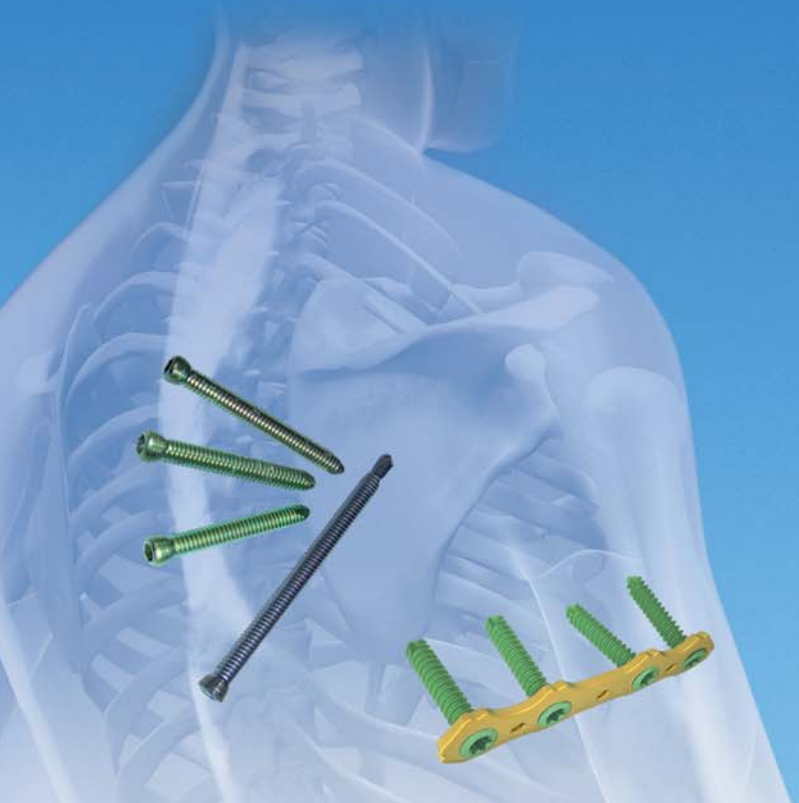
Another advantage of the machine lies in its all-in-one concept. The full integration of all required peripherals has been perfectly designed. They are centrally arranged at the rear side of the machine in the very same container. As standard equipment, the MultiSwiss includes a bar feeder, a chip and oil management system with dual filtration system using paper-type filter (filter mesh 50 µm) and an ultra-fine filter (5 µm). Its options such as oil mist extractor, chip conveyor, fire-extinguishing system and high-pressure pump harmonize perfectly with the machine. The fact that this perfect integration was conceived from the very beginning means the MultiSwiss requires less floor space and will thus quickly find its way into every workshop. Thanks to the intelligent management of the peripheral units, the machine has an extremely compact design.

According to Thomas Becker, the dimensions and the appearance of MultiSwiss were not decisive; however, they may have played a part subconsciously. Anyone who is producing almost under clean-room conditions, as TEBIT is doing, attaches also importance to an appealing design and to a clean production environment. In this respect, Tornos certainly has hit the jackpot with MultiSwiss.

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even more flexibility

SWISS DT 13:

Recently, the Swiss DT 13 model joined the Tornos range. This small and compact 5-axis machine that is most easy to use, proved to be a reliable partner for a large number of Swiss-type lathe users throughout the world.

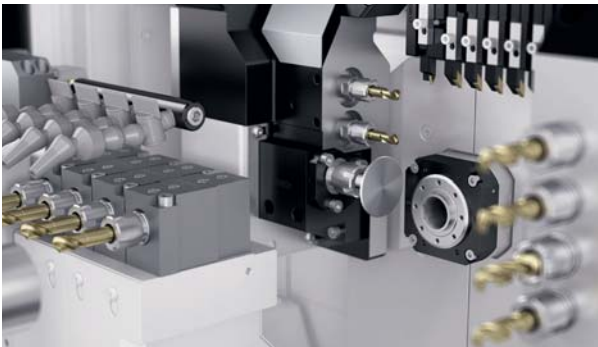
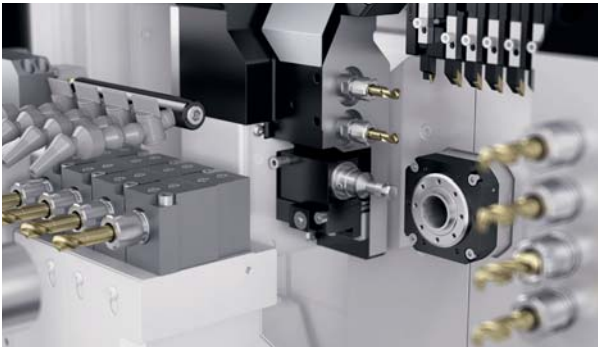
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The rapid and efficient machine excels in the connector industry as well as in any type of application in the micro-mechanics and watchmaking industries. To even enhance the machine capacity, Tornos decided to add another modular position to this platform. From now on, the Swiss DT 13 machine will be equipped with a modular machining position that enables the installation of special tooling units.

Electronics industry: terrific cycle times!

With its very short cycle times and its affordable price, the extremely fast Swiss DT 13 has inspired customers from the electronics industry; especially those who use it for the production of small connectors. Every tool is located close to the material and the machine's L-type kinematic system guarantees extremely short tool change times. This aspect is vital for this kind of market as in the electronics markets, the pressure on the unit price is very high indeed. To compensate for the steadily declining prices, a machine like the Swiss DT 13 is the partner of choice. This is credit to its high reliability, rigidity and performance. The machine enables an excellent part quality while guaranteeing attractive cycle times at reasonable investment cost. And to even round off the capabilities of the machine for the electronics market, the optional new modular position of Swiss DT 13 can be equipped with a thread milling unit that can be used as a polygon cutter. This unit is moved to a position below the two spindles for driven tools where the slotting spindle is usually located.



