

decomagazine

THINK PARTS THINK TORNOS

73 02/15 ENGLISH



EvoDeco:
a unique family



70% shorter
maintenance time



Ortho NF-X
meets SwissNano



Tornos provides
flexibility for
Irish subcontractor

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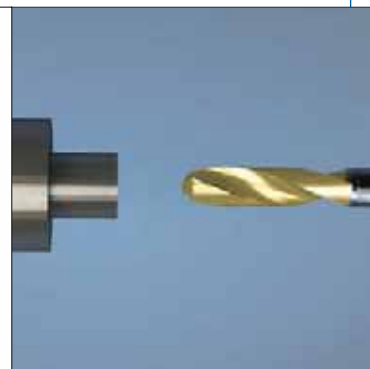
Tornos Technology Days:
spotlight on these
high-quality open days



The Swiss GT 13 –
where rigidity
meets efficiency



User-friendly features
of TISIS



Positioning the tool
on the Z4 axis
for bar turning work

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TORNOS SA
Rue Industrielle 111
CH-2740 Moutier
www.tornos.com
Phone ++41 (0)32 494 44 44
Fax ++41 (0)32 494 49 07

Editing Manager:
Brice Renggli
renggli.b@tornos.com

Graphic & Desktop Publishing:
Claude Mayerat
CH-2830 Courrendlin
Phone ++41 (0)79 689 28 45

Printer: AVD GOLDACH AG
CH-9403 Goldach
Phone ++41 (0)71 844 94 44

Contact:
plumez.j@tornos.com
www.decomag.ch

SUMMARY

New machines but also new services and possibilities	5
Tornos Technology Days: spotlight on these high-quality open days	7
We want to know what you think!	13
EvoDeco: a unique family	17
The Swiss GT 13 – where rigidity meets efficiency	21
70% shorter maintenance time	23
Collection of small workpieces on the BA 1008	25
Ortho NF-X meets SwissNano	27
User-friendly features of TISIS	31
Mastercam Swiss saves you time by efficiently controlling all Tornos machines	35
Positioning the tool on the Z4 axis for bar turning work	39
Tornos at the 3D systems GibbsCAM reseller meeting	42
Tornos provides flexibility for Irish subcontractor	45



Doing it Right!

New MATRIX Series 5
2 Sizes • Completely Modular



NEW MACHINES BUT ALSO NEW SERVICES AND POSSIBILITIES

Dear reader,

Tornos Service is moving ahead with its Service products while always keeping Tornos customers in our focus. The two main goals for Tornos Service are to have a high rate of customer satisfaction and to work together with our customers to grow the business, ensuring higher productivity and more reliability when using our Tornos machines.

One way for us to achieve this goal of more reliability and more productivity is by suggesting specific upgrades to our customers such as automatic central greasing. With this upgrade, users can minimise maintenance times for their machines and therefore can increase their production capacity. Another option is to consider adding certain functions of TISIS such as remote monitoring to your machine. So, if you have a shop with 3 machines all running an urgent customer order, it will be of huge benefit to be notified about machine problems via your smartphone or tablet. You can even take any necessary action over the weekend.

Another way to increase productivity is by offering customers the new Service product, "Used Tornos machines". In the past, Tornos Service was usually available on site when the customer had bought a used machine elsewhere. This year, we are offering a factory-overhauled Deco 20 and Deco 26 to our customers at competitive prices. Enabling Tornos Service to offer used machines to our customers is the next logical step to make use of the extensive experience in revisions and maintenance that our Field Service Engineers have gained. They work directly in favour of our customers while also using the overhaul process as an opportunity to keep track of the wear and consume parts in our machines. The feedback that we receive from overhauling used Tornos machines for our customers will be given directly to our PLM and R&D Engineers so they can improve our products even further.

For customers, the business and Service partners are the same company and the expertise built up over the duration of the partnership will be used throughout the entire business process. It will now be possible to buy a used Tornos machine from one of our Sales engineers and to involve the Tornos Application team in the Sales process if it is necessary to produce new, complicated parts on the machine.

Of course, the machines will be under warranty, and customers will benefit from the same professional Tornos Service network that they have come to rely on.

For this new Service of Product "revision", we have quadrupled our floor space in Tornos Moutier and have also integrated spindle revisions into the same building in our Service organization. In addition to this, our 12 Service Centres located worldwide are preparing their workshops to actively support customers with local revision requirements, either on site or in the Service Centres themselves.

*Matthias Damman
Head of Tornos Service*



NEW SPINDLE CENTERING SYSTEM MAKES YOUR LIFE EASIER!



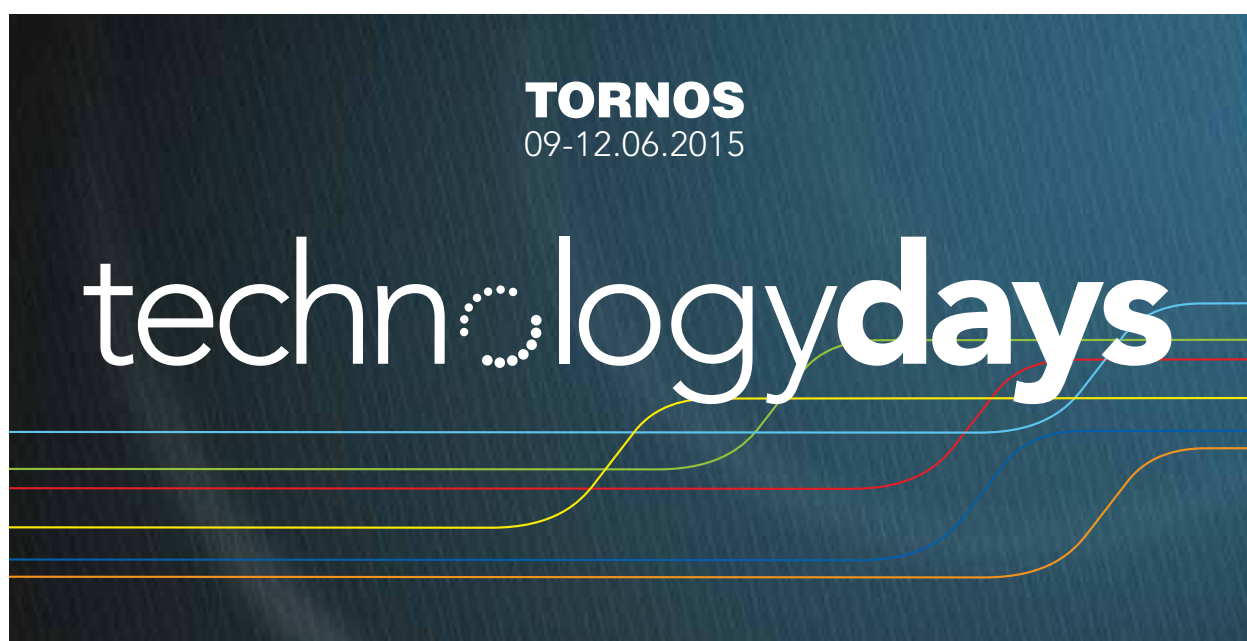
HIGH PRECISION – FAST – SMART

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TORNOS TECHNOLOGY DAYS: SPOTLIGHT ON THESE HIGH-QUALITY OPEN DAYS

From 9th to 12th June, Tornos is running a week-long exhibition at its Moutier site. Unlike events where other visitors milling around prevent you from getting the full benefit of specialists' expertise, these days offer a high value-added introduction!



The idea of organising an exhibition in Switzerland a few months before the EMO was born following the observation that visitors often do not have as much time as they would like to learn more about products that interested them, and the fact the Milan EMO only attracts a few Swiss and German visitors.

For the main areas of activity

The products presented represent the full range of current Tornos machines and the parts produced are targeted at the main areas of activity that the company covers, including the automotive, medical, electronic, watchmaking and micromechanics industries. Mr. Renggli, marketing manager, explains: *"Over the past few years we have invested heavily in developing new products and this is the first time that our customers will also have the opportunity to discover the full range."*

A full product assortment

Visitors will have the opportunity to discover the MultiSwiss, Swiss GT 26, Swiss GT 13, EvoDeco 10, CT 20 and SwissNano, all recent machines, some of which have only just been unveiled to the public for the first time.

An introduction to maximise service

In order to offer the very best service to visitors, the entire European technical commercial team will be available in Moutier to answer any questions and provide added value. Of course, a visit to Moutier will allow customers to visit the Tornos factory floor and, for example, view the entire lean manufacturing line of EvoDeco machines. A great way to show that Tornos and Switzerland have a lot to offer in terms of performance.

EvoDeco



CT 20



MultiSwiss



Take a closer look at the machines presented and the parts produced.

MultiSwiss – Automobile – Centring nut

Multi-spindle machines have been well established in this market for decades but, with its reduced floor surface area, frontal ergonomics and far superior quality to what is normally found with multi-spindle machines, the MultiSwiss offers even more and has become a best-seller in this sector, with over 120 machines on the market.

SwissNano – Automobile – Axes

Given that the SwissNano earned its stripes in the watchmaking and medical sectors, it is surprising to find it being used to produce automotive parts. *"The SwissNano machine works wonders with its thermal engineering and stability, combined with its small floor surface area and machining capabilities. Car manufacturers are starting to take a close interest in it. Several have already been sold to produce small and highly precise stainless steel shafts"*, explains the head of marketing. He adds: *"thanks to its sta-*

bility and rigidity, wear on tools is minimal, even with this stainless steel shaft. For our customers, it's a guarantee that it can be operated long-term without needing to change the tools."

Swiss GT 26 – Medical – Surgical screws

This is the first time that a Swiss GT 26 machine has been fully fitted for the medical sector. Featuring a W&F whirl cutter and rapid tool changing devices, also provided by the manufacturer, the machine will produce a whirl-cut poly axial screw with a hexagonal head. Perfectly combined with a SBF 326e feed, the Swiss GT 26 allows the production of medical screws for an unprecedented level of investment.

Swiss GT 13 – Electronics – Connectors

The new Swiss GT 13 is a variant of the Swiss GT 26. It is officially marketed via our Technology Days. Fitted with a motorised spindle that can reach up to 15,000 rpm and work with or without a barrel as required, it is smaller and more dynamic than the Swiss GT 26. Mr. Renggli explains: *"our clients that managed to get a front-row view were really*



SwissNano



Swiss GT 26



Swiss GT 13

impressed at the exhibition when the machine produced a connector at high speed."

