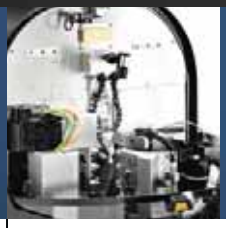
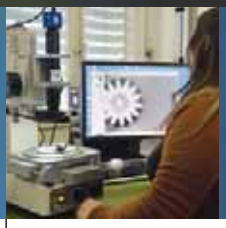
decomagazine

THINK PARTS **THINK TORNOS** 68 01/14 ENGLISH



The bar-turning machine for prismatic parts

Discover the ideal workshop



A carefully chosen machine

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SUMMARY

Pinces et embouts · Zangen und Endstücke · Collets and end pieces

for

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TECHNOLOGY DEDICATED TO MACHINING

In late spring 2013, Tornos launched the SwissNano machine, featuring a highly innovative design, onto the market. Focusing in particular on a young clientèle, for whom IT is omnipresent, the project team integrated an information monitoring solution supported by the use of contemporary technology in the form of touch tablets.

This basic idea led to an application which can be installed on a tablet using the Android operating system. This system was chosen because, in just a few years, it has become the leader in the smartphone and tablet market. The tablet application is called ISIS Tab. It enables Tornos machine production to be monitored in real time via a modern interface.

In parallel, our team of software engineers worked to develop a PC solution with the same monitoring characteristics as ISIS Tab. The PC application is called ISIS. We have added two other functions to the ISIS application which are not available on the tablet version, namely: a wizard for writing the ISO code and graphic support for creating the tool catalogue. At the moment, these two functions are only earmarked for the SwissNano & Swiss ST 26 machines. ISIS and ISIS Tab are sold together as a "connectivity pack". For users of the SwissNano and Swiss ST 26 machines, the ISIS application for PC is also available without the connectivity pack.

Thanks to the "connectivity pack", users of the SwissNano, Swiss ST 26, EvoDECO, MultiSwiss and Almac BA 1008 and CU 2007/3007 machines can monitor their production visually and in an intuitive way.

During 2014, we will unveil several new versions of the ISIS application incorporating additional functions, in particular tool trajectory simulation and intuitive assistance for creating workpiece programs. We will enhance the connectivity pack by adding functions for measuring energy and calculating overall equipment effectiveness, and integrating a camera to help with tool adjustment.

I am very pleased to be able to tell you about these technological developments, which we hope will help further improve your performance.

Patrick Neuenschwander
Software Manager
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PS: I hope you enjoy reading the new issue of decomagazine, and in particular the ISIS article on page 13.

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

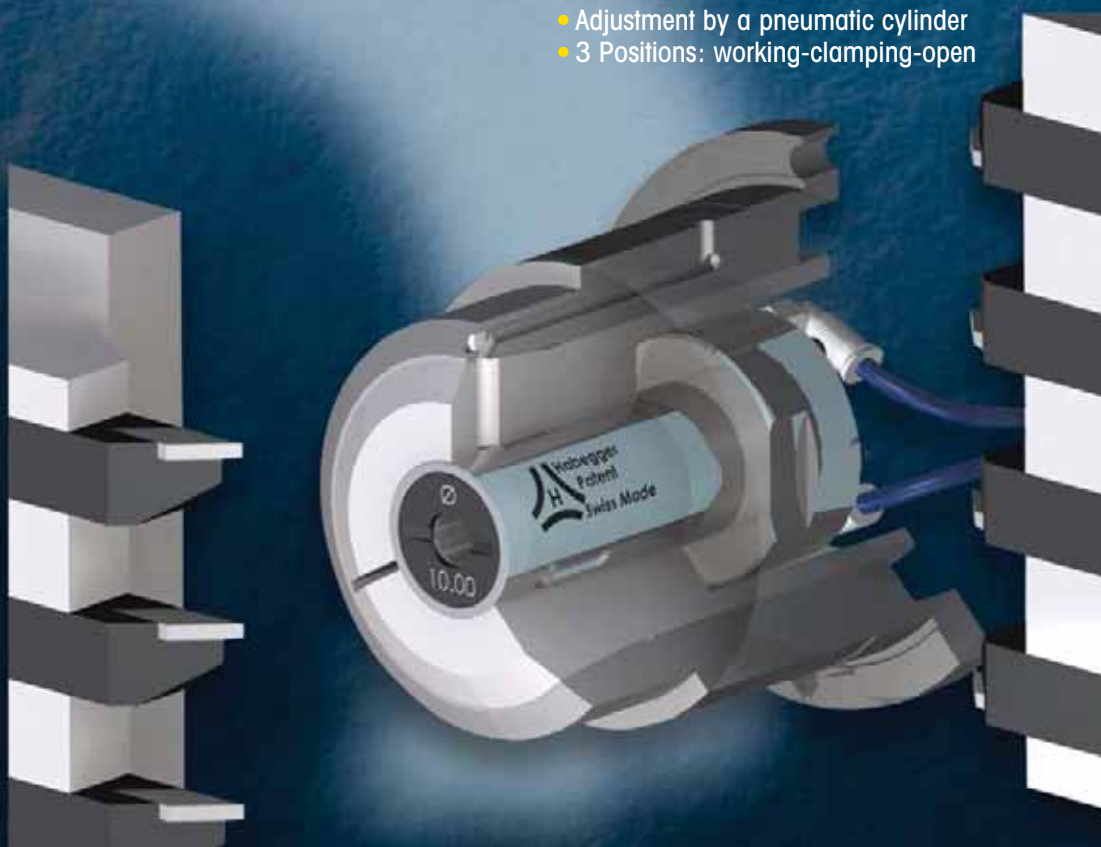
Type / Typ C

- 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!



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THE BAR-TURNING MACHINE FOR PRISMATIC PARTS

It is widely known in the industry that many bar-turners use little or none of the turning capability of their machines. Modern top-of-the-range Swiss machines are fully equipped with milling capabilities and their bar-turning capacity means that they can compete with conventional milling solutions.

Almac BA 1008

What if there was a machine that had been designed specially for prismatic parts? decomag took a closer look at the new Almac BA 1008, designed to manufacture this type of part.

Based on… the SwissNano

The Almac machine is a close relative of the SwissNano: in fact, the BA 1008 has the same basic structure and kinematic. The spindle is replaced by a divider with a maximum capacity of 16 mm diameter; the machine is able to machine parts up to 28 mm in length. Whilst on the SwissNano the spindle can reach speeds of up to 16,000 rpm, on the BA 1008 the divider is limited to 50 rpm. This is a bar-turning machine which has been converted into a bar-milling machine.

High-frequency spindle

The BA 1008 can accommodate up to three high-frequency spindles on the side unit and four high-frequency spindles on the front unit. The workpiece can be held in place when machining the sixth side as a secondary operation with two high-frequency spindles. Cutting takes place using a sectioning tool. The machine can also be fitted with different types of high-frequency spindle, depending on the workpiece.

Only one bar!

To avoid the addition of an expensive bar-feeder designed to feed rotating bars, the machine is equipped with an integrated tube, generally sufficient for over eight hours of production in most cases.

Investment «SwissNano style»

Launched in early 2013, the SwissNano machine is used by numerous watchmaking customers. Whilst each of them sees different advantages in using the machine depending on the parts produced, they all agree that it represents excellent value for money. The new BA 1008 is an integral part of this strategy and allows bar-turners in the watchmaking industry to have an effective milling solution for a relatively small investment.

Milling for the bar-turner

Since the basic machine and kinematic are generally the same as for the SwissNano, bar-turners are already familiar with how to use it. Mr Devanthéry, Almac director, concluded by saying: *"With the BA 1008 we offer our customers the option of buying a compact, user-friendly machine. There is absolutely no question that a BA 1008 can be installed in a bar-turning workshop."*

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MACHINING EXAMPLE: APPLIED DIAL

With its very specific configuration and the watchmaking expertise of Almac, one of the early applications developed on this machine was the applied dial.

Starting with a 6 mm diameter brass bar, only three BA 1008 tools are needed to produce this part. If we compare the cycle times of the BA 1008 machine with more traditional tools, the new Almac is extremely competitive.

The tools are as follows:

- Tool 1: 3 mm diamond mill for the surround (T2)
- Tool 2: milling diamond for the feet (T1)
- Tool 3: 80 mm diameter sectioning mill (T8)
- Tool 4: 0.5 mm diameter mill for bath machining (T11)

Once the work is complete, the part is held and cut. Bath machining is carried out as a secondary operation. The multi-spindle concept and bar-feeding gives an optimal cycle time for this type of part.

ALMAC CU 2007 AND CU 3007, HIGH-PERFORMANCE MACHINING CENTRES

During AMB 2011, Almac unveiled the CU 2007 machining centre; this machine marked the La Chaux-de-Fonds-based manufacturer's entry into a new dimension: whereas, until then, Almac machining centres had been restricted in terms of their size, this was the first bold step towards larger machines.