Watchmaking and micromechanics: new markets for Swiss DT 13

Micromechanics and in particular watchmaking are markets that are constantly looking for high-performance machining solutions. Due to its high flexibility, the Swiss DT 13 is a most interesting solution for these markets. Upon request, the machine can now be equipped with an optional tool holder plate that can accommodate up to 12 turning tools with an 8x8 section. As for the other Tornos machines, this option perfectly fits the modular concept as the optional tool holder plate can be reverted to the standard plate for 12x12 turning tools at any time. The new modular position can be equipped with the thread milling unit e.g. for screw production. For back machining, it is possible to mount a slotting unit that can be inclined at an angle between 0° and 90° if needed.

Swiss DT 13: a great many of possibilities...

The machine can also be equipped with high-frequency spindles that can be mounted on the angle tool post to enable both main and back machining or even on the spindle block for back machining operations. Furthermore, a gear hobbing unit can be installed at the modular position. For a long time now, this unit, that can be used for SwissNano and EvoDeco machines has proven its merits in the industry and has played its part in the recent success of the Tornos brand in the watchmaking industry. The gear hobbing unit is positioned at the guide bush and thus enables gears to be cut in main operation. The oil/air lubrication unit is positioned in the spindle zone and the various units are now perfectly integrated in the machine.

... always with high flexibility

Thanks to these features, the machine can be adapted to the specific workpiece requirements and therefore boasts a flexibility that is unique in this machine range. In its class, the Swiss DT 13 is facing a whole range of competitors. None of them can offer this level of power and flexibility. The Swiss DT 13 is one of a very select few machines that offers an optional modular position as well as the ability to be converted for the operation without guide bush. This conversion can be achieved in record time. The system for guide bush-less operation of the Swiss DT 13 is based on the same principle as the machine types Swiss DT 26, Swiss GT 13, Swiss GT 26 or even Swiss GT 32. At the moment, this is the only system that allows machine conversion without disconnecting the guide bush. Each of these machines has a special 'parking' position for the guide bush. Thanks to the TMI interface (for Tornos Machine Interface) on the Fanuc CNC unit, it is very easy to change the operation over to processing without the guide bush. By simply ticking a checkbox, the machine changes to guide bush-less configuration and the spindle moves to the correct position. The conversion takes less than 15 minutes as can be seen in the following video:



Your Tornos team will be glad to provide you with further information on Swiss DT 13.

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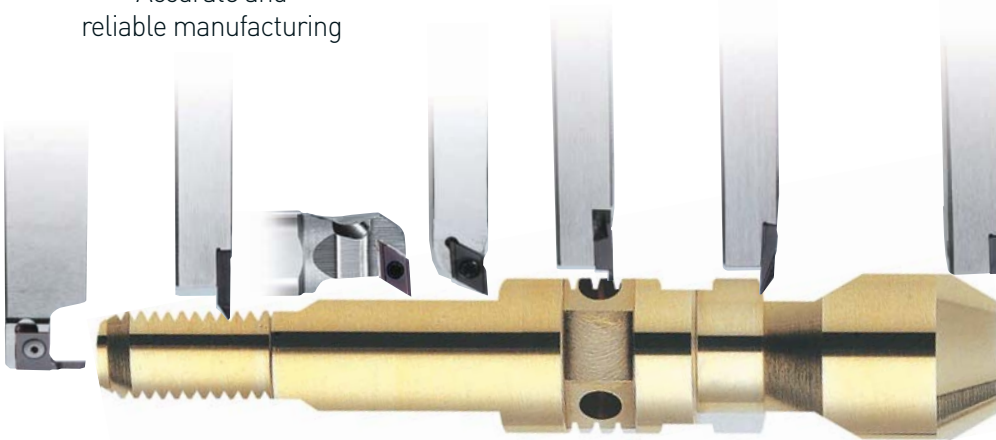


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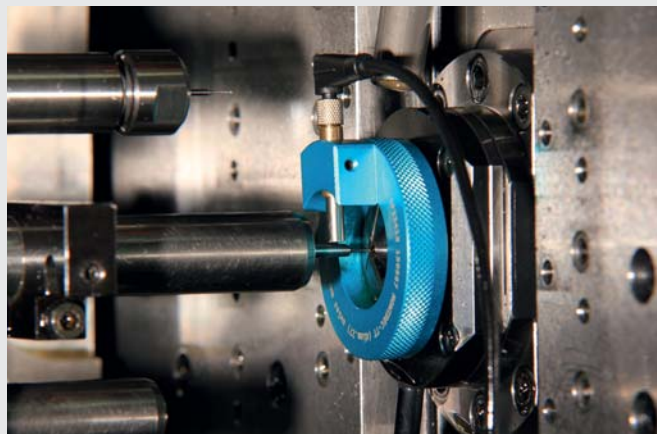
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TISIS

and Cloud Computing

Cloud computing is a model that allows ubiquitous and most convenient on-demand access to a remote network. Cloud computing enables data to be secured in a dematerialized manner for the customer on a remote server. Since the launch of TISIS in 2013, Tornos has been continuously developing new features for its TISIS products. The latest one: TISIS Net.

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With the introduction of new technologies such as Big Data and IoT (Internet of Things), secure data servers have become standard, both in personal and in professional lives.

TISIS Net – networking

Tornos now proudly presents its latest TISIS module: TISIS Net. TISIS Net provides the connection to a secure server. In fact, since the early days of TISIS, the monitoring or supervision function of Tornos machines has been reserved solely for the customer's internal network (intranet). With TISIS Net, monitoring and machine status information is now available outside the business environment. Sensitive information such as part programs or workpiece data are not stored on the secure remote server. Such data is



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encrypted and stored for each customer account. The connection between the machines and the server is established via the secure HTTPS protocol.