CT 20 – Electronics – Ejector

The simplest machine in the Tornos range produces a stainless steel ejector, which requires counter-operation milling. It is fitted with four tools that turn in operation and four in counter-operation. It can therefore produce parts that require a certain level of assembly. During the exhibition, it will be presented with a specific splitting device in counter-operation.

EvoDeco 10 – Micro-mechanics/ watchmaking – Balance

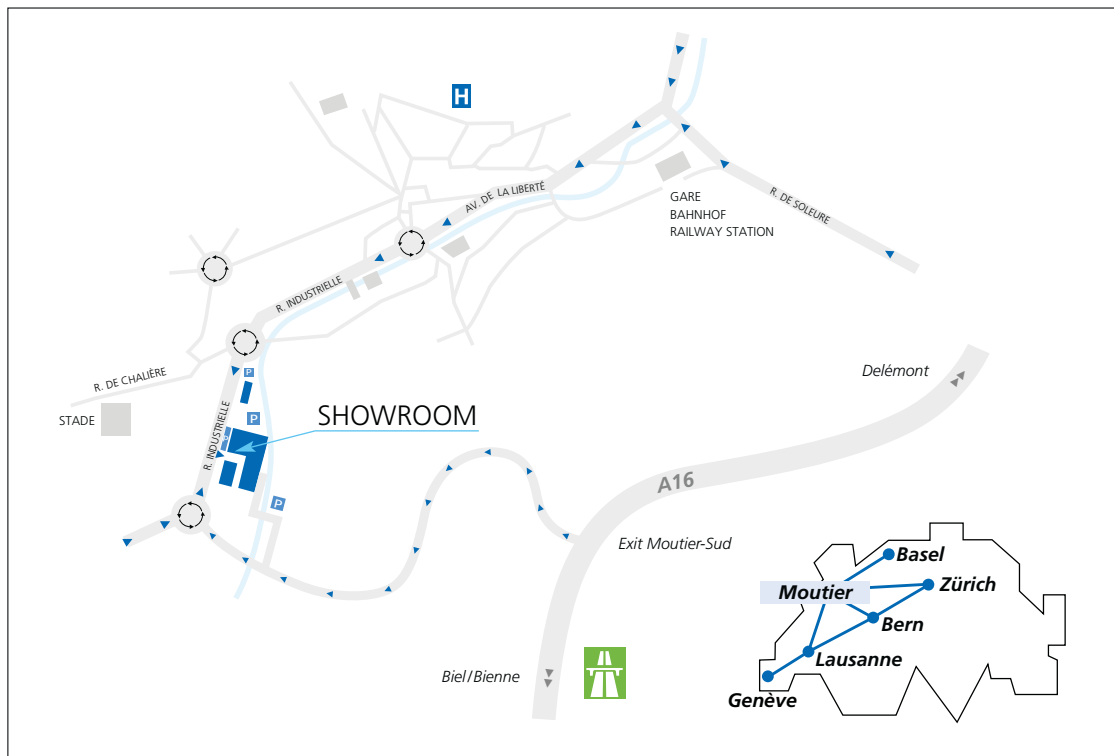
The EvoDeco 10 machine will be presented in its new design (see our article regarding the EvoDeco range and its new design on page 17). Unanimously lauded since the launch of EvoDeco 32 at the last EMO trade fair, this evolution in design features undeniable comfort, ergonomics and high performance. *"The EvoDeco machine is a must for customers wishing to produce complex parts. It is still one*

of the few machines that can simultaneously engage four tools on the same material. At the exhibition, we will produce a balance wheel that includes 503 punched holes on the periphery for balancing. The three high-frequency spindles allow the production of exceptional parts", adds the head of marketing. For the first time, the machine will operate in classic ISO programming and not TB-Deco. Mr. Renggli adds: *"The standard for EvoDeco machines remains TB-Deco, but if customers prefer, they can now order this machine with ISO programming."* When asked about the complexity of programming four channels in ISO, he concludes by saying: *"specialists willing to work in ISO programming can rely on the TISIS system."*

How will I navigate all these different machines?

This quick overview might seem complicated in terms of the choice of the machines, but this really isn't the case. Our company specialists have a strong knowledge of every product and can therefore direct customers in the best way, taking into

The present



account the parts to be produced, their cost and the level of productivity desired. A visit to Moutier at the start of June is a great opportunity to discover this.

TISIS, a tool for customers

The exhibition will also showcase programming as the new version of TISIS will be being demonstrated. However, this system doesn't stop there. It also allows you to control the machine temperature or load in real time. The designers are available for visitors to demonstrate the advantages of the system, but also to gather ideas, remarks and comments to update the program so that it has more functionality and is even more user-friendly.

Technology Days – an unmissable opportunity

With their relaxed atmosphere and specialists on hand, the Tornos Technology Days at Moutier offer the perfect opportunity for customers to come and discover more about the machine that best meets their needs. This is also a great chance to exchange and pass on their thoughts and ideas.

If this sounds interesting to you, come and visit us in Moutier! For bordering countries, please contact your usual vendor, you may be able to organise a visit with a Tornos partner or agent.



TORNOS
Tornos Technology Days
from 9 to 12 June
9 am until 6 pm every day,
Tornos Techno Centre, Moutier,
Switzerland

www.tornos.com/en/technologydays





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

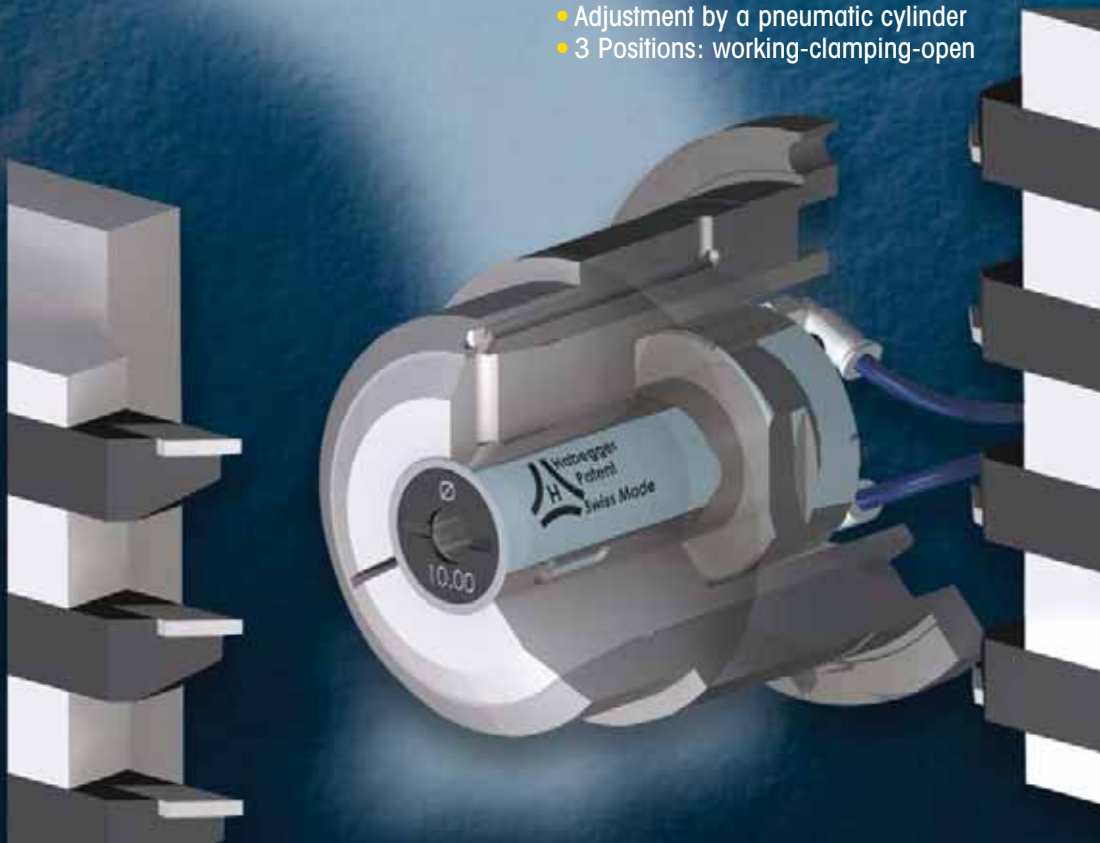


Type / Typ C

- 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

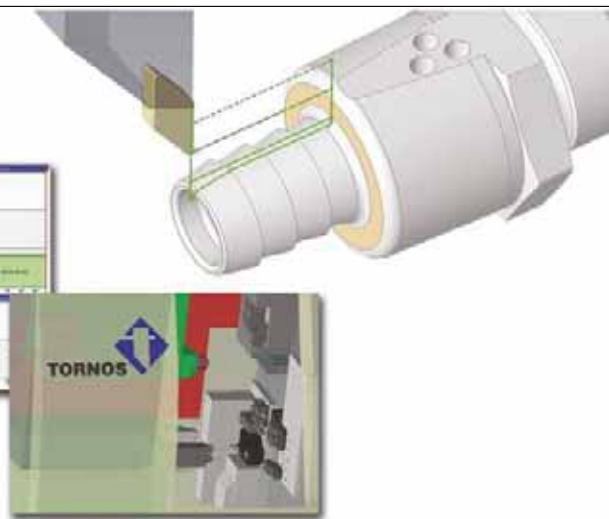


▶▶▶ 1 Porte-canon: 3 types de canon Habegger!
▶▶▶ 1 Büchsenhalter: 3 Habegger Büchsentypen!
▶▶▶ 1 Bushholder: 3 Habegger guide bush types!

Make the Most of Your Swiss Machine

Mastercam Swiss delivers everything you need to make the most of your Swiss machine.