"There are machines comparable to the CU 2007 and CU 3007 on the market, but no manufacturer offers the services we are offering in tandem with these machines", Philippe Dévanthéry, director of Almac SA, assured us. *"We are able to adapt our CU 2007 and CU 3007 machines to the customers' requirements, based on the specific features of the parts to be created".*

Standard machine adapted to requirements

The CU 2007 and 3007 boast a simple, robust cast iron structure. While the CU 2007 has X, Y and Z strokes of 500/400/470 mm respectively, its big brother is supplemented with an even greater X stroke of 700 mm. The machine bases and the column are generously sized to ensure the machine offers a high level of stability, repeatability and

precision. To further reinforce this precision, the column has just one vertical axis (Z axis). The work table can withstand an increased load (250 kg) and support the two X and Y numerical axes. The machines can be equipped with HSK-E-40 tool holders, with 24- or 40-position magazines. Tool changeover only takes 0.8 seconds, giving a chip-to-chip time of less than 3 seconds. The CU 2007 is able to house tools with a maximum diameter of 80 mm and length of 200 mm, weighing up to 3 kg.

Drive system

To support the performance of the machine, it is equipped with direct drive motors. Linear guides are used to ensure quick, accurate positioning, thereby allowing an increased machining load. The result: Movement speeds of up to 60 m/min and accelerations exceeding 1G. The drive system boasts a central lubrication system to reduce the maintenance operations.

The standard spindle has a direct drive to eliminate problems linked to vibration and play in the drive. This drive is provided with lifelong lubrication and is heat-regulated so as to ensure the greatest Z-axis precision. Able to quickly reach 20,000 rpm, it boasts a generous torque of 11.8 Nm and

power of 2.2/3.7 kW (S1/S3). Thanks to the expertise of Almac, it is possible to select an even more high-performance spindle on request; a 40,000 rpm spindle can be installed as an option on the CU 2007 and CU 3007. The Almac team consults with its customers to find the best machining solution.

A tailored machine, designed with the operator in mind.

The machines have been designed with the operator in mind, which means the work zone is ergonomic and easily accessible. The walls are all gently inclined to ensure perfect evacuation of the swarf. When there are large amounts of swarf to be removed, a washing system facilitates swarf management and ensures trouble-free machining. As an option, a chip conveyor is available for large volumes, and for fine swarf a paper belt filter with automatic belt feed is also available as an option.

Infinite customisation

Almac's strength is to be able to equip a standard machine using its full range of expertise, meaning that the customisation options for CU 2007 and CU 3007 machines are therefore infinite. In addition to special spindles, it is of course possible to add a 4th rotating axis via a table with counter spindle, or 4th and 5th rotating axes, positioned or simultaneous.

It is also possible to adapt a Renishaw OMP40 probe and Blum Z-Nano or Renishaw TS27R tool presetting or measuring devices.

Fittings

CU 2007 and CU 3007 machines can be equipped as secondary operation machines in their basic configuration, to which multiple clamping vices can be added depending on the application. Secondary operations for watch cases are possible on this machine with the addition of Lehmann Vario 5-axis dividers.

Automation

The machining performance of the CU 2007 and CU 3007 means these machines are perfect for the watchmaking sector, and in particular for machining runs of plates and bridges. To meet the needs of this market, the addition of an automation module is essential and the company has developed a low-cost solution for machining these runs of parts.

CU 2007 - Mouvement (Movement)

The CU 2007 Mouvement was born; workpieces are picked up using a pick and place collet alongside the spindle. A removable modular pallet sits in an automatically opening magazine, thereby protecting the billets from swarf and projections of oil.

Each billet is tightened on a mandrel equipped with a special fitting and the Almac team is able to define its specifications depending on the workpiece. A Blum Z-Nano tool measuring sensor gives the machine an autonomy as yet unrivalled on the market. The CU 2007 Mouvement is a fully independent production unit. The system is equipped with a cleaning system which sorts the finished parts from the billets and automatically detects whether or not a part is present.

Flexibility at your service

The flexibility of the CU 2007 and the CU 3007 knows no limits, thanks to Almac's application team which, by consulting with customers, is able to adapt these standard machines to the most demanding applications. To find out more for yourself, the specialists from Almac will be on hand to talk to you at the trade fairs listed below, and at their premises at your convenience.

OPPORTUNITIES TO DISCOVER ALMAC MACHINES

- **Tornos France inauguration during SIMODEC – La Roche-/Foron**
  25.02.2014 – 28.02.2014
- **Journées Horlogères open days – Moutier**
  04.03.2014 – 07.04.2014
- **MACH – Birmingham**
  07.04.2014 – 11.04.2014
- **SIAMS – Moutier**
  06.05.2014 - 09.05.2014
- **EPMT – Geneva**
  17.06.2014 – 20.06.2014
- **AMB – Stuttgart**
  16.09.2014 – 20.09.2014
- **PRODEX – Basel**
  18.11.2.014 – 21.11.2014

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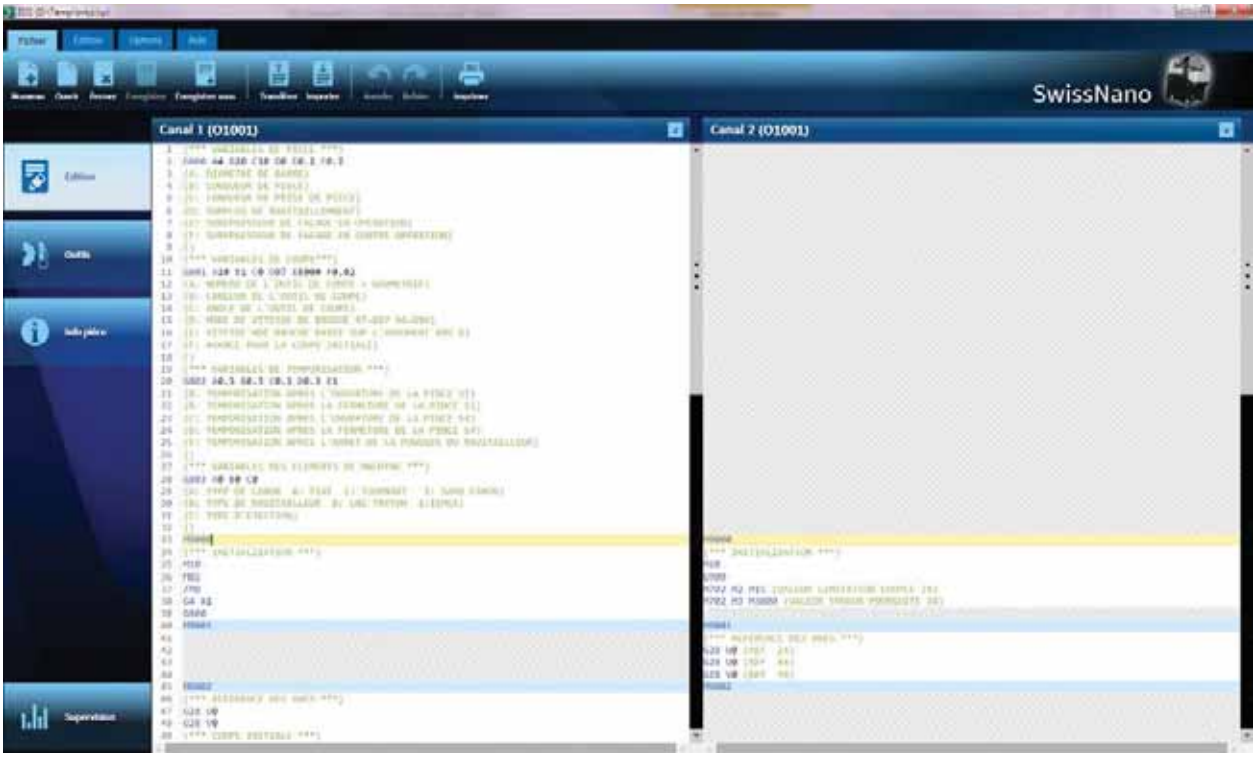
THE ISIS TOOL - BOOSTING YOUR PRODUCTIVITY

With the introduction of the SwissNano and Swiss ST 26 machines, Tornos unveiled a new software solution offering a range of functions to users of this ISO-compliant production equipment. To find out more, we met with Patrick Neuenschwander, a software manager in Tornos' Research and Development department.



First and foremost, the name ISIS (Iso Swiss Integrated Solution) covers a range of products which vary depending on the machines with which they are associated.

SwissNano and Swiss ST 26 machines

"The ISIS program was developed for these machines, so, of course, they are the ones with which it is most fully compatible," he explains. This program for PCs has three main functions: the ISO editor for workpiece programming and information, the tool catalogue and the machine inventory monitoring system. The latter is also available on ISIS Tab, an application designed to enable the state of the machine inventory to be consulted directly in the workshop using a touch tablet. The new functions in detail:

ISO editor – programming

The program includes a number of workpiece templates which enable programming to be started more quickly. If the machines are equipped with the "connectivity pack" allowing them to be monitored on line, a new workpiece can also be programmed using a workpiece already in the machine, for which the program will search automatically. The program then displays a vertical ISO code editor. Programming

takes place in standard ISO and the program offers user-friendly tools such as syntax highlighting, synchronisation error monitoring and the simplified display of workpiece information. Once the program has been created, the user can transfer it onto the machine via a USB key or a memory card, or using the company network.