Easy implementation

At the time TISIS Net is installed, every customer who has agreed to the terms of use is given a user account with login details and password that must be entered into their TISIS applications. As soon as a user is outside the company's own network, an icon showing a terrestrial globe indicates that, from now on, the connection is established via the secure server. Tisis.net does not replace the company's internal server but makes a synchronized copy of the monitoring and status data.

Better monitoring with TISIS Net

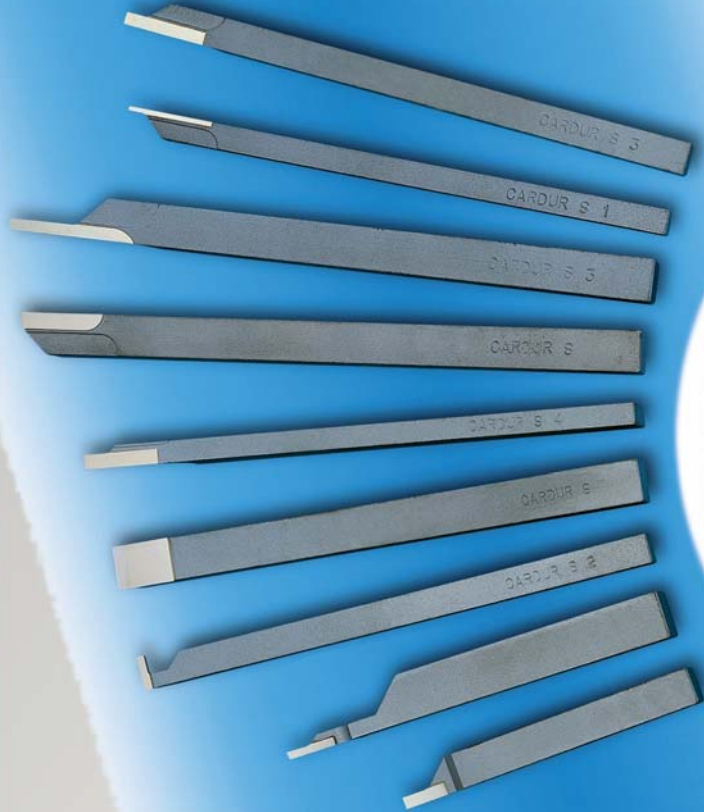
With the TISIS Net option, the customer can add the function for notifications in the case that production stops with various parameter settings such as:

- Alarm messages
- Operator messages
- End of production
- Sound notification
- Vibration notification
- Notification after X minutes

TISIS Net is now available from your Tornos dealer.

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TISIS CAM AND MASTERCAM SWISS: tools that make the best of your Swiss-type lathe

The 2017 versions of TISIS CAM and Mastercam Swiss are part of the Mastercam software family. These two applications have been specifically conceived for bar turning of micro parts and both are evolving concurrently.

Mastercam.

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**Development center
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Matthieu Sauer, Product Owner
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Jean-Pierre Bendit, Managing Director

While TISIS CAM is used for the next generation of Tornos' Swiss-type lathes, Mastercam Swiss controls all types of machines including the Deco machine series with TB-Deco.

TISIS CAM, an efficient CAM tool for companies that specialize in bar turning

For several months now, the first customers have been working with TISIS CAM, a Mastercam software adaption intended for responding to the specific requirements of the Tornos machine tool range. TISIS CAM allows TISIS users to benefit from the advantages of CAM software. These benefits include:

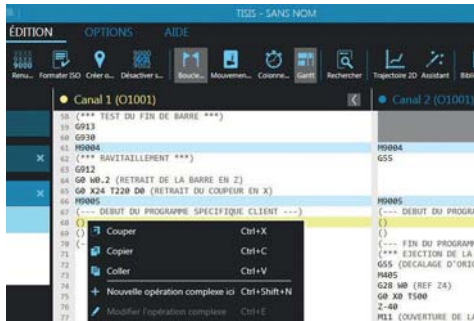
- automatic, fast and precise ISO code generation for both simple and complex operations
- machining simulation
- facilitated examination of various machining parameters
- creation of exemplary operations
- management of all tool types
- evaluation of the machining time for the workpiece
- uniform programming irrespective of the Swiss-type lathe model and the CNC unit.

"The cooperation with CNC Software, the provider of Mastercam, has been further intensified over recent

months in view of specific customer projects or internal developments. Thanks to the high responsiveness of a competent and flexible staff located close to our development center, we can respond actively and precisely to the demands of the Tornos customers. The TISIS CAM product developed in collaboration with CNC Software perfectly fits into the range of the TISIS software solutions," Patrick Neuenschwander Software & Electrical Manager at Tornos declares. Marketing and training for TISIS CAM is provided by Tornos. At Tornos in Moutier, one week per month is reserved for TISIS and TISIS CAM training.

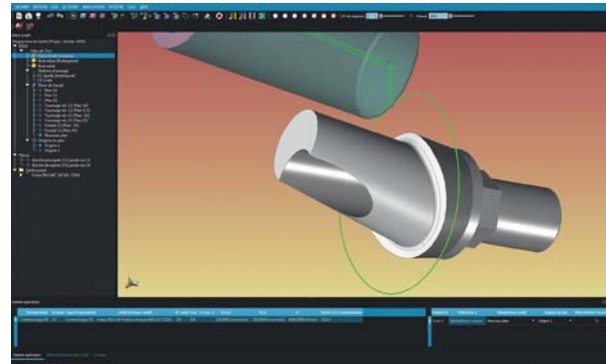
How does TISIS CAM work?

In partnership with Tornos, the Mastercam Swiss development team has developed a 'light' version of its software intended for integration with the TISIS software. In this edition, the user can program manually and enable the TISIS CAM function that facilitates the calculation of the tool path.