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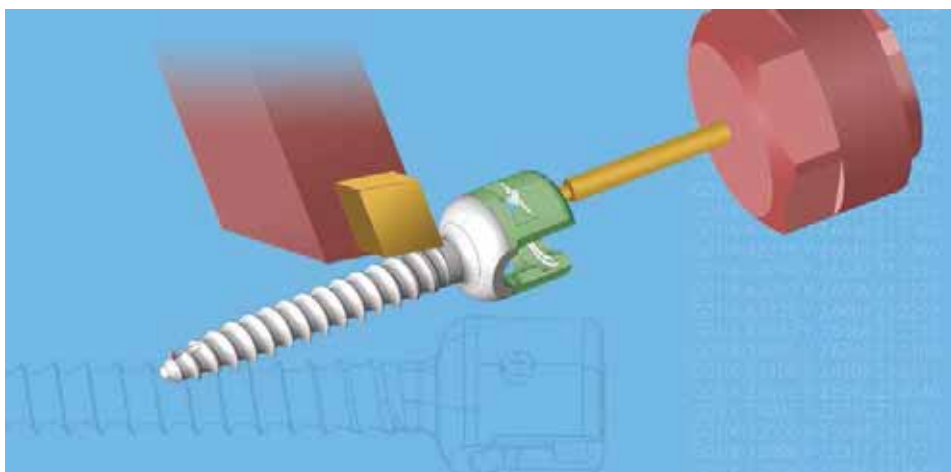


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OUTILLAGE
DE DÉCOLLETAGE
POUR L'HORLOGERIE

WE WANT TO KNOW WHAT YOU THINK!

In March 1997, just after the release of the Deco 20 Machines, Tornos decided to launch its own technical magazine to inform current and potential customers about its products and solutions, as well as complementary devices and solutions available on the market.



Starting out, the magazine was published in three languages and covered 32 pages. Over the years it has evolved and, to allow it to continue to move in the right direction, we often carry out surveys with our readers. Our layout has changed, new features have been added, other languages have appeared and our print numbers have increased. Today it has reached 16,000 copies and the magazine is printed in 8 languages.

Innovation above all

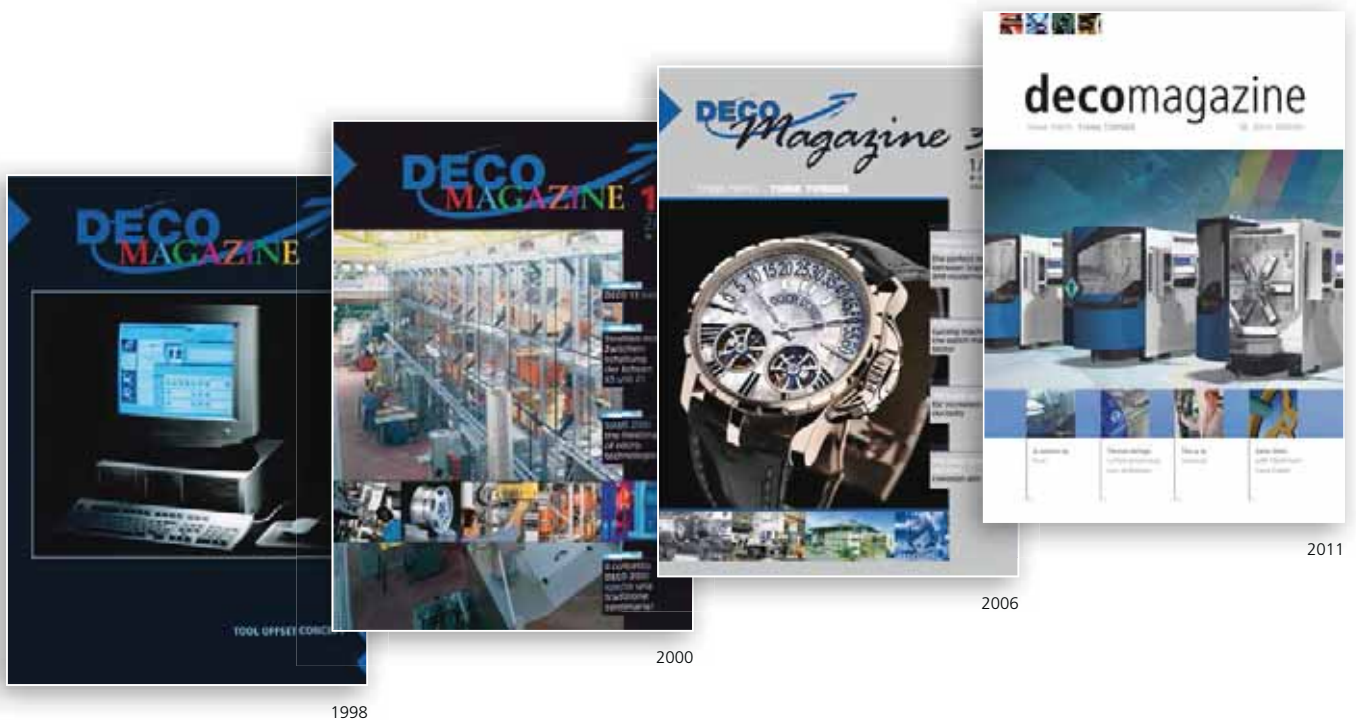
In the first issue, published in April 1997, we wrote: *"The launch of this title, in the highly conservative world of precision engineering, represents a mini revolution. Its objective is to share the motivation of our engineers and salespeople at Tornos-Bechler for*

Deco 2000, a product that marks a turning point in the history of precision engineering." Eighteen years later, the spirit of the specialists at Tornos is still the same; they want to share their passion and help customers to go ever further with their products.

A quick question?

Following two surveys, which have allowed us to continue to offer a magazine that meets your needs, we would like to ask for a few minutes of your time so that we can continue to offer you the most efficient and relevant support. Your opinion matters to us. We have prepared a short questionnaire that will enable you to let us know how you feel about our different features, layout, promotional pages and any other elements that form part of the magazine.

The present



A few minutes so the magazine can be even better

We have prepared a quick online survey that we invite you to complete at www.tornos.com/survey-decomag. This will only take a few minutes of your time.



Your magazine!

To thank you for your opinion, one lucky participant will be selected at random to receive a Samsung Galaxy Tab Pro touchscreen tablet.

decomagazine is here to inform you and it is published for you. Please don't miss this opportunity to improve the magazine as you see fit and with what you like most!

Thank you for taking part

The questionnaire will be available online until the end of August 2015 and our winner will be selected during the EMO trade fair. The winner will be contacted personally. The results of the survey will be published at the start of 2016.

I would like to thank you again for taking part, which I hope many of you will choose to do.

Best regards,

Brice Renggli



Tornos SA
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EVODECO: A UNIQUE FAMILY

Take the best and make it even better, as the new EvoDeco by Tornos could best be described.



Always at the cutting edge, EvoDeco is a product that provides the ideal combination of Tornos expertise with its strong commitment to the future of the industry.

The new range, launched in 2013 following the unveiling of the EvoDeco 32 machine, is now complete. This series of machines represents the cream of the crop of automatic turning machines currently available. Unique and unrivalled, these new machines are based on the Deco concept which, with over 7000 units sold, is without contest the most widely used high-end machine in the world.

Unique machines

EvoDeco is a machine produced without compromise, and seeks to offer the best performance on the market. Constructed to meet even the most exacting demands, these products define the high-end screw cutting machine market. Mr. Charles, head of product design, explains: *"These four new products are the result of the application of values*

identified to satisfy the most demanding customers, notably constant innovation, the desire to match customer needs as closely as possible and the ambition to always go further and faster."

Unique kinematics

A numerical control machine featuring four completely independent tool systems... When it was launched in 1995, this ground-breaking idea rapidly met with exponential success. Today, almost twenty years later and with 7000 machines sold, it should be noted that the kinematics perform just as well; no other machine is able to engage as many tools at the same time, and twenty years later Tornos is still the only manufacturer to offer this feat of engineering genius.

Presentation

A unique piece of equipment

The choice of tool holder system has been made with a view to achieving complete versatility and a very high level of flexibility. All types of tool holders are fitted with a rapid change system and pre-set adaptations. EvoDeco machines are capable of solving all machining problems, with so many possibilities that it would be impossible to list them all. All Deco accessories can be mounted on machines to increase their machining capacity.

A unique and revolutionary concept

The concept of machines has evolved in correlation with market requirements in order to successfully cater to all segments, including the automotive, medical, electronic, watchmaking, micro mechanics and aeronautical industries. The innovations are pragmatic and have only a single aim – to help customers using these machines to be successful. Does that mean that Tornos has relied on the success of yesteryear? Yes, but to respond better and always offer more. Optimising the frame, integrating a touch screen computer, increasing the power of the motors, strengthening the guide rails, thermal optimisation of the frame, active thermal stabilisation, synchronous spindle motors, optimising maintenance operations, increasing operator accessibility, adding a B axis, ISO programming, these are just some of the major innovations that are featured in the EvoDeco range in comparison with the previous generation.

The fastest and most powerful motors on the market

On the market currently, synchronous technology is only used with motor axes in order to benefit from the accelerations and decelerations necessary to provide the dynamism necessary for machining: EvoDeco machines utilise this technology in the spindle motor too. This technology allows these machines to boast the fastest accelerations and decelerations ever observed with an automatic turning machine. The torque is constant at any speed. The customer benefits are clear, with gains of up

to 30% increased productivity for a part requiring frequent stoppages. The kinematics of the EvoDeco machine allow a high degree of milling, which means milling more often than frequent stoppages.

B axis for greater feasibility

Placed in counter-operation, the B axis of the EvoDeco 16 machine allows the user to program any angle without any mechanical adjustment. The time saved is phenomenal, especially for those manufacturing dental implants; a part that lends itself well to the EvoDeco 16 machine and its b axis, manufacturers have seen their productivity soar by over 50% thanks to this single numerical axis. The B axis has three driven positions and a fourth fixed position.

A unique design

While our machines all now feature a single design that began with the SwissNano Machine, this design isn't just beautiful to look at; it is the product of long and extensive research to reduce maintenance costs and facilitate the work of the operator. As such, these new machines, in addition to their distinctive appearance, are more accessible for the operator since access to the machining zone is optimal. Due to the numerous possibilities that this machine offers, the machining area must be as large



EvoDeco		10/10	10/8	16/10	16/8	20	32
Maximum diameter	mm	10	10	16	16	20	32
Number of linear axes		10	8	10	8	10	10
Number of C axes		2	2	2	2	2	2
Number of independent tool systems		4	3	4	3	4	4
Total number of tool positions		18	15	20	16	27	27
Position for rotating tools		13	10	15	12	21	21

Summary of the main characteristics of EvoDeco machines.