Tool catalogue – simplified management of tools and tool supports

A number of different supports may be mounted on the machine. Some are compatible and can therefore be mounted simultaneously, while others are not, as they are mounted in the same position. The ISIS program allows all the tools required for machining to be mounted virtually on the PC. This prevents incompatible tools and supports from being mounted. Information concerning the tools can be easily customised. Once the tool catalogue required for creating the workpiece has been validated, it is very easy to repeat the setup procedure as the system indicates all the required tool holders.

ISIS 1.2 – WHAT'S NEW?

ISO-Editor
- Importing a program from the machine
- Incremental renumbering of synchronisations
- Automatic detection of ISO code formatting
- Find and replace function

Tool catalogue
- Importing a complete or partial existing tool catalogue

Production monitoring
- Display and modification of workpiece library
- Addition of new workpieces to the library
- Display of active alarms

Monitoring system –
real-time production monitoring

This program allows the machines in the workshop to be displayed and provides instant access to a range of information. In general, the display shows the machine state and the current production percentage for the connected machines. Each machine also has a specific screen which provides more detail, for example: time remaining before the end of production, average workpiece time, overrides and other information.

All information concerning the workpieces produced is saved and the operator can add to the information library as required. Mr. Neuenschwander explains: *"If the workpiece requires additional information, for example to simplify a subsequent setup, the operator can simply add images or PDF files directly in ISIS."*

Complete programming management

The ISIS interface simplifies workpiece programming and management. The software can also be used to transfer programs to the machines and, in case of modifications on the machine, the corrected workpiece program can be transferred back to the PC. This ensures simplified programming traceability.

EvoDECO, MultiSwiss, Almac BA1008,
CU 2007/3007 machines

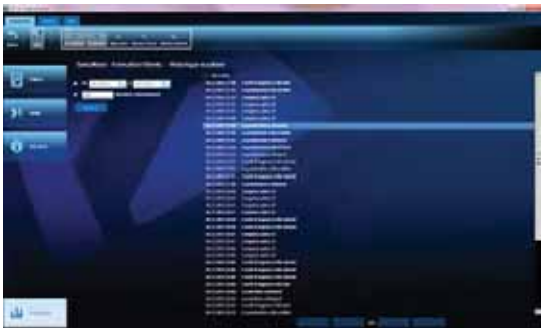
The ISIS program available for these machines includes the production monitoring system but not the programming or tool catalogue. It offers a simple, intuitive way to monitor machine production in the workshop. On all machines, the production can only be monitored via ISIS with the "connectivity pack" available as an option.

ISIS Tab mobile application

On the SwissNano and Swiss ST 26 machines, Tornos offers an optional touch screen and support which enables the operator to quickly access all the production parameters, just like on the PC version. Mr. Neuenschwander continues: *"The ISIS Tab mobile application is also available for other machines with access to ISIS (see above). The only requirement is for the machines to have an integrated industrial PC and an information server. The oldest machines, such as the Deco, are not monitored by ISIS."*

Already developing

For customers with the first version of ISIS, a new version is now available (1.2) in the form of a professionally packaged USB key (in line with software industry standards). This will automatically be sent to users.



Installation is very simple. Simply start the program and follow the instructions. Some of the functions mentioned in this article are only available from this version onwards. The box contains the list of new characteristics from version 1.2.

Permanent development logic

"During 2014, we will unveil several new versions of the ISIS application incorporating additional functions, in particular tool trajectory simulation and intuitive assistance for creating workpiece programs. We will enhance the connectivity pack by adding functions for measuring energy and calculating overall equipment effectiveness, and integrating a camera to help with tool adjustment," reveals Mr. Neuenschwander.

The ISIS software can be downloaded from the new 'store.tornos.com' site in both PC and tablet versions. This is available for 30 days on a trial basis. To purchase a definitive licence key, please contact your usual Tornos distributor.

TORNOS

Tornos SA
Patrick Neuenschwander
Software Manager
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SWISS LINE

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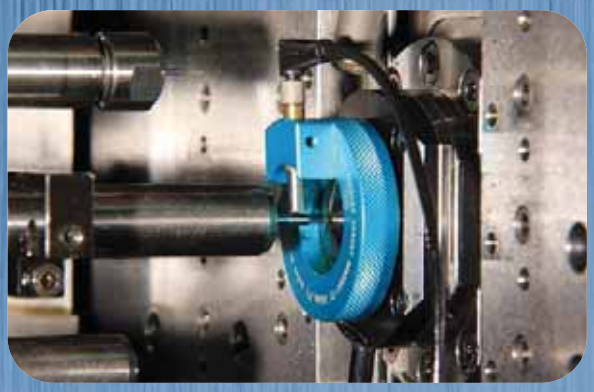

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6th TORNOS JOURNÉES HORLOGÈRES

DISCOVER THE IDEAL WORKSHOP

From 4 to 7 March 2014, Tornos will hold its 6th Journées Horlogères in Moutier. This now traditional event is attended by 90% of bar-turners from the Swiss watchmaking industry and is increasingly drawing specialists from southern Germany and France. Interview with Brice Renggli, Marketing Manager, and Carlos Almeida, Sales Manager for Switzerland.

decomagazine: The events calendar is very busy, and with EPHJ, Swiss watchmakers already have the perfect subcontracting event. Why another event?

Brice Renggli: When we launched the Journées Horlogères, our aim was to penetrate this traditional market, which we had previously neglected slightly. For Tornos, the weeks spent in discussion with our customers have allowed us to find out more about the current constraints faced by bar-turners in the watchmaking industry. For our customers, it is a chance to spend more time exploring our watchmaking solutions.

Carlos Almeida: There's no comparison: during the Journées Horlogères, we're on site with numerous resources available to us. We do our utmost to ensure that the visit is an enjoyable and positive experience for our visitors, and we can devote the necessary time to them. We have excellent face-to-face time during our Journées Horlogères.

dm: Obviously you do everything you can to make your customers feel welcome, but what else will they learn about the 2014 models?

CA: Our vision is to present the "ideal workshop". We now have turning/cutting and milling machines that enable us to cover the majority of machining operations required to make a watch. Our customers will be able to learn all about the SwissNano, the MultiSwiss, Almac BA 1008, the VA 1008 and EvoDECO 10, as well as the ISIS software. Several new features will be unveiled on the machines.

dm: For the last few years, you have given presentations on watchmaking operations outside your traditional area of expertise – for example you had a guilloche worker in 2012 and a decorator in 2013. Are you going to showcase a new profession this year? And if so, why?

BR: Yes, this year we're going to talk about watch design. Every day, trainee designers at the School of Art in La Chaux-de-Fonds will be in our showroom to explain the constraints and specific aspects of their profession. Our aim is to add value to the whole event experience. Watch design is evolving, as are the parts and the machines themselves. The Journées Horlogères are firmly rooted in the present with the machines and solutions on show, but they also look to the future.

CA: Often our customers are too busy manufacturing to spend time learning about other related professions. During previous Journées Horlogères, there were numerous discussions with representatives from these various professions. The fact that this year they will be young designers fits nicely with the new lease of life that has been given to bar-turning workshops with the arrival of the SwissNano.



dm: You say that the Journées Horlogères are also a chance for Tornos to get feedback from its customers. Can you tell us a bit more about that?

CA: The best example is the SwissNano. It was during the 2012 Journées Horlogères that we were really able to pin down the specifications of the machine with the help of our visitors. Less than 13 months later, at the 2013 Journées Horlogères, we then unveiled the new machine to those visitors. Face-to-face with the actual machine, other ideas then emerged, such as the need for cutting and polygon operations: today these come as standard with the SwissNano.

BR: This is not the only time we work on solutions for our customers, although the Journées Horlogères are a chance to confirm or modify our ideas.

dm: Going back to the machines unveiled in 2014, what exactly can we expect?

BR: The SwissNano will have been on the market for around a year, and even though we're in constant contact with our customers, the Journées Horlogères offer a new opportunity to exchange information. The machine on display will be no different, although we will be presenting typical watch parts. The BA machine, which some people call the milling SwissNano, will demonstrate that milling operations are increasingly an integral part of bar-turning and that this compact machine has extraordinary potential. The EvoDECO will be fitted with an automatic centring system, which will also be available for the SwissNano. The MultiSwiss machine will produce a typical watch part. This machine is already used by numerous watchmaking customers to manufacture medium to high-volume parts, in order to optimise the price of the part.

CA: To go back to what Mr Renggli was saying, the BA 1008 machine has very similar tool systems to the SwissNano, although I'm convinced that bar-turners can easily work with both machines together.

Tornos is already looking forward to extending a warm and professional welcome to everyone who visits us during the next Tornos Journées Horlogères.