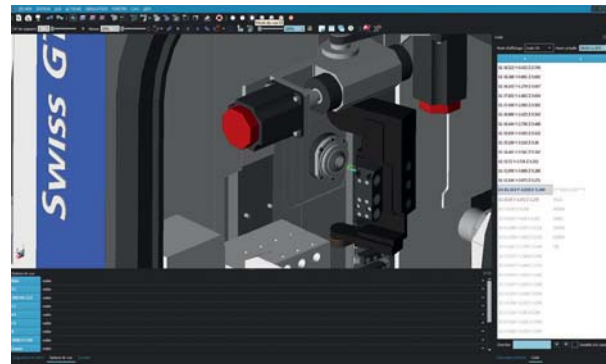
Addition of a new and highly complex operation to the TISIS environment.

Via the TISIS CAM software, the operator employs a 3D model that represents the workpiece to be machined. Based on this model, the blank is defined. Information pertaining to the machine and its configuration are directly taken from TISIS. The desired machining operation can be picked from a list ranging from simple turning and drilling tasks to milling with positioning of up to 5-axes. The tool can be taken from a supplied or adapted library.



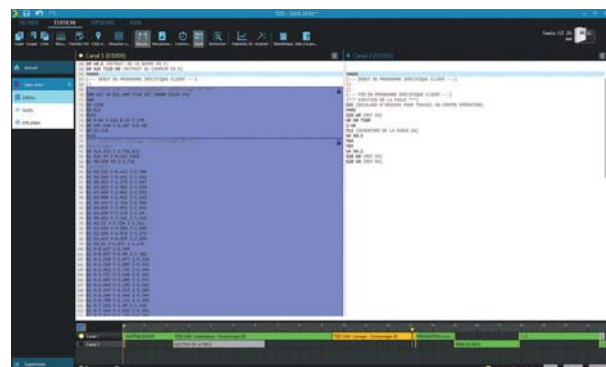
Description of the desired operation in TISIS CAM.

In TISIS CAM, the operator cannot create more than one operation or use more than one model at a time. However, this operation can be simulated in conjunction with the complete machine environment. This enables interferences and tool path deviations to be detected in real-time.



Machining simulation in TISIS CAM with detection of interferences and tool path deviations

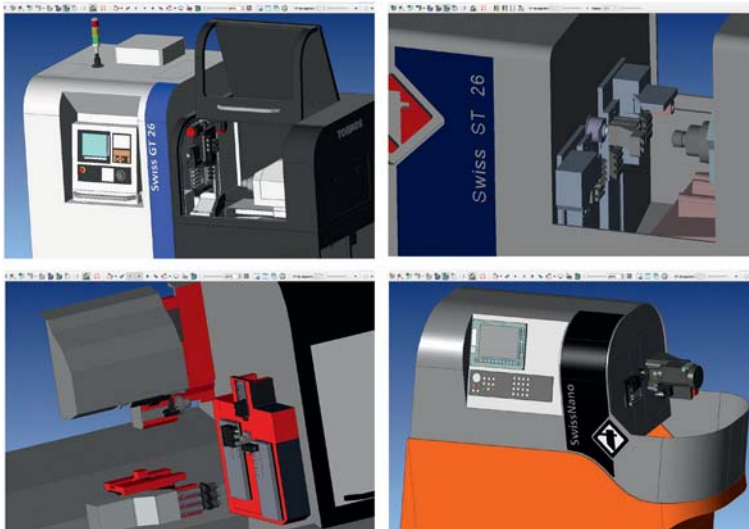
Upon validation, the points that have been generated automatically in relation to the workpiece geometry are transmitted to TISIS. The operation is created in two locked sections, approach and machining. The operator can unlock the approach to change it manually as desired. As long as the machining section is locked, the operator can return to the TISIS CAM section to finely adjust the tool paths as often as needed and examine other machining options.



Return to TISIS environment.

Swiss-type lathes already supported by TISIS CAM

Based on the partnership between Tornos and Mastercam, high-quality machine environments with extremely accurate kinematics and post-processors can be offered.



New Swiss-type lathes from Tornos, controlled by TISIS CAM.

At present, the following machine families are supported:

- Swiss GT
- Swiss ST
- SwissNano
- EvoDeco with ISO code programming.

The innovations of Mastercam Swiss 2017

The Mastercam Swiss 2017 version was launched in June 2016 and its major innovations are:

- integration with Mastercam Design, the 3D CAD system of the Mastercam family with direct modeling
- advanced Gantt chart
- multi-view simulation
- dynamic machine configuration
- addition of 'slot milling'
- new display features
- advancement of 5-axis simultaneous machining especially for bar turning.

Mastercam Swiss and its integration with Mastercam Design and other CAD systems

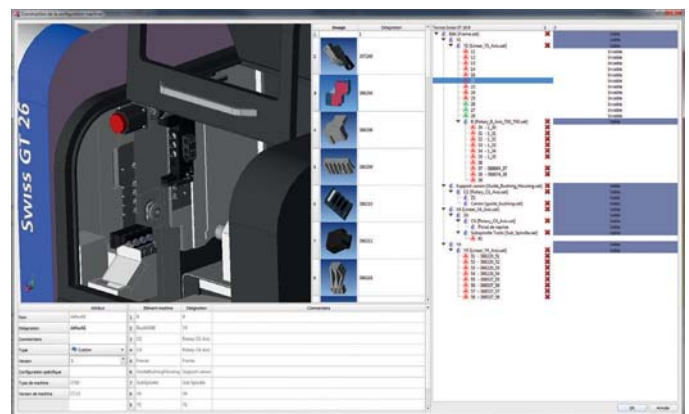
Mastercam Design enables the user to model, modify or re-model their 3D models. From this CAD system, it is possible to return to Mastercam Swiss in order to update the machining processes. This is done automatically and such integration is possible with other CAD systems as well.

Management of flexible machines

The manufacturers are designing more and more flexible machines to be able to tackle the multifaceted bar turning applications. The machines must offer a large range of tooling options, from simple turning tools to tools for multiple-axis milling.