The challenge for the Deco range was, at the time, to create a machine capable of managing productivity and complexity in perfect harmony. This icon has forged the reputation of Tornos over the past 20 years and the new EvoDeco range is its worthy successor.

as possible in order to remove the swarf, ensuring continuous machining for eight hours. Mr. Renggli, marketing manager, tells us: *"each part fitted in our machines is included to benefit users. This is part of our DNA and underlines every engineering and design decision. Every curve and component in our machines is examined in detail. Everything is perfectly designed to improve the performance, handling and user comfort of Tornos machines."*

ISO or TB-Deco programming

EvoDeco can now receive two programming systems – TB-Deco or TISIS.

The two systems allow the user to effectively make use of the full potential of the machines in this family.

With its user-friendly graphic control, TB-Deco is the system of choice for EvoDeco programming. However, Tornos now offers the possibility of programming EvoDeco machines using ISO standard. The ISO standard option, which gives direct access to the machine's numerical control, proves particularly practical when creating complex interfaces between the machine and external peripherals such as measurement systems. Interfacing of CAM systems is also simplified for customers using this system.

Synchronisation of the four tool systems in the machine is carried out via the Tornos TISIS software. This allows the user to view the four channels and therefore facilitate programming. Management of the machine and its peripherals is still highly intuitive thanks to the Tornos machine interface (TMI).

For further information regarding EvoDeco, please visit www.tornos.com, or speak to your normal Tornos representative.



Tornos SA
Industrielle 111
2740 Moutier
Tel. +41 32 494 44 44
Fax +41 32 494 49 07
www.tornos.com



PONTED CH

ROUTE DE CHALUET 8
CH-2738 COURT
SWITZERLAND
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THE SWISS GT 13 – WHERE RIGIDITY MEETS EFFICIENCY

The Swiss GT family is growing! The range now includes 2 models: the 13 mm and 26 mm. Tornos has been able to develop these new machines very quickly, thanks to a major effort in standardisation and parallel development across our three sites in Switzerland, China and Taiwan.



The Swiss GT 13 can manufacture complex components at high speed, thanks to its highly dynamic performance. Equipped with the TISIS programming software as an option, this machine is a particularly effective solution for manufacturing complex, precision parts measuring 1 mm to 13 mm in diameter.

State-of-the-art features

The equipment includes a counter operation station, equipped with a Y axis, which can house 8 tools. Operations and counter-operations are performed completely independently. The Swiss GT 13 machine is also equipped with a spindle and counter spindle with identical power ratings, for even greater freedom of programming. In fact, it is no longer necessary to choose heavy bar operations due to any lack of power in counter operations. The machine's spindle and guide bush system, with integrated

motor, delivers speeds of up to 15,000 rpm. As on all Tornos machines, the grippers can be opened at high speed, to reduce downtime.

A huge range of equipment options

With a total capacity of 30 tool positions, including 22 on the main platten and 8 in counter-operation, the machine is richly equipped. Just like its big sister – the Swiss GT 26 – the machine has 6 modular positions. Depending on requirements, these positions can be equipped with a thread whirling unit, a polygon cutter, an angled milling device, dual drilling tool holders, with even more options available in the future. As necessary, the machine can also house the W+F quick-change tool holders developed for the Swiss GT 26 and Swiss ST 26 machines. The Swiss GT 13 boasts 12 positions for rotating tools.



State-of-the-art programming software and interface

Available as an option, TISIS makes it so easy to program the Swiss GT 13; the software is very accessible and offers many aids and macros which make the operator's work much easier. More information on TISIS is available on page 35 of the magazine and online at www.tornos.com. The machine can also be programmed in numerical control. Here too, the Tornos Machine Interface (TMI) is very intuitive. This interface made its début on the SwissNano and is now available on the Swiss GT 26 and the Swiss ST 26.

A large-scale frame

The Swiss GT 13 machine is part of the new platform generation. Tornos has decided to implement a platform concept, in fact, designed to unify the constituent parts or components used in the various products. Consequently, an Almac BA 1008 micro-mill is based on the same platform as a SwissNano bar-turner. The Swiss GT 26 – a standard machine built on the platform concept – has now been followed by the Swiss GT 13 machine. According to Development Manager, Christophe Tissot, the frame and guides on the Swiss GT 13 have been optimised for a machine measuring up to 26 mm. The rigidity of the assembly therefore simply cannot be faulted.

The first-choice partner for the dental and medical sectors

Thanks to its dynamic performance and its rigidity, the Swiss GT 13 shows itself particularly effective working with difficult materials like stainless steel, cobalt-chrome or even titanium. This makes the Swiss GT 13 the first-choice partner for the production of maxillofacial screws or even dental implants. Thanks to the connectivity pack, available as an option, it is very simple to monitor tool wear; in fact,

it is possible to monitor the load and temperature of each axis on the machine and, used correctly, this information can serve as a very valuable indicator.

The connectivity business: another target market

The connectivity business is an extremely competitive market which requires companies to act quickly and respond to falling prices; the Swiss GT 13 is also the perfect partner in this sector, thanks to the dynamic performance of the machine's axes (35 m/min) and its simple programming and setup. Its very competitive price is another significant selling point. The Swiss GT 13 has quickly shown itself to be highly stable in producing parts for the connectivity business. The machine's temperature response is extremely well regulated. The spindles and guide bushes feature a temperature stabilisation device, just like the motors connected to the platens. The result is crystal clear: the machine remains very stable from the start of production and any variations are minimal, even during stoppages.

Last, but not least – the watchmaking sector!

Shortly, the Swiss GT 13 will also be equipped with a gear hobbing device; coupled with the machine's temperature stabilisation, this option is sure to make it the first-choice partner for the watchmaking sector too. The Swiss GT 13 is the only machine in its category to offer this option.

The Swiss GT 13 will be on show during the Tornos Technology Days from 9 to 12 June 2015 in Moutier, Switzerland (see article on page 7).



Tornos SA
Industrielle 111
2740 Moutier
Tel. +41 32 494 44 44
Fax +41 32 494 49 07
www.tornos.com

70 % SHORTER MAINTENANCE TIME

Tornos Service completes its range of accessories with an exciting new upgrade kit, available for all Deco range machines. Featuring an automatic cyclical lubrication unit, decomag met up with Simon Aebi, head of machine development at Tornos, to find out more.



decomagazine: Mr. Aebi, why the need for this new upgrade kit?

Simon Aebi: Deco machines used to be fitted with manual lubrication, and this technical choice meant that several dozen lubrication points needed to be regularly checked by the operator during maintenance work. This kit saves precious time and prevents oversights or operator errors. The machine will always be perfectly lubricated. Even if the operator forgets to fill the reservoir, the machine will sound an alarm.

dm: So, it's a kind of "intelligent" kit then?

SA: Exactly! Our service includes numerical control programming, which means that the system is fully integrated into the machine, including all settings and system tests, plus the implementation of the lubrication pipe system inside the machine. With our system, we cover more than fifty lubrication points, making it as complete and effective as possible. It also lubricates linear guide rails as well as ball screws.



MACHINE RECONDITIONING

"Launched last year, our machine reconditioning service has met with growing success. We currently have two Deco 20/Deco 26 machines, 10 axes undergoing reconstruction, all equipped with bar feeders, and which can be configured to your requirements: don't hesitate to get in contact if you are interested!"

Simon Aebi



dm: What are the advantages for the customer with this kind of system, other than reduced maintenance costs?

SA: Firstly, you can be safe in the knowledge that the machine will be correctly lubricated throughout its service life. It features original components that guarantee an unequalled level of performance and quality. It also comes with full Tornos Service support and a twelve-month warranty. We are the only company on the market to offer an automated lubrication system, making it a highly advanced upgrade kit that provides precious support to our customers.

dm: Is this kind of system expensive?

SA: Absolutely not! I encourage customers to contact their Tornos service provider to discover the benefits of this system for themselves.



Tornos SA
Industrielle 111
2740 Moutier
Tel. +41 32 494 44 44
Fax +41 32 494 49 07
www.tornos.com



COLLECTION OF SMALL WORKPIECES ON THE BA 1008

A good example of the synergy between the Tornos SwissNano automatic turning machine and the Almac BA 1008 bar milling machine.



In decomag #71, we presented the new vacuum system for collecting small workpieces on SwissNano machines. Presented in particular during the Journées Horlogères days in Moutier (March 2015), this solution is also ideal for collecting workpieces on the Almac BA1008 bar milling machine.

A collection system for small workpieces

Workpiece collection is a very important part of the production process. Indeed, it is vital that each workpiece is stored correctly and efficiently and, in particular, is not damaged during its journey from the machining area to the storage area. This is especially true for small precision workpieces such as those produced on BA 1008 milling machines.

The vacuum system developed by Tornos for the SwissNano has been painstakingly designed to offer numerous benefits, in terms of its rapid execution, precision and reliability.

An ingenious system

One of the final stages in the bar milling process is sectioning the workpiece, which is held in place by the counter spindle collet attached to the 3-axis front spindle block. The workpiece is then transported, very precisely, either to the back operation spindles, or directly to the vacuum collection system which instantly picks up the workpiece using suction, and transfers it to a storage bucket. The suction system is controlled via the M function on the

Technical

numerical control. The vacuum activation is therefore synchronised with the counter spindle collet's clamping system, enabling quick, reliable collection.

Simple to use

2 laterally sliding storage baskets allow the container to be changed without stopping production. The operator can remove the basket full of workpieces and replace it with an empty basket in under 5 seconds. Each and every workpiece can therefore be collected without any effect on productivity. The collection containers are placed in the machine housing, inside the dedicated workpiece storage area, and are very easy to access via the hatch.

No workpiece damage during transportation

The buckets are made from plastic which is resistant to benzine and solvents. They have been designed to retain sufficient oil to absorb the impact of each workpiece. This prevents damage to the workpieces



during transportation. Optimal protection is guaranteed as all the components of the collection system in contact with the transported workpieces are made from plastic.