TORNOS

6th Tornos Journées Horlogères
Tornos Showroom
Rue industrielle 111
2740 Moutier

From 4 to 7 March 2014
From 09:00 to 18:00

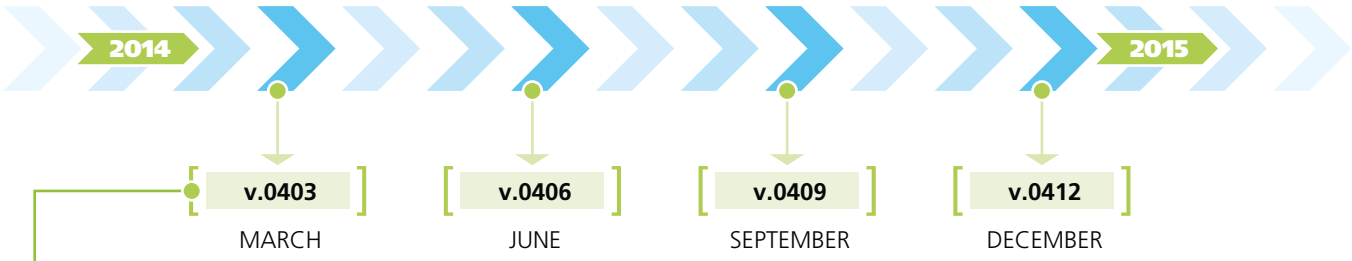
MACHINE CONTROL SOFTWARE: CONTINUOUS DEVELOPMENT AND IMPROVEMENT

The new version of the Machine Control software for the EvoDECO PTO, DECO PTO and SwissNano machines is set for release on 21st March 2014. This software is released 4 times a year: in March, June, September and December. For us, continuously improving our machine software is a necessity. In fact, it is clear that new software releases not only enable us to fix any bugs, but also to implement subsequent improvements to this software.

We make a point of analysing our customers' requests and integrating them into new versions of our machines.

This summary gives an update on the current software and upcoming developments. Tips and tricks for users will also be published.

MACHINE CONTROL SOFTWARE RELEASE SCHEDULE



Tornos software version:

- Machine Control: 0403.00
- TB-Deco: 8.02.054
- ISIS: 1.2
- Connectivity kit: 1.2

New on version 0403.00:

- Probe management via the simplified Tornos interface – TMI (Tornos Machine Interface).
- New tool management via the simplified Tornos interface.
- Centring of turning tools for facing on the SwissNano.
- Programming the slave spindle for locking on the SwissNano.
- Support for the new EvoDECO 20 and Evo-DECO 32 machines.

New developments for 2014:

- New automatic preheating option on the SwissNano.
- Help page in TMI.
- IES management for the EvoDECO PTO and DECO PTO machines.
- Improved production management for the SwissNano.
- And much more.

For the latest news, or to ask questions or make suggestions, contact us at **www.tornos.com/softwarecontrol**

RIGID TAPPING ON THE SWISSNANO

The SwissNano machine can perform rigid tapping for both primary and secondary operations. See below for an example of its application

RIGID TAPPING FOR PRIMARY OPERATIONS WITH S1 VERSION: 0312

Example 1a:

Tapping:	M2 to the right
Rotation speed:	300 rpm
Tap fitted at:	T33

This function is programmed using the following variables:
G0 X0 Y0 T33
G0 Z1
M129 S300
G84 Z-4 P100 F0.4
G80
G28 W0

Explanations:

M129	Command for programming rigid tapping
G84	Longitudinal rigid tapping
Z-4	Tapping depth
P100	Time delay (0.1 sec) at the end of tapping before rotation is reversed
F0.4	Pitch 0.4 mm
G80	Cancel function G84
G28 W0	Return Z axis to reference position

Example 1b:

Tapping:	M2 to the left
Rotation speed:	300 rpm
Tap fitted at:	T33

This function is programmed using the following variables:
G0 X0 Y0 T33
G0 Z1
M129 M104 S300
G84 Z-4 P100 F0.4
G80
G28 W0

Explanations:

M129	Command for programming rigid tapping
M104	Used for tapping to the left
G84	Longitudinal rigid tapping
Z-4	Tapping depth
P100	Time delay (0.1 sec) at the end of tapping before rotation is reversed
F0.4	Pitch 0.4 mm
G80	Cancel function G84
G28 W0	Return Z axis to reference position

Comments:
Functions M150 and M151 are not necessary. Rotation is completely blocked in the M129 function. For tapping to the left, M104 is compulsory.

TORNOS FRANCE INNOVATES FOR ITS CUSTOMERS

Tornos opened its French subsidiary in St-Pierre-en-Faucigny in 1987. After more than 25 years of serving its clientèle, the premises have just been renovated so that they can continue to receive customers under the very best possible conditions.

Tornos Saint-Pierre boasts a new showroom which will be inaugurated during a fantastic event which will take place from the 25th to the 28th February 2014. All customers and interested parties are invited to attend. Decomag met with Patrice Armeni, director of Tornos France to find out more.

A huge space dedicated to customers.

The showroom is designed as a relaxed space for receiving customers. A real arena for exchange, it boasts the latest machines and technologies on the market and provides a pleasant, friendly environment. Mr Armeni explained: *"Our customers have the opportunity to discover our products, but also to benefit from the expertise of the many companies offering products which complement our own, for example oil, cutting tools or even materials"*. Of course, it also allows Tornos to demonstrate its latest creations: for its inauguration in February, the showroom will have 7 machines on display: EvoDeco 32, MultiSwiss, Gamma 20, Delta 20, SwissNano, Swiss ST 26 and Almac CU 2007. And if visitors so wish, they can enjoy a moment of relaxation on the comfortable sofas. *"We have done everything in our power to ensure our visitors have a positive, interesting experience during their visit to Tornos France, not only during the opening event, but throughout the year"* explained the director.

A local structure benefiting from a global infrastructure

Thanks to its geographical, historical and cultural closeness to its customer base, Tornos France can ensure a quality of services unrivalled in France and can respond much more quickly to requests from its customers. The subsidiary wants to be as close as possible to its customers, the director explained: *"Tornos France is able to offer a complete range of services such as, for example, providing technical support or for programming, training, calculations, setup activities and assistance in creating test parts. We also have a stock of spare parts which are available over*

the counter, within the shortest possible lead times, to customers for whom this is an important issue. Our two highly experienced staff members provide a professional welcome and keen diagnostics. As part of our drive to improve performance, we have recently started to offer a next-day delivery service for parts ordered by customers, ready for delivery once they clear customs at 7.30am." While this means that the subsidiary is largely autonomous, it can, if necessary, also rely on headquarters in Moutier, which further increases its ability to react quickly and effectively to customers' requests.

All change for Tornos at Simodec

"For 2014, we decided not to have our own stand at Simodec, but, let our customers rest assured, we will be very visible at the trade fair and beyond. We are continuing to support the SMILE initiative, for example. As we have for the last four years, we will be present at the "Associons nos compétences" (Combining our skills) stand with an EvoDeco 32 lathe which will machine a watchmaker's loupe to astound our specialist customers. In addition, visitors can discover the brand new Tornos Swiss ST 26 on the CMZ/Arcane stand" the director told us, adding: *"This more targeted presence allows us to invest in our showroom which will be, to reiterate, inaugurated with 7 machines on display, including the famous SwissNano, during a week of open days during Simodec".*

Located just a few kilometres from the exhibition centre, the Tornos France showroom is an ideal complement to a trip to Simodec. Visitors can also benefit from some great sales promotions.

Working for our customers all year round

A series of events will be organised throughout the year in this new showroom, particularly with the aim of demonstrating new products from the Tornos Group, and those of its partners. The Director concluded: *"We invite all customers and interested parties to join us in the Tornos France showroom, to discover our new products and enjoy a friendly exchange, from 25th to 28th February… and throughout the year."*

VISIT TORNOS FRANCE DURING SIMODEC

La Roche-sur-Foron exhibition centre
From 25 to 28 February 2014
Tuesday, Wednesday and Friday: 9:00 - 18.30
Thursday, evening opening: 9:00 - 21.00

Stands:
"Associons nos compétences", stand I22/JI9
CMZ/ARCANE, stand D19

Special exhibitions in the Tornos France showroom
From 25 to 28 February 2014
Every day from 7:30 to 22:00

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NEW WATCHMAKING BAR FEEDER

Bar feeder manufacturer LNS has just unveiled a device specifically designed for the watch market. The aim? To provide a reliable device of the same quality as the famous Tryton, well-known by specialists working with small diameters, but whose capacity has been limited to 7 mm. The result? The Tryton Watch Industry 107. Interview at Orvin with Gilbert Lile, CEO Europe, and Samuel Ventron, Product Department Manager.

Tryton Watch Industry 107

The driving force behind this new product is a large group of watchmakers, keen to order more than 100 devices with a maximum capacity of 7 mm. Mr Ventron explained: *"To meet this customer's requirements, capacities of 8 to 12 mm were clearly not required."* Mr Lile added: *"Thanks to the technical modifications made and to the limitation of functionalities, the Tryton Watch Industry is offered at a price which is more than 12% lower."* For this customer, that works out as almost 15 machines equipped for the same investment as the standard Tryton.