Mastercam Swiss also responds to these requirements by providing the user with a function to configure the machine tool within the software. This can be done in-line with the customization system in the workshop. Programmers can now test and validate various tooling options prior to machine set-up.

In a dedicated window, the user can slide/shift machine components or tools to the possible positions. By means of color codes, free positions are distinguished from occupied positions. The system also manages tool groups by allowing for several tool positions such as the gang tool post, angle tool post, thread whirling unit and so on. The complete configuration can be displayed in the software, in real time.



Management of flexible machines.



HAROLD HABEGGER

Canons de guidage Führungsbüchsen Guide bushes

Type / Typ CNC

- Canon non tournant, à galets en métal dur
- Evite le grippage axial
- Nicht drehende Führungsbüchse, mit Hartmetallrollen
- Vermeidet das axiale Festsitzen
- Non revolving bush, with carbide rollers
- Avoids any axial seizing-up



Type / Typ C

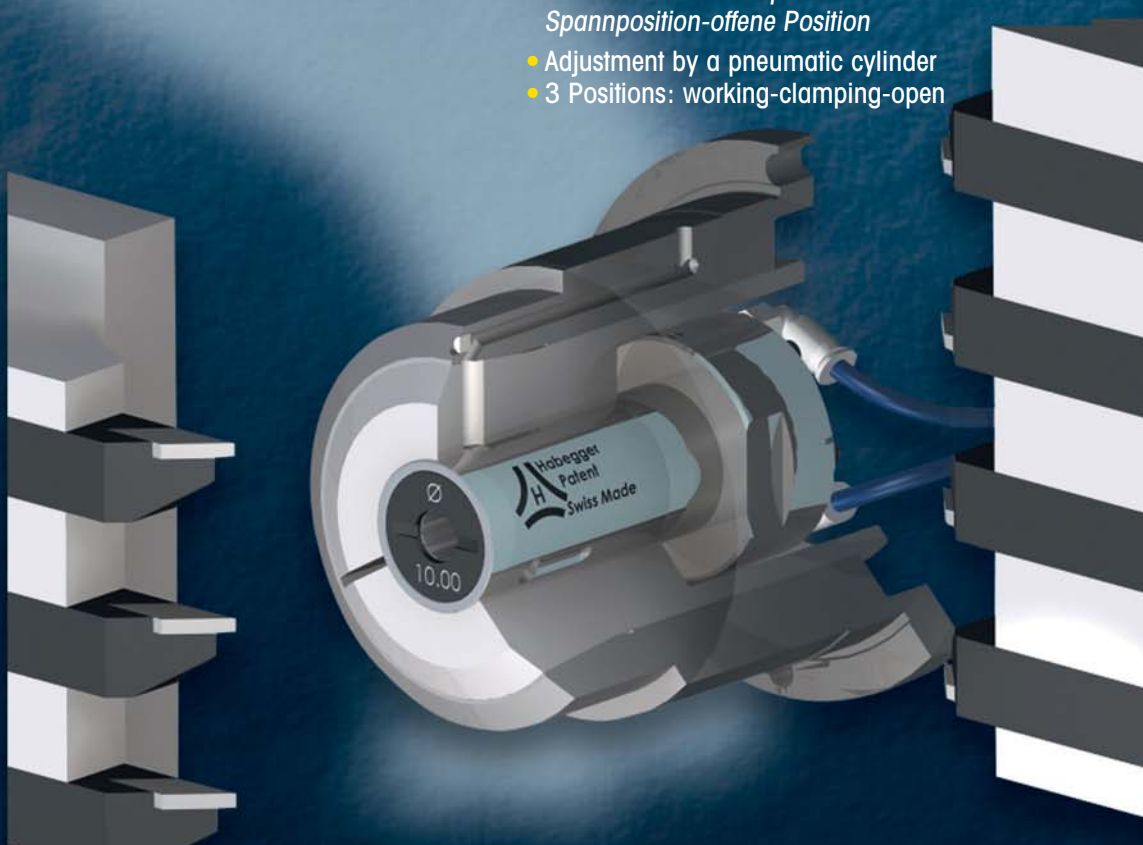
- Réglable par l'avant, version courte
- Longueur de chute réduite
- Von vorne eingestellt, kurze Version
- Verkürzte Reststücke
- Adjusted from the front side, short version
- Reduced end piece



Type / Typ TP

- Réglage par un vérin pneumatique
- 3 positions: travail-serrage-ouverte
- Einstellung durch einen pneumatischen Zylinder
- 3 Positionen: Arbeitsposition-Spannposition-offene Position
- Adjustment by a pneumatic cylinder
- 3 Positions: working-clamping-open

- ◆ 1 Porte-canon: 3 types de canon Habegger!
- ◆ 1 Büchsenhalter: 3 Habegger Büchsentypen!
- ◆ 1 Bushholder: 3 Habegger guide bush types!

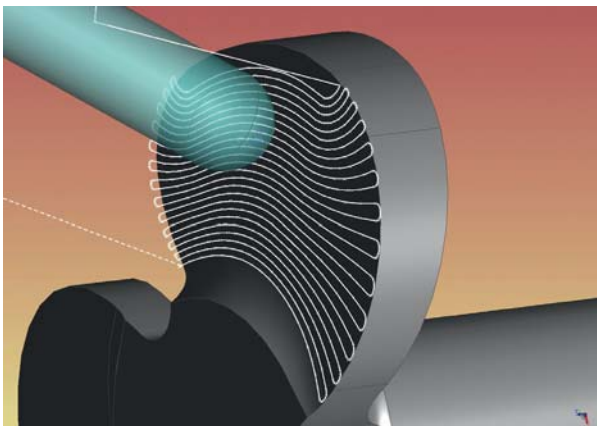


These Mastercam functions are embedded in the software of the bar turning companies