Available since January 2015 on the bar-turner, this system is now offered as an option on BA 1008 machines. The vacuum system can also be incorporated on machines already in service. Please do not hesitate to contact your Almac representative for any further information.



Almac SA
39, Bd des Eplatures
CH - 2300 La Chaux-de-Fonds
Tel. +41 32 925 35 50
Fax +41 32 925 35 60
www.almac.ch
info@almac.ch

SYNERGIES INCREASE COMPETITIVENESS

ORTHO NF-X MEETS SWISSNANO

Bar turners contribute significantly to many a technical masterpiece with the parts they manufacture. This is why the industry is a prime example of rapidly advancing innovation on all levels. The launch of the compact, NC-controlled Tornos SwissNano is questioning the existence of long-serving cam-type automatic turning machines. It is important to achieve a high productivity level with maximum reliability and precision at low costs per part – but the machining fluid used is an often underestimated key to success in this regard.



Ortho NF-X, the universal machining fluid from Motorex, enables performance-enhancing synergies to be used not only on traditional machine tools but also significantly more often on machine tools of the latest generation.

Many bar turning companies have been mastering their craft for generation after generation. Production facilities have seen new technologies, processes, materials and machines come and go during this time. Some technological eras can still be seen today in various plants. This means that millions of parts, specifically for use in the watchmaking industry, continue to be manufactured relatively competitively on long-serving cam-type automatic

turning machines. This is almost always the case with large to very large batches, with such machines frequently working around the clock.

Increasing demand for flexibility

Anyone who frequently manufactures small and medium-sized batches as well is aware of the considerable advantage gained by being able to

The present



Vmax technology from Ortho NF-X utilises special additives that only become active at specific temperatures. There is a measurable increase in performance when compared with using a standard cutting oil.

plan their machine inventory efficiently. Deadline requests from the customer are now considered strict instructions and meeting them has a great influence on whether or not an order is completed successfully. This requires maximum flexibility. The

new generation of SwissNano machines from Tornos offer precisely this sought-after degree of flexibility. The extremely compact NC-controlled machine with six linear axes and two C axes is quick to set up, while its high capacity and precision makes it a wise investment for the future amidst fierce competition. It can be used, for example, to manufacture two thirds of the parts needed to make a watch mechanism. Motorex contributed its special expertise in lubricant manufacture to the development of the new compact class (bar diameter up to 4 mm) by Tornos and further increased the machine's potential through the use of synergies.

Cutting oil from the medical industry

As its name suggests, the high-performance cutting oil Motorex Ortho NF-X was originally used in medical engineering, where standards are particularly exacting. Here, difficult-to-machine materials for demanding applications need to be manufactured to the very highest quality. These standards demand that the machining fluid has certain properties, such as a very high power reserve. This was integrated into Swisscut Ortho cutting oil products across the board, thereby setting a new standard in a wide variety of applications. Motorex has made the desire

PERFORMANCE ANALYSIS OF A BAR-TURNED PART

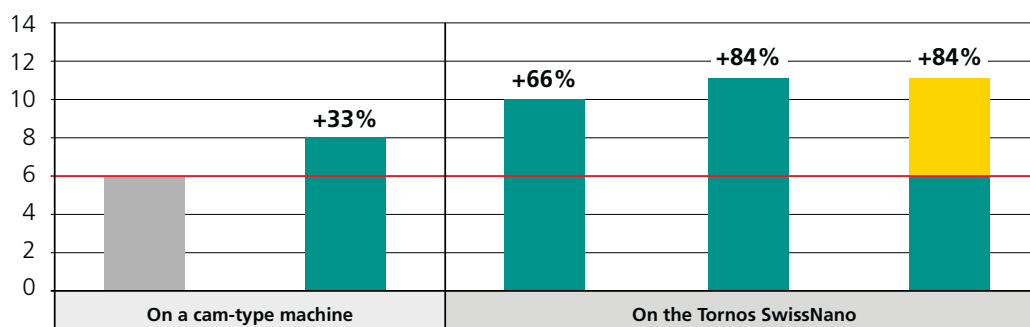
Using a standard cutting oil and
Motorex Ortho NF-X 15 on a cam-type machine tool
and a Tornos SwissNano.

Material: 4C 27A stainless steel

Part: Levelling foot used in watchmaking



Tool life quantity in 1000 pieces per tool



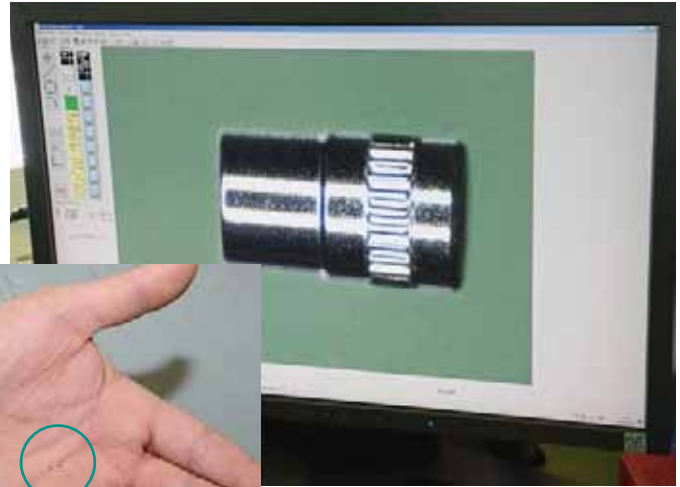
* with enhanced machining parameters



The way in which a tool wears out and the colours it presents can provide bar turners with a lot of important information.



The service life of the tools and the surface qualities obtained provide a direct indication as to the qualitative properties of the machining fluids used.



The 1.2 mm-long stainless-steel (inox 4C 27A) part manufactured during the test goes through four machining steps and is used as a levelling foot in millions of watchmaking factories.



for improved productivity, longer tool service life and optimal machining results reality with Swisscut Ortho NF-X using field-tested Vmax technology. A comparison between a cam-type automatic turning machine and a Tornos SwissNano using a standard cutting oil and Motorex Ortho NF-X ISO 15 clearly shows how much additional potential can be exploited (see graph page 32).

Significantly improved tool life

As a general rule, using Ortho NF-X makes it possible to significantly improve tool life while also improving performance. This is no empty claim: It is clear to see from recording the cutting data, tool life quantities and tool change rates. The performance-enhancing cutting oil Ortho NF-X uses Vmax technology developed by Motorex to achieve these results.

Chemical effects through heat

In the past, heat was to be avoided and dissipated as efficiently as possible. This basic principle still applies today, but Vmax technology from Motorex has changed this in that there is now an ideal temperature range for every application that uses Ortho NF-X – and this is often higher than the temperatures which have been established thus far. Optimal manufacturing parameters ascertained as part of application testing enable desirable chemical synergy effects triggered by the heat to be exploited, which in turn allows performance to be significantly

improved. An innovative combination of additives in Ortho NF-X is responsible for this: Over a dozen active ingredients enable cutting values to be optimised and ensure flawless surfaces on a broad range of materials.

We will be happy to provide you with more information about the use of Swisscut Ortho cutting oils – why not carry out a practice test in your own plant too? It does not matter which machine generation you are currently working with.



Motorex AG Langenthal
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USER-FRIENDLY FEATURES OF TISIS

The software for programming and monitoring Tornos machines is continually being developed to make it simpler and more user-friendly. In this issue of decomagazine, we will be taking another look at two highly practical features: Tips & Tricks and connectivity manager updates.




Tips & Tricks

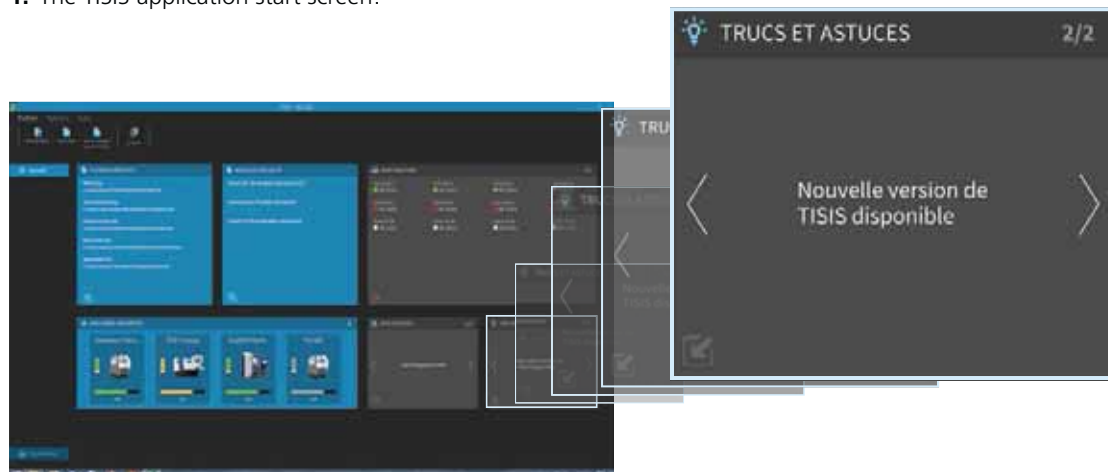
TISIS introduced a Tips & Tricks function several versions ago. This function makes it easier to use the TISIS application, for example, by giving the main short-cuts which are most used.

The Tips & Tricks information is available from several sources:

1. The TISIS application start screen:

The arrows < > are used to review the various Tips & Tricks. The items automatically scroll by default.

The Tips & Tricks box can be minimised on the start screen using the  function.

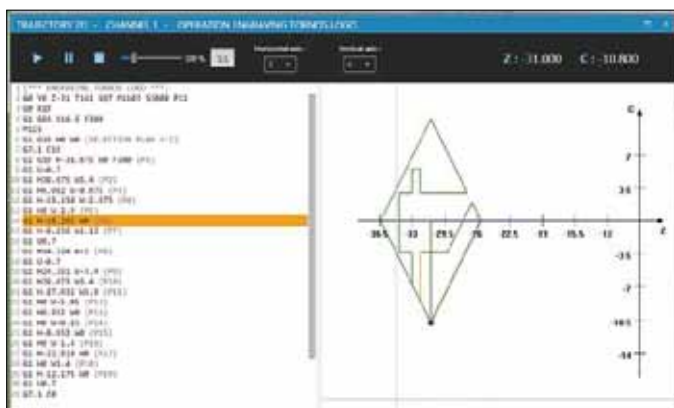


Clicking on one of the items under "Tips & Tricks" opens a web page in the browser (see point below)

2. Via the website www.tornos.com and the TISIS page under: Our products/Software/TISIS.



Example on tool trajectory simulation: site image



These Tips & Tricks are updated with the release of each new version of TISIS.