Easy transition

Over the years, the LNS Tryton bar feeder has become a benchmark for working with small diameter bars and functionalities have been regularly added. Its level of performance and quality is widely recognised and the company set itself the goal of retaining all its benefits whilst reducing the resources needed for its acquisition. Mr Lile explained: *"The difference was made by reducing the number of options and functionalities, however, the performances required by our customers have been retained."* Mr Ventron added: *"How the product is used is identical to the traditional Tryton; the control is the same."* This means no training is needed.

MAIN SPECIFICATIONS OF THE TRYTON WATCH INDUSTRY

Adaptable:	all CNC and cam-type machines
Capacities:	from 1 to 5 or 1 to 7 mm
System:	Tube barrel
Technology:	hydrobar
Lengths:	3 m
Pushers:	670 mm, 870 mm

For all machines

While the bar feeder has been developed in principle for installation on new CNC machines, it also perfectly adapted to cam-type machines. In the watchmaking industry, there is a huge amount of potential. Mr Lile explained that more than two thirds of sales of the Tryton are to the watchmaking sector. When asked about the positioning of this new device, and the fact that it risks stealing sales from the Tryton with capacities up to 12 mm, he told us: *"Our goal is to offer the solution which best suits the needs of our customers."* At the moment, more than 14 bar feeders from the Tryton range are sent out by the company each week.

Some technical information

As indicated above, to succeed in providing a bar feeder which offers the same features at a lower cost, the company limited the capacity to 7 mm. As a consequence, the entire system could be streamlined. Mr Ventron explained the main modifications: *"We have fitted simpler bases and the frame does not have the reinforcements required for working with heavier bars. The tip is now made from a mechanically welded structure and the base is fixed, and the barrel is no longer removable."* Is this last point a problem? He continued: *"Obviously, we had to make technological choices so that we would be able to reduce the price by over 12%. The barrel no longer being removable is the only concession in terms of functionality, and is not a deal-breaker according to our customers. If it is required, then there is always the option of choosing a Tryton 112 CNC"*.

More than 680 bar feeders for the same customer

The first user of the new Tryton Watch Industry is a watchmaking group which works with 680 devices provided by the LNS group. Some of the Tryton bar feeders installed are over 25 years old and are still working well. As shown above, the aim for the manufacturer was to keep this same high level of quality and performance. What is the feedback from customers? *"We can today state that the watchmaking Tryton is a success: it meets the needs of our customers perfectly and their feedback has been very positive, both from the large group cited above and users of all sizes"* concluded Mr Lile.

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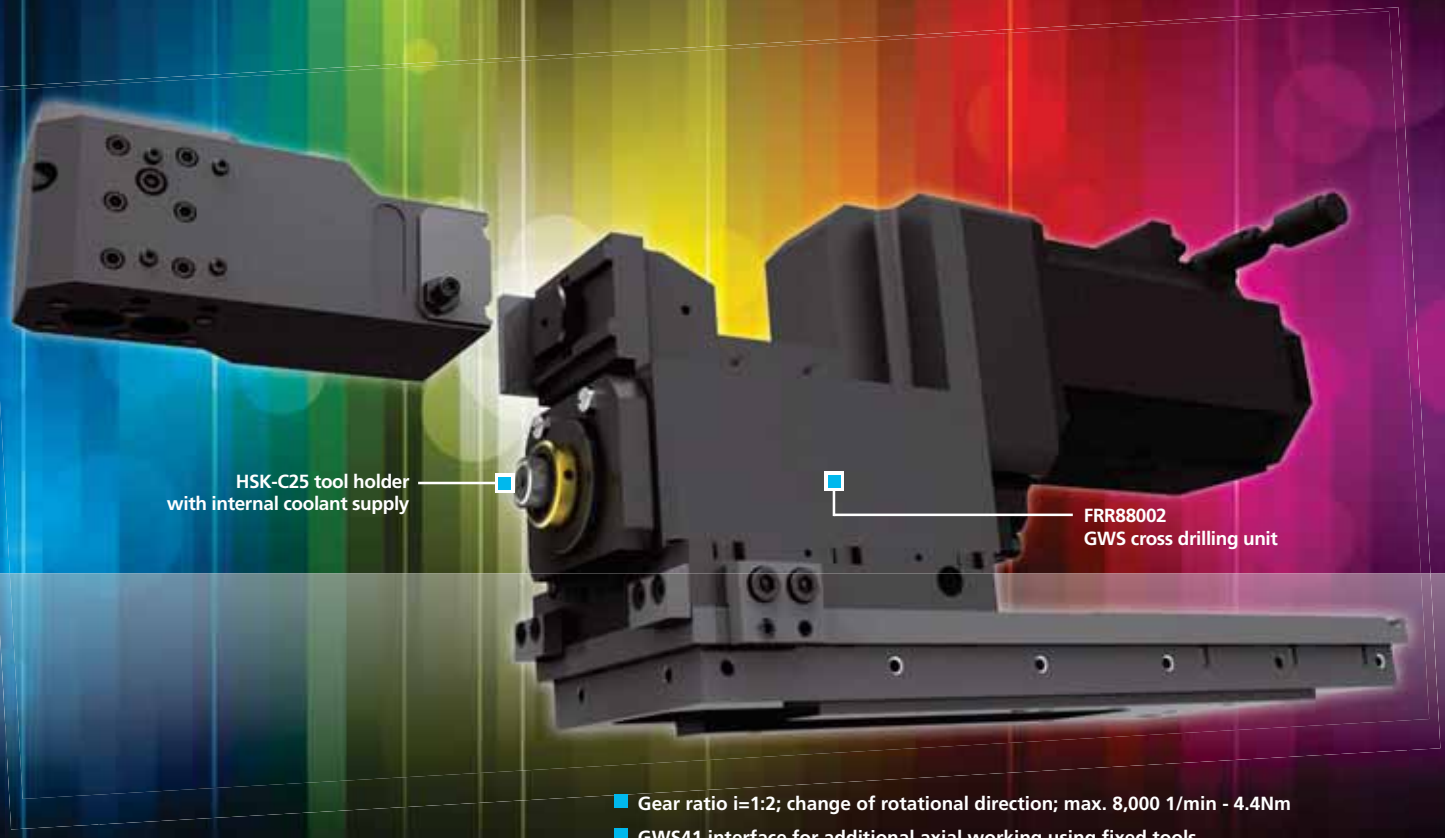

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FINDING THE RIGHT MACHINE

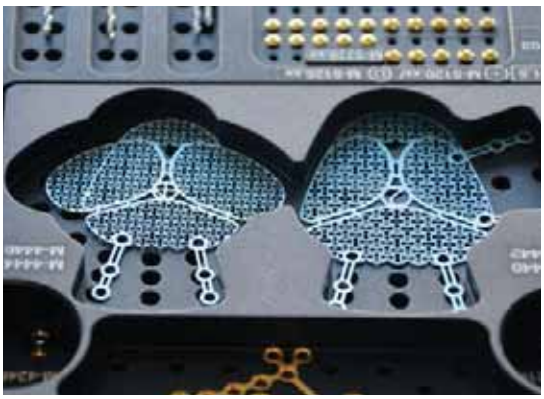
In the medical industry, Medartis, founded in 1997, is a lightweight figure compared to some of the industry's senior players, but this dynamic SME has some exclusive ways of ensuring it always provides the markets with better service. What about its production? We met André Vogt, in charge of the bar turning workshop.

Located in an ultra-modern building in the heart of Basel, at first glance the company premises do not seem a likely home for production equipment and yet, one floor is dedicated to machining centres and another to automatic turning machines. Our meeting took place as three EvoDECO 10 machines were being delivered to the third floor by a highly specialised team.

Choosing the best machine

"We follow a strict analysis procedure for selecting our production equipment and we only choose machines which are precisely suited to our current needs" explained the workshop manager, who added: *"We are always looking for ways to optimise and we cannot simply content ourselves with "generic" production equipment."* Every machine



is therefore studied in detail and chosen with care. Medartis developed its patented Tri-Lock system using the capacities of Deco machines. Mr Vogt explained: *"The Tornos machines ensure we are always able to finish the parts; if, for example, a screw head needs polishing, it will be done on the Deco."*

Continuous growth

Even though the choice is made as judiciously as possible, it is just the start and the company is always looking to improve and optimise. Mr Vogt told us: *"With an annual growth in our turnover of almost 20% every year, we need to keep striving to find solutions which allow us to improve."* When asked about the possibilities for the future, Mr Vogt explained: *"With the new EvoDECO machines just delivered, we should be very productive straight away and we aim to cover the requirements for our growth in 2014. For the following years, we will need to invest in the replacement of the old Deco machines, but also in extending our machine inventory."*



From Deco to EvoDECO

This quest for improvement also includes the replacement of the ageing Deco 13 machines. As almost 90% of production carried out on these machines has a diameter of less than 10 mm, the company decided to start replacing these with EvoDECO 10 machines. Mr Vogt explained: *"The EvoDECO 10 machine has shorter strokes and offers the latest technology, particularly in terms of spindles. Switching from one machine to another has allowed us to increase productivity by 20%."* The machines are equipped with a range of devices designed to improve production and make it safer, for example the new thread whirling devices or the vacuum workpiece pick-up system. The workshop manager added: *"The EvoDECOs are also easier to programme and to use. In addition, we switched to TB-Deco ADV and saw a significant change in performance. Simply having a built-in PC has also streamlined programming."* The production runs are 4, 8, 12 or a maximum of 24 hours, so the flexibility of the machines and the ease with which runs can be changed are therefore incredibly important.