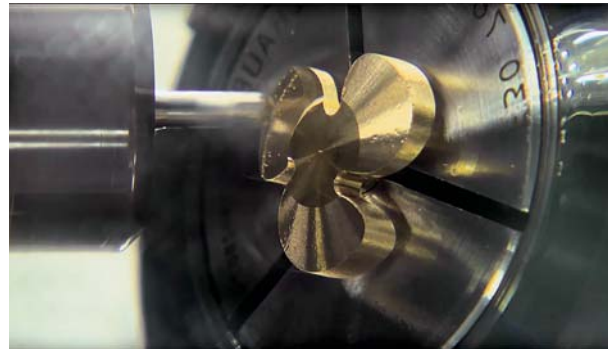
Machining of complex workpieces with 5 simultaneous axes

For 3 years now, several algorithms for 5-axis simultaneous machining have been available with Mastercam Swiss. Of course, these Mastercam functions are embedded in the software of the bar turning companies. This enables users to maximise the milling performance for their multiple-axis machine tools. Nevertheless, these machining processes are adapted to the specific features of the Swiss-type lathes in collaboration with the machine manufacturers. These machining systems open up new possibilities for working with 3, 4 or 5 simultaneous axes on Swiss-type lathes. Furthermore, with the 2017 version, 5-axis machining has been improved for various machine environments. Today, the following operations are supported by the 5-axis simultaneous control:

- parallel operations
- irregular shapes between two surfaces
- line parallel to a surface
- irregular shapes between two curves
- projection of curves.



Example: Impeller machined in 5-axis in collaboration with Tornos.



5-axis simultaneous machining on a Tornos Swiss GT 26.

Mastercam: more than 30 years of experience in machining with a global network of skills

When selecting Mastercam, you do not only select a CAM software vendor, but the product family used most throughout the world. For 22 years, Mastercam has been the leading CAM solution with more than 500 dealers in more than 75 countries. Mastercam's huge success can also be traced back to the synergy between the dealer's skill sets and the customers' requirements. It is already 6 years since a Competence Center was built in Switzerland with the further technological development of Swiss-type lathes in mind.

In particular, the Mastercam family comprises:

- Mastercam Design (3D CAD)
- Mastercam Mill (milling)
- Mastercam Lathe (turning)
- Mastercam Wire (wire EDM)
- Mastercam Swiss (bar turning).

Let's recall some of the strong points of Mastercam Swiss:

- realistic simulation of the tool path
- automatic interference and tool path deviation control
- unlimited number of axes and channels
- machine-type specific synchronisation and restriction management
- management of the machining processes with various types of tool holders and bar-turning specific operations
- capability of 5-axis simultaneous machining
- automatic creation of high-precision programs in ISO, TB-Deco (PNC or PTO), and TISIS.

mastercam.com
jinfo.ch

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PRECISION CARBIDE TOOLS



www.meister-sa.ch

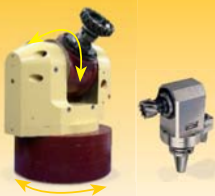
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ANGULAR HEADS



Set up from 0 to 120 °
Rotation of 360°

SPINDLE SPEEDERS



Still 50 000 rpm
or power still 35 kW

MULTIPLE SPINDLES HEADS



From watchmaking industry
to boats engines

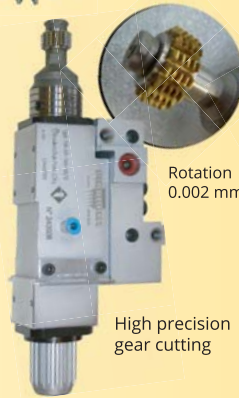
TURRET HEADS



20 Kg to 4000 Kg



Specific equipment and accessories for TORNOS machines



Rotation
0.002 mm

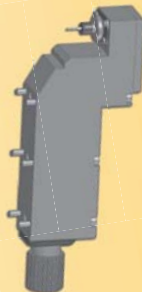
High precision
gear cutting

Adjustable angle head
with range of adjustability
from 0 to 90°
5 mm clamping capacity



Polyvalent drilling and milling head
for heavy machining with speed-reducer
Usable with or without over-arm

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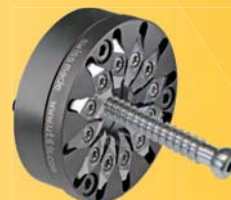


Right angle spindle speeder
5 mm clamping capacity
15'000 rpm



Modular tool holder

Whirling machine 27°



Programmable Coolant System Wavy Nozzle™

How to improve chip removal efficiency and significantly improve processing efficiency.

How to supply coolant-oil to the precise cutting point and improve tool life.

TORNOS

Tornos SA
Industrielle 111
CH-2740 Moutier
Switzerland
Phone +41 (0)32 494 44 44
www.tornos.com

How to deal with machining chips is an everlasting task for cutting work. Chips may entangle with a tool, chuck and workpiece and it causes various problems such as reduction of the yield rate by scratching a workpiece, time loss due to a machine stop for removing chips, reduction of tool life and in the worst case, it would lead to a machinery breakdown.

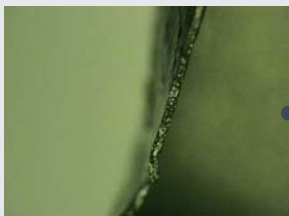
Problems of Entangled Chips and Conventional Countermeasures

The standard solution would be installing a high-pressure coolant device. This is a method of blowing off chips by a high-pressure coolant device (8-20 Mpa) and it has a great effect. However, the method has disadvantages when using a small lathe, such as making processing precision worse due to vibrations of a high-pressure coolant jet pump and deterioration of a machine, or degradation of a factory environment caused by generated oil-mist.