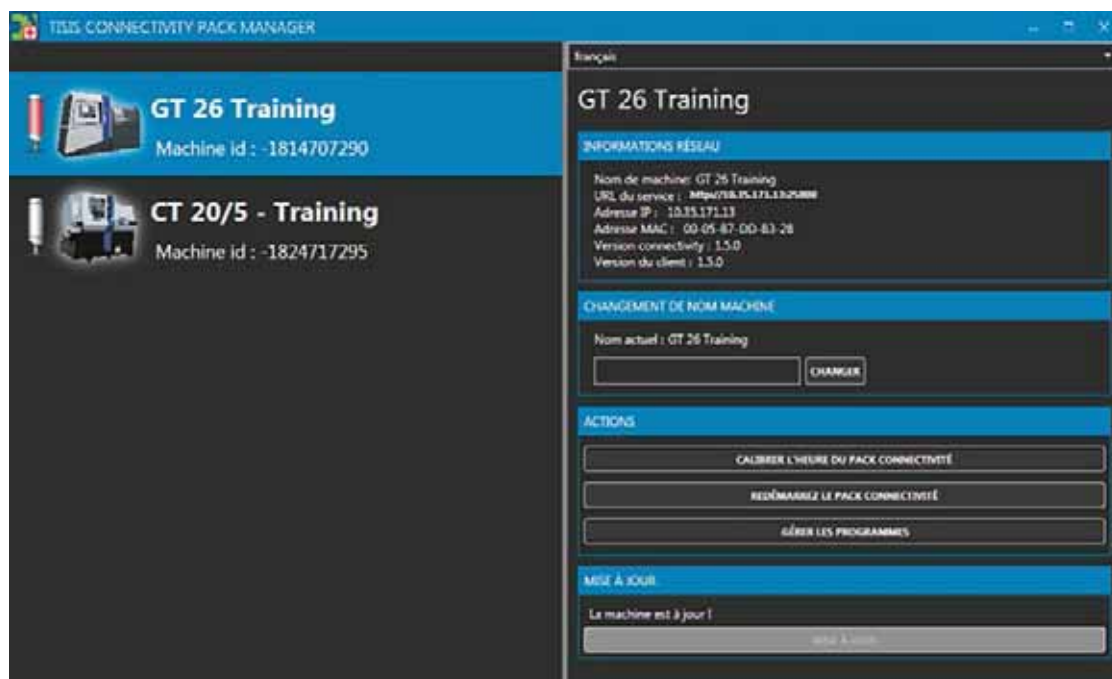
TISIS Connectivity Manager (TCM)

With the release of the latest version of TISIS and the required update to the connectivity pack, the team of engineers at Tornos developed a new feature. This tool actually enables the connectivity Pack conversion to be updated remotely, i.e. directly by customers themselves via their IT network. This means that, in theory, you no longer need to call the after-sales service team at Tornos to perform this operation. However, the machine software (Motion Control) must still be updated by qualified Tornos personnel.

Here are a few details of this free application which is available for licence-free download from the Tornos WebStore: <http://store.tornos.com/en/products/tisis-connectivity-manager/tcm-1-5-0>



The section on the left lists all the machines in the workshop. The interface is available in the following languages (function available in the top right): French, German, English, Italian, Spanish and Chinese.



Various information is displayed by selecting from the machine list.

1. NETWORK INFORMATION: Various information e.g. IP/MAC address, the machine's connectivity pack version, the connectivity pack version included in the TCM.

2. RENAMING THE MACHINE: This machine can be renamed using the CHANGE button. This change will be implemented across all connected TISIS & TISIS Tab customers.

3. ACTIONS: Various options for actions e.g.:

- a. Calibrating the time of the connectivity pack: this calibration is necessary to change the time in summer/winter and if required by the time zone. The time and the date are used each time information is sent for the machine log.
- b. Restarting the connectivity pack: The PC can be restarted remotely during a manual update.
- c. Managing programs: This function is used to manage all the programs on the connectivity pack PC. Simply select the various items using CTRL+CLICK and perform the operations:

DELETE: delete the selected item(s)

EXPORT: make an external copy of the selected item(s)

IMPORT: import various items from an external disk

4. UPDATE: update the connectivity pack. The function is automatically greyed out if it is not necessary. The version of the connectivity pack available for each machine is integrated directly into the software installation (TCM).

To ensure this operation is successful, the machine must be switched on and connected to the company network, and must not be in production (the interface will be blocked during installation). During the TISIS connectivity Pack update, the machine must remain connected to the IT network and its power supply must not be cut off.

Installation can begin once the aforementioned conditions are met. The installation may last up to 30 min. The update is split into 4 phases. The machine interface also shows that the update is in progress. A completion message appears on both the TCM and the machine.

PARAMETERS TO BE RESPECTED

When TISIS is used with the connectivity pack, the software updates must be carried out on the machine. The Connectivity Pack and the Motion Control must be the following versions as a minimum:

Connectivity Pack: 1.5

Motion Control SwissNano, CT 20,

Swiss GT 26, Swiss GT 13: 503.2

Motion Control Swiss ST26: 28U

OS compatibility: Windows XP, Vista, 7, 8 and 8.1 (32-/64-bit)

Recommended screen size:

WGXA (1280 x 800 pixels)

Random Access Memory and Hard Disk

Drive: RAM 2 GB, HDD 300 MB

IMPORTANT: The ISO code editing function and the tool catalogue management function are only available for the following machines: SwissNano, Swiss ST 26, Swiss GT 26 & Swiss GT 13, CT 20.

If you have not yet purchased TISIS software, it is possible to download it from the webstore <http://store.tornos.com> and benefit from a free 30-day trial.



Tornos SA
Patrick Neuenschwander
Software Manager
Rue Industrielle 111
2740 Moutier
T +41 32 494 44 44
F +41 32 494 49 03
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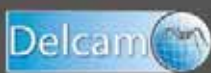
Peter Reypa | President
Integral Machine | Oakville, ON Canada

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MASTERCAM SWISS SAVES YOU TIME BY EFFICIENTLY CONTROLLING ALL TORNOS MACHINES

Mastercam Swiss enables the bar-turner to easily and precisely generate points for contouring or complex geometries, guaranteeing increased productivity. Mastercam Swiss also allows workpiece programming to be switched quickly from one machine to another, whether controlled by TB-Deco, ISO or TISIS, taking into account the machine's kinematics and tools.



Manage all your Tornos turning machines with Mastercam Swiss.

The 2015 version of Mastercam Swiss is available

Since the recent 2015 version, Mastercam Swiss Expert has been rechristened Mastercam Swiss. This change was made in the interest of consistency with the various modules of the Mastercam family, which includes:

- Mastercam Design;
- Mastercam Mill;
- Mastercam Lathe;
- Mastercam Wire;
- Mastercam Swiss.

The 2015 version includes the following new features:

- support for nearly 100 machine environments, plus an interface with the TISIS software;
- better integration with Mastercam Design, the Mastercam CAD tool;
- the option to customise workshop documentation for the commissioning engineer;
- easier customisation of post-processors;
- new machining algorithms with 5 simultaneous axes.



Exporting a Mastercam Swiss program to TISIS with tools, as in TB-DECO.

Mastercam Swiss lets you efficiently manage your turning machine inventory

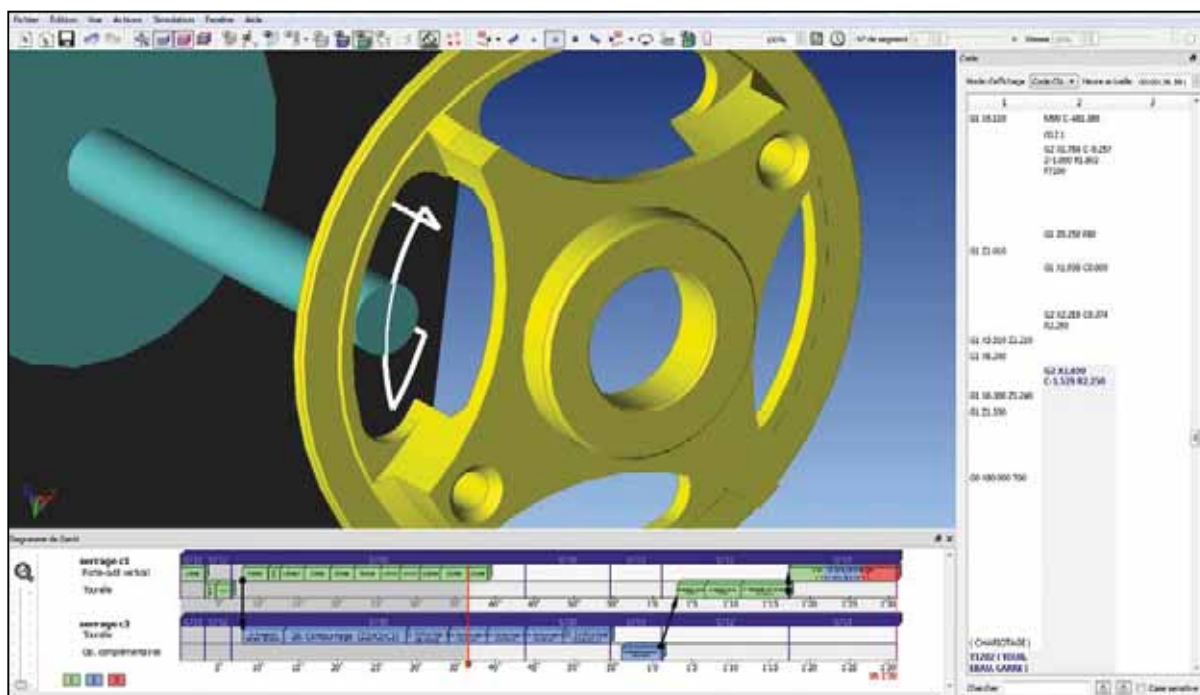
Mastercam Swiss provides bar-turners with an efficient tool for managing their turning machine inventory. Almost 100 multi-channel turning machines and machine-tools are now controlled with their complete kinematics, also including management of off-strokes and special tools. TISIS, the new ISO code programming and communication solution for recent Tornos machines, is now interfaced with the Mastercam Swiss, just like the PTO operating mode on EvoDeco machines.