MEDARTIS IN BRIEF

Founded: 1997

Growth: 7 staff members in 1998
approximately 170 staff members in 2008
approximately 280 staff members in 2013
hiring of around 40 people planned for 2014

Products: Medical screws and plates, patented Tri-Lock system

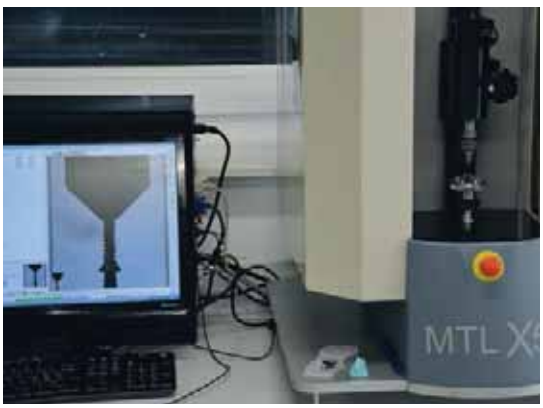
Bar turning: 19 employees
1 Deco 10, 15 Deco 13,
3 EvoDECO 10

The aim? To be the first and the best

With levels of production of 19 hours per day, working with just one team, Medartis places total faith in the reliability of Tornos machines. The workshop manager is very clear: *"Our processes are managed and we want to be able to work 19 hours a day without having to work in shifts. Tornos machines provide a trouble-free solution and I can attest to their excellent reliability."* He continued: *"Having the best machines is just the start, we also need the best operators."* To achieve this, Medartis has a two-pronged strategy: Training and excellent working conditions. In particular, the company trains polymechanics in the specific needs of the medical industry. As concerns the quality of the working conditions, a visit to the workshops tells you all you need to know: the work spaces are spacious, well-lit and each has its own test equipment to hand.

Moving premises as an example

"We are a team and every member of the group is important, which is why when we moved to our new premises in 2009, we decided together how to lay out the machines and the auxiliary equipment so that every work space was user-friendly and comfortable." The same approach was applied when the new EvoDECOs were introduced. Even though Medartis works according to the most rational processes, such as 5S or the SMED method, human beings are still



at the heart of its concerns. And the statistics clearly support that, as the bar turning department has not seen any staff leave in 5 years.

The 'Tornos package'

The concept of team explained by the department management does not stop at the company's walls: *"We also see our work with suppliers as teamwork and this works very well with Tornos. Both in terms of service and spare parts, we have only positive experiences to report. Tornos offers us a "package of services" which meets our expectations. We know that we can count on them."* And the workshop manager explained to us that this team concept is being developed even further as Medartis is also working in close conjunction with Tornos to develop specific solutions.

And what about the future?…

When asked about the future, the workshop manager's answer was clear: *"We are going to continue to develop and improve our productivity. For example, in terms of controls, where we want to automate certain operations, the perfect solution would be to do so directly on the Tornos machines."* Today, Medartis does not have any delays in delivery and the aim is to continue to provide this to its customers. With planned growth of almost 20%, the challenges for the machines are therefore very high… the same is true for the company, as it intends to hire around forty new staff.

… with Tornos!

As explained at the start of this article, Medartis always analyses several manufacturers and machines when it is acquiring new production equipment, and the quality of the service as a whole is key. Mr Vogt concludes: *"We have always gained with Tornos solutions. We are a veritable team, with all of the parties working very well together. Because the machines correspond precisely to our needs and because we can rely on a highly efficient package of services, the likelihood that our new machines will be Tornos is very high."*

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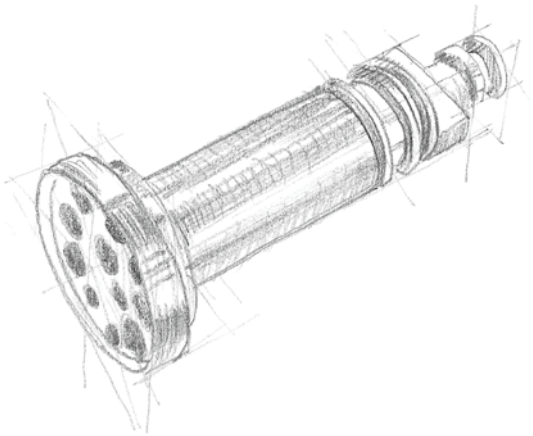

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A CAREFULLY CHOSEN MACHINE

Ultra, the manufacturer of watch parts and equipment based in Court, Switzerland, has for the past few months been working with a new Tornos SwissNano machine. Interview with Benoît Marchand, co-director of the company alongside his brother and who together represent the fourth generation of the family that owns the business.

Mr Marchand has opted for a standard colour SwissNano. He comments on the excellent ergonomics of the small watchmaking machine from Tornos.

The director got straight to the point: *"I won't buy a machine simply because it's from Tornos: we have a strict validation procedure for buying machines and the SwissNano stood out for a host of reasons."* With 90% of its production being destined for the watchmaking industry, the company needs machines that can manufacture parts not only with the right dimensional and geometric tolerances, but also in terms of the surface finish and appearance.

Is this the end of cam-type machines?

Ultra still uses a range of cam-type machines that offer exceptional production capacity. As the director himself explained: *"Our production capacity for winding stems is enormous: we can make more than 1.5 million a month."* Although the size of production runs is shrinking, millions of these types of parts are still delivered each year to several different customers. Mr Marchand continued: *"To produce large runs of this type of part, we rely exclusively on our range of cam-type machines."* Asked about the possibility of replacing these cam-type machines with NC turning machines, he explained: *"We mainly compete on price and quality, and the SwissNano is now extremely competitive compared with cam-type machines – to the extent that for runs of less than a week, I use the SwissNano rather than cam-type machines."*

A range of complementary machines

For very intricate parts, Ultra uses Deco 10 machines. Before the arrival of the SwissNano, relatively straightforward parts with production runs that were "too small" for cam-type machines were manufactured

The SwissNano machine and Iemca bar feeder have a very small footprint. The director plans to set up machines equipped with 2 m bar feeders to increase the number of machines installed.

The Ultra workshop has a range of different machines, which means that the best machine can be chosen for the part to be made. For lead times of less than a week, the SwissNano has replaced the existing cam-type machines.

ULTRA IN BRIEF

Founded:	1906, expanded in 1920, 1992 and 2007 Further expansion is planned for 2015-2016
Management:	Benoît and Sylvain Marchand, fourth generation
Machine inventory:	Bar turning: 40 cam-type machines 3 Deco 10 5 Delta 1 SwissNano cutting (15 machines), rolling (30 machines), terminating devices (5 machines)
Size of runs:	from 25 parts to several million a month
Markets:	90% watchmaking industry, equipment
Type of parts:	barrel arbours, chronograph spindles, split-second pins, barrel bridges, screw feet, pinions, stem extensions, column wheels, posts, pallet fork stems, winding stems, split stems, screws. Certain universal standard parts, such as stems and winding stem extensions, are in stock and can be delivered immediately.


The company has a large rolling workshop which allows it to deliver fully finished parts to its customers.

using Delta machines. Asked whether these machines could also be replaced by the SwissNano, the director explained: *"For a certain number of parts, we have switched from the Delta to the Nano, although the machine cannot do everything. For parts with a diameter of more than 4 mm made from tough materials, the Delta is more robust and better suited."* Ultra has a diverse range of machinery, enabling it to choose the best machine for the parts to be made. For parts with a small diameter, the management now favour the SwissNano.

Straightforward machines that are easy to set up

Mr Marchand has chosen the ISO-programmable version of the SwissNano. He told us: *"We don't need a system like Isis, since our parts are straightforward to program."* He added: *"The machine is conventional and easy to program and use, even a bar-turner who is not familiar with NC can get by after a few explanations."* He concluded: *"Using conventional ISO also means that our operators are more versatile and able to get involved."*

Unique design

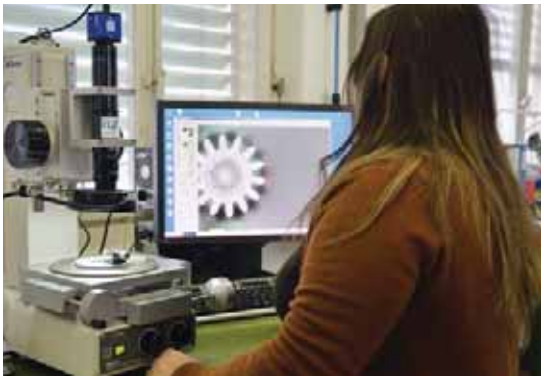
"During the machining process, it is crucial that we have an unobstructed view of the work area. In this respect, the SwissNano is ideal, since the glass screen isn't an issue, we have excellent 180° vision and the glass is far enough away from the machining area to stay clean," explained Mr Marchand. The director also likes the smaller footprint and the fact that it is no longer necessary to leave a large space behind the machine. He explained: *"We decided to fit the machine with an Iemca bar feeder which has a very small footprint. In future, we plan to buy SwissNano machines with 2 m Iemca bar feeders, then not only will we be able to do a straight swap with cam-type machines, but also fit more into the same space. Our buildings are old and quite narrow. The length of the machine and its bar feeder are key."*