How chips get entangled

- 1 Start processing
- 2 Chips are generated
- 3 When a workpiece rotates, chips also rotate
- 4 Chips start to entangle
- 5 Once entangled, it continues
- 6 Entanglement generated



Machining Chips Comparison

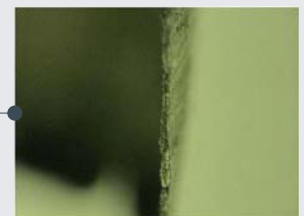
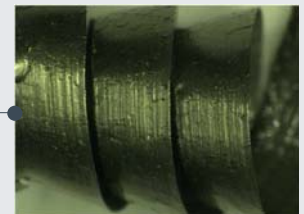
Using SUS303 (austenitic stainless)

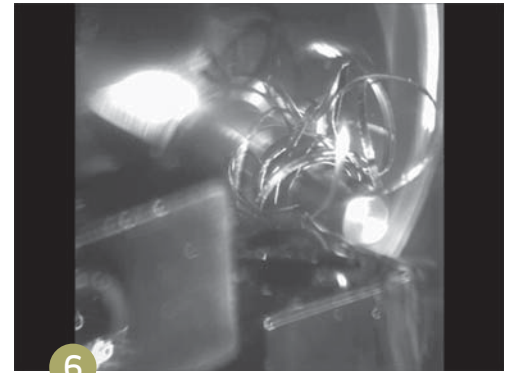
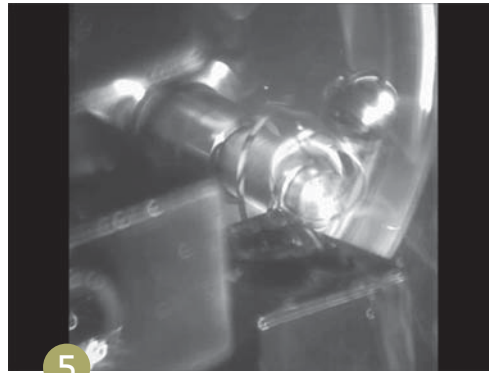
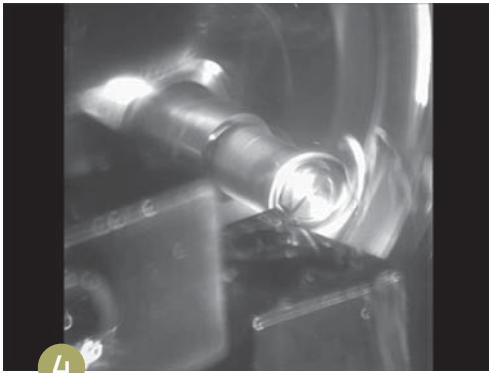
Conventional fixed-type coolant

- Large waves
- Uneven waves
- Uneven stretch
- Bladed tooth shape surface
- Trace of force on the cross-section surface

Wavy Nozzle (SWEEP Mode)

- Small spirals
- Regular spirals
- Even stretch
- Flat shear surface
- Smooth cutting





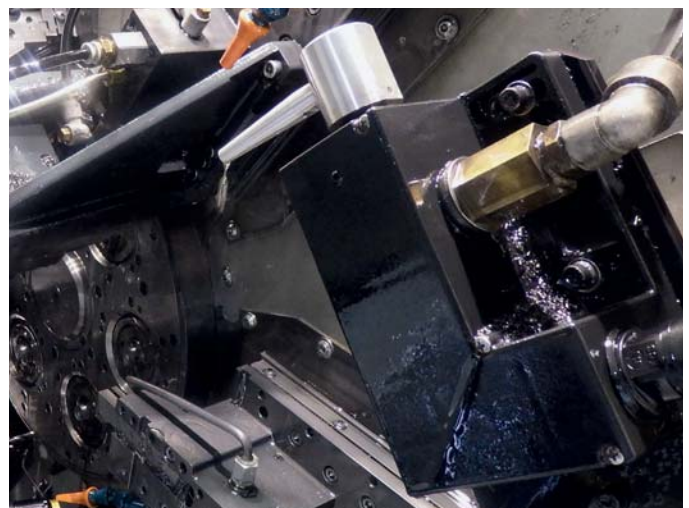
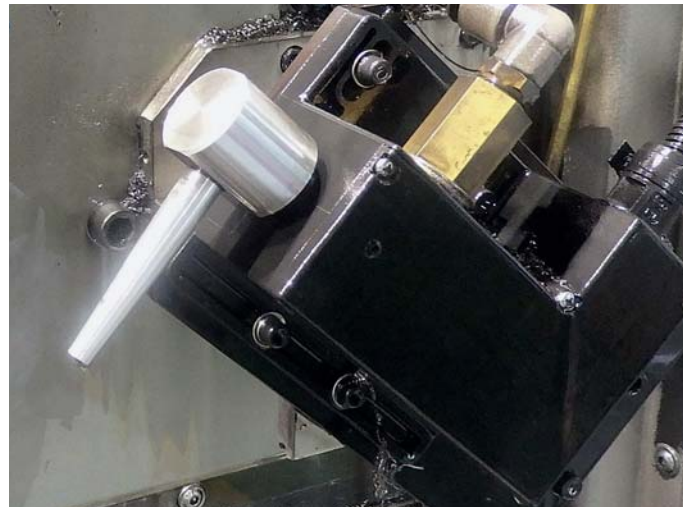
A new way to deal with chips

Wavy Nozzle is a product developed under the new concept of a swinging coolant-oil injection using a swing jet nozzle. Unlike a high-pressure coolant device which blows chips off, Wavy Nozzle swings, jets coolant-oil and takes chips into one direction and this prevents entanglement of chips.

“Wavy Nozzle” can be installed in “Tornos single spindle & MultiSwiss machines”. It is compact and does not take much space.