Mastercam Swiss increases productivity by enabling simple generation of an exact program

With Mastercam Swiss, the bar-turner stands in front of his computer as he would his machine, enabling him to optimise the machining times for workpieces ranging from the simplest to the most complex. The machine's complete kinematics are controlled with all types of tool. All specific operations such as thread whirling, polygon operation, stamping, broaching, gear hobbing and flange milling are preconfigured. This working method allows programs to be generated automatically with no risk of errors, using the exact words and codes for TB-Deco or ISO, or exported to TISIS.

Users do not need to determine whether G02 or G03 machining is required, nor whether the values are positive or negative. This automation is possible because, when generating the code, the software takes into account the position of the tool on the platens or turrets, as well as whether machining is taking place on the main or counter spindle.

Moreover, one of the major benefits of Mastercam Swiss is its ability to create multi-channel programs. Using the Gantt chart, the operation sequence can be optimised via the graphic interface. Synchronisations and constraints are fully managed.



By selecting them simply on the 3D model, the contour points are generated in an exact code corresponding to the turning machine and the tool position.

Different variants can be studied and the cycle time is displayed. It is also a useful addition when formulating a tender.

A significant addition: Mastercam Design, CAD software from the same family as Mastercam Swiss

Mastercam Design is a powerful 3D design software based on direct modelling without parameters. The main interfaces integrated as standard are:

IGES, Parasolid®, SAT (ACIS solids), AutoCAD® (DXF, DWG), AutoCAD® Inventor™ (IPT, IAM), SolidWorks® (SLDPRT, SLDASM, SLDDRW), Solid Edge® and STEP.

Its main characteristics are as follows:

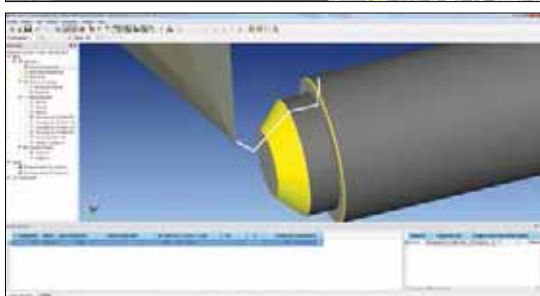
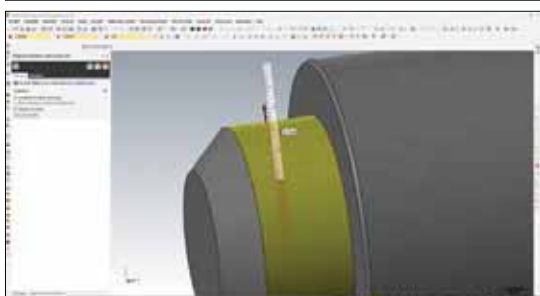
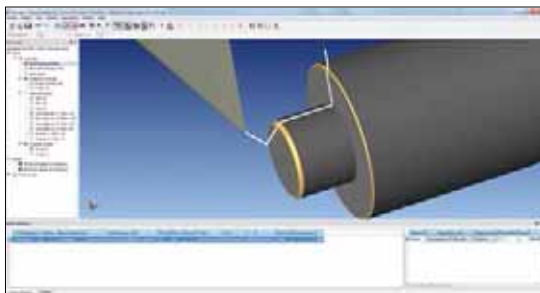
- simple direct 3D modelling, continuously modifiable with no restrictions;
- powerful surface modelling functions: limitation, extension, fillets with constant and variable radius;
- 2D and 3D associative dimensions.

How do you update a program in Mastercam Swiss after the 3D model has been modified in Mastercam Design?

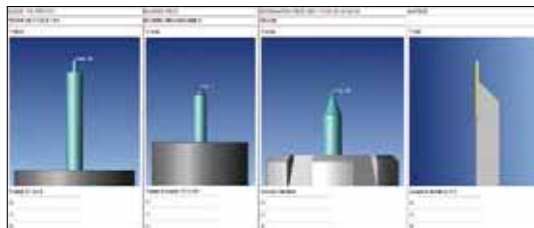
Machining updates are automatic in most cases. When a hole is removed or a radius or fillet modified for a machining operation after programming in Mastercam Swiss, a recalculation is automatically performed for the new trajectory. In the next version of the software, an integrated function will make the exchange of data between CAD and CAM software even simpler.

Shorter setup times thanks to customised workshop documents and phase plan

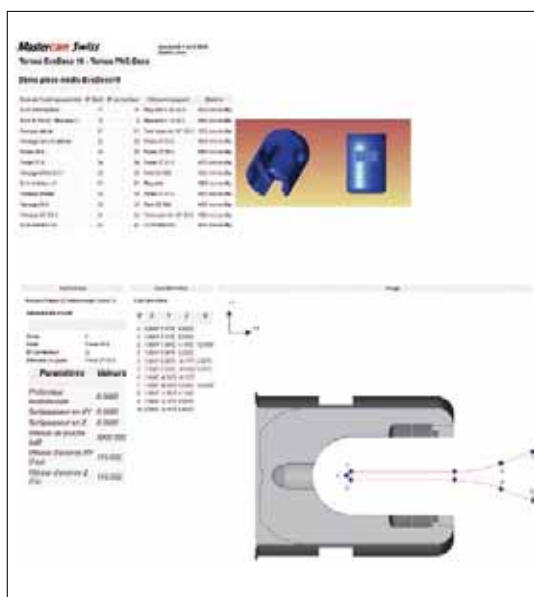
A phase plan can be created automatically to facilitate setups by clearly presenting the generated tool trajectory. The first page of this document summarises the tools used, then one page per operation is generated with the ISO code data and an image of the tool trajectory.



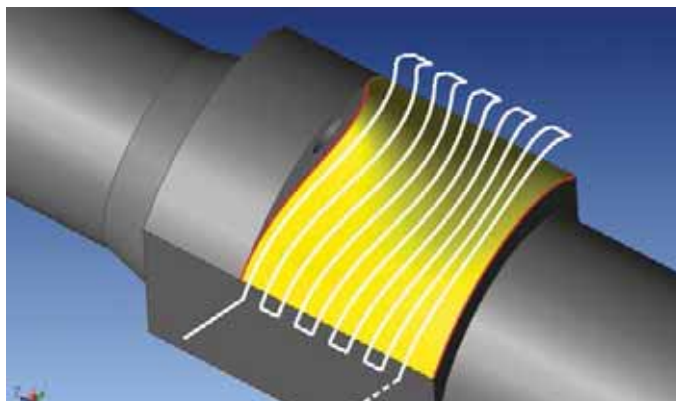
Example of a modification to a 3D model with Mastercam Design and updating the program in Mastercam Swiss.



Example of a tool list generated automatically.



Example of a phase plan to facilitate setup.



Machining in 5 simultaneous axes possible on new turning machines with a B axis.

In the new 2015 version, this documentation can be customised according to the customer's specifications and depending on the information required. It is possible to create several different documents, including phase plans, tool lists and the tool positions on the machine.

Customised post-processors and training

A major innovation on the 2015 version involved modifying the core of the Mastercam Swiss software to enable simpler customisation of the post-processors. Now, if a user requests a modification to a post-processor, the update is much quicker.

As with the post-processors, the training is tailored to each user. It depends on the type of machine used, the types of workpiece and the IT expertise of future users. Mastercam Swiss training takes place on a turning machine chosen by the customer. Documents tailored to each machine family are supplied to the user. Lines of preconfigured models and specific tools are also provided. Programming examples are installed on the customer's machine. The last day of training is dedicated to programming a part chosen by the customer. After training, bar-turners may execute their subsequent programs with the help of their personal database.

New machining algorithms with 5 simultaneous axes

Two new machining algorithms with 5 simultaneous axes have been added to the new version of Mastercam Swiss. These relate to the following types of machining:

- surface parallel;
- shaped between two curves.

These 2 new machining types open up new possibilities for working in 5 simultaneous axes on turning machines with a B axis. Furthermore, machining in 5 simultaneous axes has been improved for several machine environments. As planned, these functions available in Mastercam are integrated in the bar-turner's software, thereby offering all the milling power of the world's most popular CAM software.

Mastercam Swiss Expert

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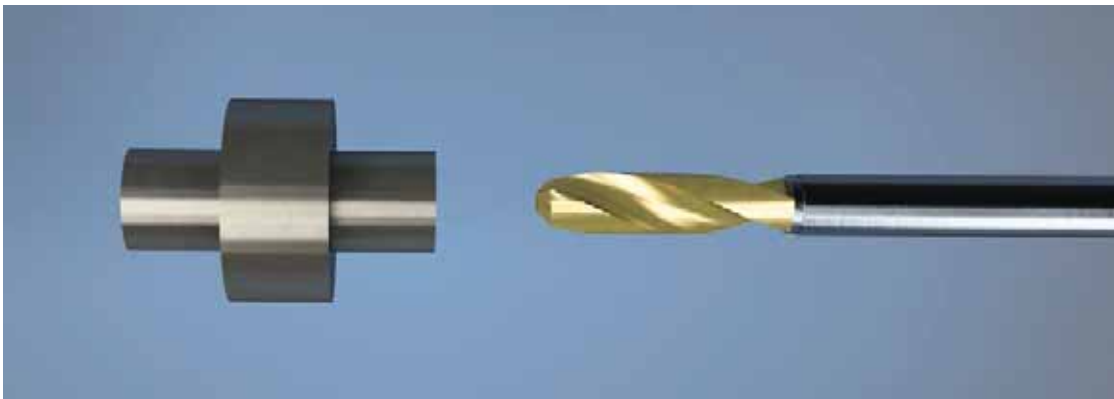
MACHINE: SWISSNANO

POSITIONING THE TOOL ON THE Z4 AXIS FOR BAR TURNING WORK

Code G915 is used to inform the Z4 axis of the current position of the bar. The bar in the SwissNano machine moves continually according to the Z1 axis programming.