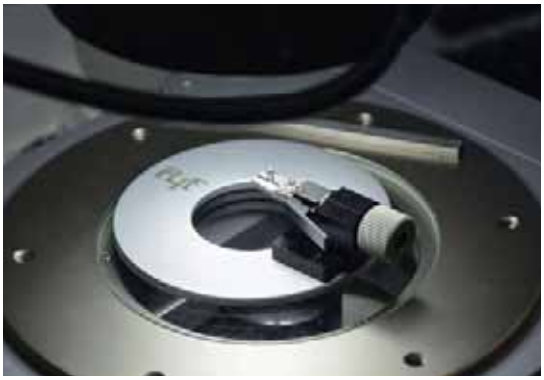
A very competitive price

As Mr Marchand mentioned earlier, the choice of the SwissNano machine was based on objective criteria: footprint, price, precision and the overall quality of the machine. On this subject, Mr Almeida, sales manager for Switzerland, explained: *"The SwissNano machine was designed and built in Switzerland; it is a 'Swiss Made' product for 'Swiss Made' watchmaking." For Tornos, watchmaking is very important and we have developed this machine for our customers."* Mr Marchand continued: *"When we launched the consultation process for the procurement of new machines, Mr Almeida showed us the design and we waited to see if Tornos could offer us a 'watchmaking machine' at a price that would allow us to make a return on our investment while still offering our customers competitive terms."* A year later, the SwissNano was launched at the price originally discussed and Ultra ordered its first machine.

A wide-ranging service

Asked about the specific aspects of the company, the director told us not only about his range of complementary machines but also his highly qualified staff and Ultra's desire to offer its customers a comprehensive solution. This is why the company has both a cutting and a rolling workshop. Equipped with specific machines, they add value to the service provided. He explains: *"We have been specialising in watchmaking for over 100 years and we know the market. We are equipped to offer a complete service to our customers and have put in place an organisation that allows us to handle all batch sizes in a responsive manner."* The company also offers the possibility of finishing





The inspection department has the latest tools available on the market and offers several options for dimension checking.

Where necessary, Ultra can also perform 100% quality control of the manufactured parts.

runs part-by-part with felting or other value-added operations. Mr Marchand concludes: *"We provide services geared towards the luxury watchmaking industry. If our customers want a particular finish or 100% quality control, for example, we are equipped to deliver this."*

The future? With the SwissNano!

We wanted to take stock after three months of using the SwissNano. Mr Marchand is fully satisfied: *"We don't regret waiting for this machine to become available, since its price and size mean that we can be very competitive. The precision and stability are excellent."* Ultra now plans to test new applications on the SwissNano. *"It clearly offers the best value for money on the market. We produce machined parts at very reasonable prices and, if our tests are satisfactory, we plan to buy several SwissNano machines a year for the next few years. We only have Tornos machines, although we analyse each investment carefully to find the best solution. For watchmaking today, the SwissNano is the best choice."*

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SAN-TRON – A FAMILY OPERATION WITH TORNOS CONNECTIONS

Just off US Route 1 (the first interstate in the country) is San-tron, Inc., a successful manufacturer of RF connectors, turned components, and cable assemblies headquartered in Massachusetts. The family-owned company was started in a cellar by Kenneth Sanders after he completed duty as a Machinist's Mate on PT boats for the Navy in World War II then ran Brown & Sharpes for the screw machine department in a local General Electric plant. The company has seen its share of ups and downs over the years – much like the pattern of waves that run through the RF connectors and cable assemblies made at San-tron today.

Ken Sanders in the 40's; his passion for technology and strong work ethic are still intensely lived every day at San-tron.

Mike - Swiss Department Supervisor, Wayne -Vice President, Rich - Swiss Setup (left to right in front of the ST 26 machines).

Kenneth Sanders and his brother Fred first had hopes of "making it big" selling Indian motorcycles in Florida near one end of Route 1 as the first distributorship in that state. They built and raced motorcycles; so this was likely a dream career for them. But the motorcycles didn't sell well; and it appeared that life had other plans for Kenneth further up the highway.

In a town named Ipswich, he built a global company beginning with loans he secured to buy a couple of starter machines. With his back against the wall, needing to support his big family of seven kids, he was able to make a go of it in his small shop, taking any jobs that came along… doing piece parts for the connector industry, soldering tips for an English company, and military parts for companies like Varian Associates. Wayne Sanders, current Vice President at San-tron and son of Kenneth, credits a strong work ethic to his father's success.

Strong work ethic helps San-tron grow and ride the tides of business

Incredibly, they still have a lot of their customers from the early days in the 60's. But the business has definitely changed. Wayne explains, *"The screw machine industry would swing back and forth between good times and bad times. While making parts for connector companies, my father started putting pieces together, taking a chance and hoping that when things got better he would sell his customers the whole assemblies. His customers were happy to have him do that. And I guess that's how we started getting into connectors. He always said 'You have to have a product. You need some sort of a product."*

Today, San-tron designs and manufactures RF connectors, adapters, and complete cable assemblies – in addition to doing some precision-turned component work for a variety of industries and applications.

"My father didn't start with Swiss screw machines; but I remember him telling me in my early years when I was just a youngster that he could get this other work if he had Swiss machines. So he bought a few Petermann and later added a couple of Strohms back then."

Wayne joined his father along with other family members at San-tron after getting his degree from Northeastern University and following a lab job at MIT. (Today Wayne has a brother that's the COO and another that's the CEO, a sister that's HR, a brother that is an assembly supervisor, his wife, son and a couple of nephews in the company – so it's a large family operation making primarily families of parts).

"I started working in the secondary department at San-tron where we were doing slotting and milling. And my job as a mechanical engineer was to automate the secondary operations. Then we lost a couple of Swiss setup guys and I was brought over onto the Petermann line. I think I put about 10-12 years into that department. Along the way, we learned that Tornos made the best Swiss machine. So we eventually picked up seven or eight Tornos MS 7's to do precision parts including cross-drilling and some secondaries. We saw how nice we could do the secondary operations on the Swiss machines. That was a big plus. We became very good in secondaries and also built a number of machines specifically for connectors. So when the communication boom hit, we were ready."

The connector business grew like crazy in the late 90's with the dotcom surge; and San-tron was so busy that at their height, they had 100 people working for them. The company expanded their rented space, bought the 7,000 square foot building, and then moved operations into a new 30,000 square foot building in 1995. That year they bought their first Citizen CNC… a year later, another; then two Star SA Swiss machines along with Imoberdorf Rotary transfer machines for secondaries. Around 1998, they bought their first Tornos Deco 10. *"We had belief in Tornos… the quality was always there from the early MS-7's. Those were Cadillacs."*

With the Deco 10 they found they were able to run lights out. Says Sanders, *"We were doing lights out back around 1998. And our production went through the roof!"* The Tornos Deco 10 machine was so successful that they bought two more shortly thereafter and produced center contacts for connectors round the clock, kicking out complete parts on average every 15-20 seconds. Today, Deco 10's still make about 90% of all San-tron's center contacts.

According to Wayne, *"The Deco 10s were and still are very effective on center contacts for connectors… probably THE perfect machine. I believe the best machines in the world for slotting, crimping, back-drilling, and creating small threads on center contacts. The two opposing slides are beautiful. If you're*

Deco 10 sawing a connector contact.

Swiss ST 26 making a connector body.

Ease of access to tooling area of the Swiss ST 26.

Jack, R&D Supervisor; Tom, Assembly Supervisor (left to right).

doing small diameter and you're knurling it; you can bring a knurl in from each side. It's a tremendous way of knurling. Splitting the work between the main spindle and subspindle reduces cycle time dramatically. A lot of our center contacts are crimp-type contacts where the slots are crimped or reamed – these used to be 6, 8, 10 operations for our shop. With the Deco 10, it's kicked right down to one operation. When it drops into that container, the only thing we have to do is wash it and then get it into a heat-treat oven. We're done. The more times you handle the part, the more chance of something going wrong.

"The Deco 10 also gave us a lot more tools to finish the part. I think that's what we all want to do in the screw machine industry, is drop a part complete. The Deco 10's did that for us."

Mike - Swiss Department Supervisor, Joel - Swiss Setup, Rich - Swiss Setup (left to right in front of Deco 10 machines).

Wayne and Mike in front of the Deco 26 with "the old cams of the past" in background.

Ups and downs – Just part of Life

But when the dotcom bubble burst in 2000, San-tron had to rethink their game.

For the first time, San-tron began marketing and added a sales force (which they hadn't needed prior to the dotcom crash since word-of-mouth kept them so busy). They also applied for and received ISO certification. They had to spend money on things they hadn't had to spend money on before.

"As things kind of collapsed around the world with the overestimated dotcom bubble, customers basically advised us to go to China because that was where the big build out was in the RF field."