Solving problems of machining chips

When process ductile materials (aluminum, stainless and others) using a lathe, machining chips are often blown off together with the force of rotation work. This is the main cause of entanglement of chips. It is not easy to remove entangled chips once it occurred regardless of how much coolant-oil you inject. Wavy Nozzle is capable of guiding chips to flow out in one direction and it makes chips to be discharged without being involved in rotations of processing work. After becoming a certain length, long continuous chips do not get blown off due to their weight. As a result, chips do not get entangled. This is the benefit of Wavy Nozzle.





Easy to use with M-code

In order to handle many different forms of processing work, a nozzle angle and a swing speed is adjustable and those values are stored in the main device of Wavy Nozzle. It is easy to control by simply choosing "M-code" from the processing program when you actually use the nozzle. The use of Wavy Nozzle does not make cycle time longer.

Additional Benefits of Wavy Nozzle

Benefits of Wavy Nozzle are not only for preventing entanglement of machining chips, but also to make coolant-oil easier to reach to the cutting point. Due to wind pressure generated by rotations of processing work, coolant-oil sometimes do not reach to the point of processing. Wavy Nozzle is a device capable of supplying coolant-oil at the exact point of processing by using swing motions. By properly providing coolant-oil at the cutting point, we can expect improvement in a rough cutting surface and to be able to have a prolonged tool life.

"Wavy Nozzle" is a registered trademark of MinebeaMitsumi Co., Ltd Japanese Registered Trademark No.: 5645210, 5645226. This system is available for Tornos customers through the usual Tornos network.

For more information, please contact Tornos.

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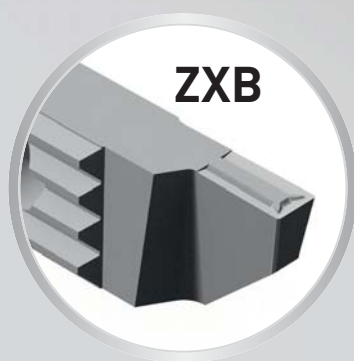
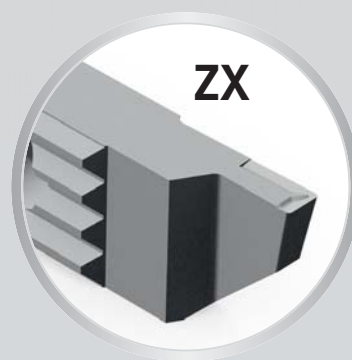
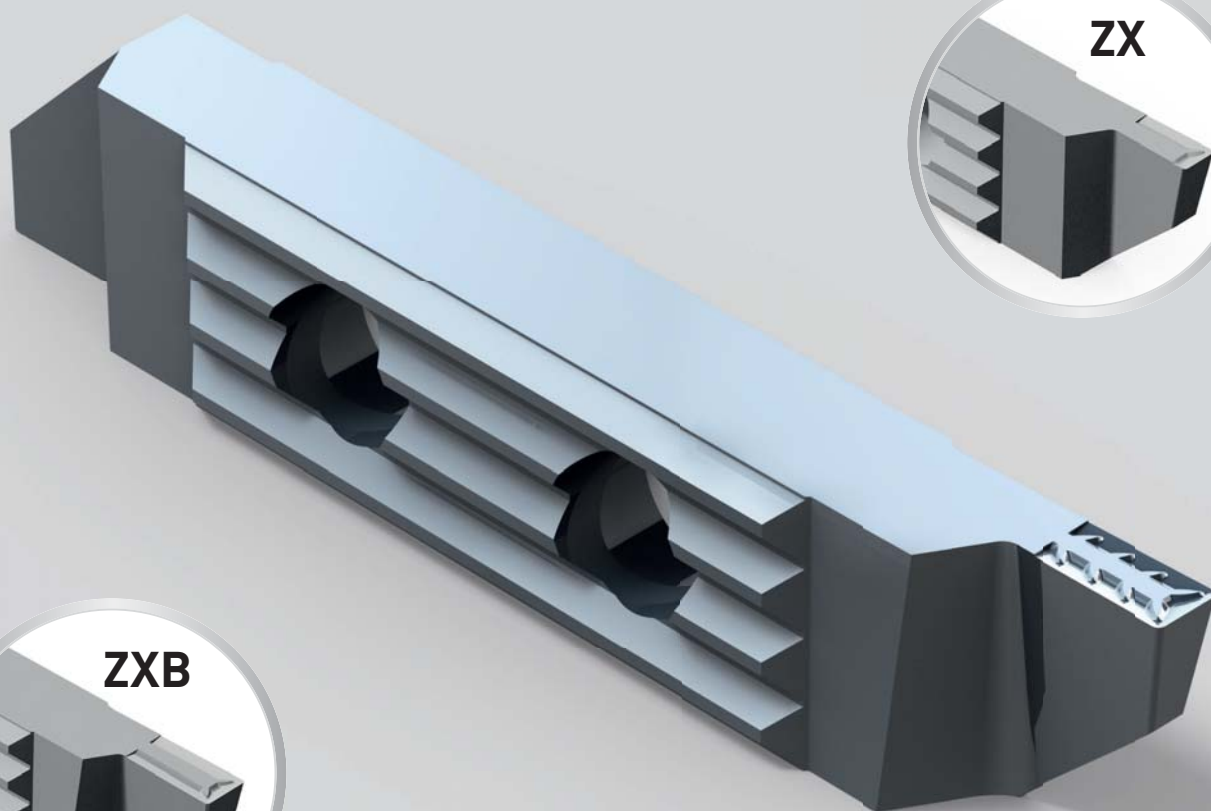


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TOP-Line

ZXT

Pour un meilleur contrôle des copeaux
Für eine bessere Spankontrolle
For a better chip-control



ZXT

A close-up photograph of a hand reaching down towards a spinning top. The spinning top is a brass-colored metal object with a cylindrical stem and a conical base with horizontal ridges. The background is a light, neutral color. The overall composition is clean and professional.

TORNOS

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*We keep
you turning*

Our commitment