DESCRIPTION

CHANNEL 1	CHANNEL 2	
 <p>Positioning the bar for working with the Z4 axis</p>	 <p>Calling the tool which will perform the machining with the Z4 axis on the bar</p> <p><i>Warning: position the tool so as to avoid collision with the bar</i></p>	STEP 1
M9xxx (synchro code)	M9xxx (synchro code)	
<p><i>The Z1 axis must not move</i></p>	<p>G915</p>	STEP 2
M9xxx (synchro code)	M9xxx (synchro code)	
<p><i>The Z1 axis must not move, unless the axis locking function is used</i></p>	 <p>Programming the machining to use the Z4 axis on the bar</p>	STEP 3



PROGRAMMING EXAMPLE

	CHANNEL 1	CHANNEL 2
STEP 1	<div>...</div> <div>G0 Z-12</div>	<div>...</div> <div>G0 G54 X0 Z20 T31</div>
STEP 2	<div>M9xxx (synchro code)</div> <div></div>	<div>M9xxx (synchro code)</div> <div>G915</div>
STEP 3	<div>M9xxx (synchro code)</div> <div></div>	<div>M9xxx (synchro code)</div> <div>M103 S2000</div> <div>G0 Z1</div> <div>G1 Z-5 F0.05</div> <div>G0 Z1</div> <div>...</div>



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TORNOS AT THE 3D SYSTEMS GIBBSCAM RESELLER MEETING

The well-known GibbsCAM annual conference on CAM software was held in the last week of March this year, at the Warner Marriott Center in Woodland Hills.



This event enabled all GibbsCAM resellers worldwide to meet and discuss modern machining issues, to work together to find effective solutions for customers across the globe.

2015: The next chapter

2015 marks a real turning point in the history of GibbsCAM computer-aided manufacturing. Firstly, in terms of its structure.

In early February 2015, we learnt that 3D Systems was acquiring Cimatron for the equivalent of \$97 million. As Cimatron owned the GibbsCAM system, this acquisition meant that 3D Systems became the new owner of the software from Moorpark, California.

Leading the field in 3D printing solutions, 3D Systems is offering its customers solutions by adding GibbsCAM to its product range, whether these customers prefer to continue using traditional machining solutions or add to their existing range by acquiring the 3D process.

This is, in fact, a complementary process rather than a replacement technology. Nowadays, we are seeing new generations of machines emerge which can start by "printing" the metal on the part to be manufactured, before finishing the machining traditionally, using cutting tools. This marks the start of this collaboration between two complementary technologies.

2015: the year of the GibbsCAM UKM

Available in its release version from the end of the first half of 2015, the GibbsCAM 2015 UKM (Universal Kinematic Machine) is set to revolutionise the world of computer-aided manufacturing. It is now possible to fully manage complex CNC kinematics in a CAM environment.

Until now, CAM systems were only able to simulate the toolpaths and standard movements on the machine. Inter-operational movements could not be simulated, even those movements which could be a source of conflict or collisions, leading to doubt and uncertainty in users.

With the GibbsCAM 2015 UKM, this is all in the past! All the movements programmed in the GibbsCAM system are faithfully reproduced and detection of collisions is managed upstream of the machining process.

Those who know about IT will be familiar with the WYSIWYG interface (What You See on the screen Is What You Get on the CNC).

Complex kinematics involves bar turning. With multichannel machines, where the channels need to be synchronised, Tornos machines truly were the number one choice in the UKM revolution.

Thanks to its graphic synchronisation module, the GibbsCAM 2015 UKM has proven to be the perfect

tool for Tornos users with extensive experience of TB-Deco. For them, it is an easy and accessible way to switch to the GibbsCAM system.

2015: Tornos at the GibbsCAM Reseller Meeting

Tornos went to the GibbsCAM Reseller Meeting to introduce all the attendees to its product range and the machining principle inherent to bar turning.

Mr. Lanute, from Tornos Technologies USA in Lombard, also made the trip to California to attend the event.

During the presentations which followed Mr. Lanute's speech, we also had the opportunity to discover how GibbsCAM could control both single-spindle and multi-spindle Tornos machines, in particular, thanks to a demonstration on the MultiSwiss, presented by Andreas Heffner (in charge of multi-task solutions at GibbsCAM).

2015: Discover UKM technology

From 2nd to 5th June 2015, the well known EPHJ-EPMT trade fair will be held in Geneva. At this event, the new UKM technology will be presented by Productec – GibbsCAM software reseller for Switzerland and France.

You will also have the opportunity to discover the ProXYZ modules for the watchmaking and jewellery professions, and ProCONNECT – the essential tool for optimising your production equipment.

Meanwhile, please do not hesitate to contact GibbsCAM and Productec for any further information on optimising your CNC machine inventory.



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TORNOS PROVIDES FLEXIBILITY FOR IRISH SUBCONTRACTOR

As a longstanding Tornos customer, Mann Engineering is only too familiar with the benefits that arrive from investing in technology from the Swiss machine tool builder. Having purchased a Tornos Deco sliding head turning centre over ten years ago, the Wexford subcontractor has just invested in another two machines to meet the changing needs of the marketplace.



The Irish manufacturer bought its first Tornos Deco 2000 to replace no fewer than 4 CAM Auto machines whilst reducing secondary operations. At the time, the savings from the sub spindle and driven tooling on the Deco cut some cycle times from over 2.5 minutes to less than 30 seconds. And that doesn't even touch on the floor-space, labour, lead-time and power consumption savings.

'The Times They Are a Changing'

A decade down the line and a global recession later and Mann Engineering has seen significant changes to the manufacturing landscape in Ireland. Customers are no longer ordering large batches. A New Ross business in County Wexford had to respond. As company director, Mr. Rolf Fuhrmann explains: "Our regular batch sizes have fallen from 5,000 – 30,000 off to anything from 200 to

5,000, so we needed to review the feasibility of our machine tools." Upon reviewing the marketplace and taking its existing plant list of four twin spindle triple turret Japanese turning centres into account; Mann realised it needed flexibility and productivity for parts below 26 mm diameter. This is because its larger twin spindle machines would support the turning of parts up to 64 mm diameter. The answer was a Tornos Swiss ST 26.

The addition that arrived in August was acquired to replace the ageing Deco machine, increase capacity and also relieve the workload on the larger twin spindle multi-axis centres. The results have been impressive.

As Mr. Fuhrmann continues: "We turn our parts around for customers within a week and sometimes within 24 hours, so the critical factor in machine selection was service and support. Tornos are fully

supported in Ireland by Premier Machine Tools and their excellent support over the last decade was a contributing factor in our decision process. After that, the key element was flexibility; and both machines offered this in abundance."

With a machine shop filled with a variety of Fanuc machines, the Fanuc 31i control on the new Tornos additions reduced the learning curve and created the simple transition of programs from alternate machines. As soon as the Swiss ST 26 was up and running, the benefits were staggering. Set-up times were instantly slashed by over 70%, which instantly made Mann Engineering competitive on smaller batch runs. As Mr. Fuhrmann says: *"We will do a job changeover every day and sometimes twice a day on a multiple of machines with a longer batch being loaded in the evening for lights-out machining. The new machines have instantly made us competitive whilst the productivity of the machines has been excellent."*

The productivity of the new machines over the Deco and the existing twin-spindle machines has been attributed to a number of factors. Firstly, the new Tornos machines are fitted with integrated motor spindles and pneumatically activated clamping mechanism, which significantly cuts the time required for workpiece clamping and feeding bar from the Robobar SBF 326 barfeeding when compared to alternate hydraulic systems. Additionally, the kinematics of the Swiss ST 26 plus the modular tooling arrangements have further attributed to flexibility and cycle time savings. As Mr. Fuhrmann confirms: *"Compared to hydraulic chucks and collets, the Tornos system has cut the feeding of a work piece, clamping and un-clamping times by 5 seconds per part. In addition, the tool configuration sees every tool no further than 50-60 mm from the workpiece at all times whereas our turret machines will have to move the tool by up to 350 mm before cutting can commence. These two factors*



alone have seen parts transferred from the larger machines with a cycle time reduction from 40 to 20 seconds. Another part, a stainless steel pin for specialised shelving applications was drilled, tapped and turned externally and at both ends in 60 seconds, a 15% saving from the larger machines."

Additionally, on the Swiss ST 26 a hydraulic ram port component was cut on the larger machine in 50 seconds and then transferred to the Swiss ST 26 to achieve a cycle time of less than 40 seconds. For a part that required internal and external turning, internal screw cutting and machining from both ends, the cycle time reflects the saving from the machine kinematics and tool configurations alone.

Geared for the Future...

With a healthy order book, a bulging customer base and annual growth in the region of 10%, the new Tornos machines will ensure that Mann Engineering can adapt to the marketplace, whatever it has in store. As Mr. Fuhrmann concludes: *"The Swiss ST 26 is remarkably productive, flexible and capable for all our parts below 26 mm diameter. The powerful spindle, sub-spindle and rotating tool units ensure we can machine all our 304 and 316 stainless parts with outstanding material removal rates whilst the base of the machine deliver a platform for impeccable thermal stability, precision and surface finishes. We are absolutely delighted with the new machine, their performance and also the service we receive from both Tornos and Premier Machine Tools."*



Mann Engineering
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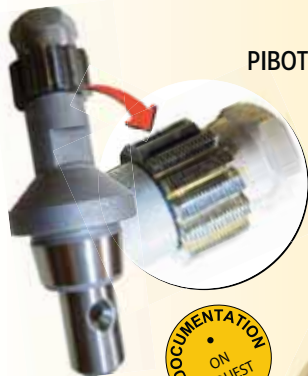
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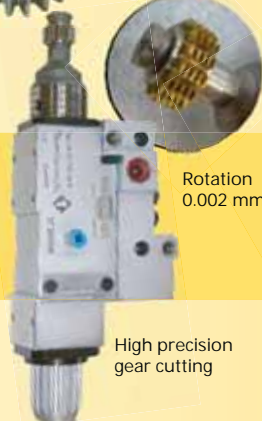


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