They followed their customers' advice and became a global company, opening a facility in China, and hiring employees to assemble the San-tron US-designed connectors for the growing Chinese market.

"Right after the dotcoms crashed, we were quoting hard and tight and trying to get work here in the US so we didn't have to lose any of our talented employees. We were hit pretty hard. Nothing was happening here in the states. It was slow. And our big customers, global companies who were participating in the Chinese cellular industry build out were saying to us: 'Your prices are good. We know your quality is good. But we can't give you the order because you're not here.' So we had to support our customers there.

"For a manufacturing guy like me it was very hard to go to China… very hard. Because I want to keep every bit of manufacturing I can in the states. But the work ethic in China was good, labor costs were low. And we needed to be there. It's a global world today and we realize that some of the parts come from overseas and some go out."

To keep as many jobs in the US as possible, San-tron invested in automation for their Massachusetts facility as well. *"We built some connector assembly machines; one that does 40 different computer checks for quality. It assembles our standard "Type N" connector in about 4 seconds. It takes all the different parts from bowl feeders and orients the parts the right direction, assembles and numbers the parts. You have to automate. That's the big thing. It's good growth for us and keeps things stable. It was difficult being hit with the low costs of the Asian labor, but it forced us to improve our internal processes to compete and succeed in the global marketplace. We have a good engineering staff, good machinists and a family of great employees and we knew we could make the assemblies with good quality. The assembly machines and our automated turning machines keep jobs here."*

Wayne points out that after the dotcom crash, they had a "bit of a problem on the manufacturing side" because they hadn't yet moved to CNC for parts over ½" diameter.

"It was rough getting work here during that particular downturn. We picked up some Index ABC turret machines. We went used because that was the most

Wayne in the front lobby of San-tron.


Assembly department at San-tron.

we could invest at that time to expand our capabilities. We took our CNC capabilities from about a 1/2 inch capacity up to 2-1/2" which is what we have today. That put us into a different realm of connectors. We were able to grab the 7/16 connector business. And we also moved down to the SMAs and smaller connectors."

Around 2004, San-tron purchased a Tornos Deco 26 machine. *"The Deco 26 has been a great machine. It's got great overlap like the Deco 10. You can split operations 50/50. The cycles on connector bodies are some of the best in our facility."*

So, with things back on track – increased automation, greater machining capacities, assembly facilities at home and overseas, and a solid work force, San-tron began to thrive again.

Last year, they placed an order for three new Tornos Swiss ST 26 machines. They needed more capacity for center contacts and smaller connector bodies between 1/2" and 1". The Swiss ST 26 fit the bill.

With San-tron's experience in China, they were open to the idea of a Swiss type machine partially made there. Wayne says they asked Tornos many questions. And when they learned that the machine was engineered in Switzerland and key components like the spindles were Swiss, they were interested.

San-tron's experience with Tornos over the years was certainly positive. *"Tornos has a great crew in Connecticut. We're in Massachusetts, so Connecticut is who we work with most of the time. Roland Schutz is always there with the answers to our problems. Mike Callahan, Paul Cassella, and Jim Kucharski do a great job."* Knowing the Swiss ST would be backed by this same team, San-tron placed their order for three Swiss ST 26 machines. And things are going very well so far.

Adding the Swiss ST to the San-tron family

"This ST 26 has a very nice polygon unit. And it has a lot of tool capacity: 36 tools. I think Tornos has a winner there! We reviewed our first 5 jobs that came off the ST 26. We are averaging 17% faster on our cycle times over our turret machines already. We've got cycles of 60 seconds to 90 seconds and that includes threading and polygon milling, back threading, slotting and recessed bores. We do so much brass that polygoning is something we would always want on a machine now… after seeing it and using it on the Deco 26, Index, and ST 26.

"The ST 26 also has the Fanuc control which we like here. It's user-friendly and popular in the states so that makes it easier to add new people to the company. We also think it's a very stable control. We've never lost any of them in a power outage." And for San-tron, because they are on the end of the electrical service in Ipswich and get power glitches (outages and single phasing) quite often, that was important. They have noticed that their Fanuc machines will shut down properly; where some of their other controls have major problems.

San-tron is averaging about 5 million parts a year – primarily families of parts, these days. But they do some prototypes and short runs too. Average lot sizes are 500-2,000 pieces (with production level runs of 10,000 - 50,000 pieces); so quick setups are important to their operation.

"With the ST 26, we can edit at the machine. For short runs, where we're just trying to prove out a job – get it on and off without worrying about the cycle so much – the ST is quicker to setup. It will ask you what diameter you're doing, and then you press 1/2" or whatever and then you bring your tool right up to it and you're touching it off. If you want to change a speed or feed it's a little tougher on other machines because you have to go back to your computer, make the change and load it back on the machine. We don't have to do that with the ST 26.

"I like the double slide setup on the ST 26 – that was really a great selling feature. It's great for knurling from both sides or being able to overlap the work just like we do on the Deco 10s and the Deco 26. The slides are quicker than our turrets. It's much quicker to move a slide back and forth than it is to bring a

turret in, do your cut, bring it back, index it, bring the turret back in. The fact that Tornos is bringing more tools on the machine and using the slides on the machine, it's a good plan to give you better cycle times. When I was a kid, Swiss machines were very limited. There was no revolving guide bushing, there was no front and back-end work. Usually your turret machines could beat the Swiss machines cold. Unless you had a long and narrow part – the Swiss were the only ones that could do those accurately.

"We would just love to see a 32 mm version of the ST. If they do it pretty quick, we'll place orders. We have some other machines that we're going to be phasing out. And I'd like to work in the direction of adding more Swiss style machines because they're fast and accurate. It looks like Tornos has a deep hole drilling feature on the ST too. There's a family of longer deep hole parts we're hoping to swing into the ST.

"Another thing I like about the ST is the removable bushing because it can help us cut down on some of the waste of more expensive materials – bronzes and beryllium coppers and stainless – sometimes we may not want to waste 8 or 10% of our material. It can also save us from having to grind. I've seen it happen that we get material in after we have quoted a job and the material is not round enough. If we haven't allowed enough money in the job for grinding, we can remove the bushing assembly on the ST. We don't want to forget that feature is on the machine. I think it will come in handy soon and bail us out. I can't wait to try it.

"We brought one ST 26 machine in and we placed an order for three based on the fact that it would keep efficiencies up. We got through the learning curve on the first one and we just brought the second one in and it went up real quick.

The center contacts for these small eSeries connectors are made on San-tron's Deco 10s.

SMA 2.92 connectors.

"I'll tell you, we had taken another machine and moved it across the aisle, and within a couple of days we actually had the Tornos ST 26 up and going. We were probably another week to get the machine we moved back up."

San-tron in a secure position for whatever comes their way

San-tron manufactures a full catalog of RF connectors and has seen growth in security technologies in the post 9/11 era. As the telecom carriers and technologies have changed, San-tron has remained ahead of the market requirements. They recently received AS 9100C certification for aerospace (to support the ITAR, ROHS, and DFARS compliance they already had in place); so beyond commercial communications, the company plans to continue expanding their aerospace & military production which has been part of their product mix since the beginning.

Recently San-tron achieved the great honor of having their SRX low-PIM cable assemblies installed in the 104-story Freedom Tower skyscraper that occupies the former location of the 6 World Trade Center in New York. The cable assemblies will be used for the building's wireless communications and security equipment. On May 10, 2013, the final component of the skyscraper's spire was installed, making it the tallest building in the Western hemisphere and the fourth tallest skyscraper in the world. So, for San-tron, it appears that they are back on top.

In December 2013, Wayne and his family sold the original 7,000 square foot building that San-tron had occupied from 1963 to 1995. It brought back old memories when they moved the equipment out of there and could see stains on the floor where the Petermanns had been located. When his father transitioned the business out of his cellar and into that building, he rented a mere 10% of that space. Now, they're a global manufacturer with a very bright future.

If you've got a good work ethic and you're looking to become a Swiss turn operator or programmer in the Massachusetts area, watch for the "Help Wanted" signs along old Route 1. San-tron is growing; and they've got great machines.

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WESTWIND REDUCES SUBCONTRACT COSTS WITH TORNOS INVESTMENT

As the world's leading and largest specialist designer and manufacturer of air bearing spindles, Westwind Air Bearings is enjoying significant growth levels across many of its spindle sectors. To support this growth, Westwind has undertaken an investment program to bring the production of jets, and a number of additional small machined parts in-house from subcontractors.

The Delta 20/5 and its operator holding screws, rivets, restrictors and development parts manufactured on the Delta.

The reasoning behind bringing the work in-house was to reduce subcontracting costs, control its own destiny with regard to lead times and batch quantities whilst avoiding the financial penalties of continually changing batch runs to meet its Kanban schedules. To achieve all this, Poole based Westwind acquired a Tornos Delta 20/5 and a Tornos Deco 10a.

With the production of 30,000 jets per week being subbed out, Westwind required sliding head lathes that could offer high levels of productivity, unmanned running and flexibility. The company reviewed the available vendors and selected the Tornos Deco 10a. With four existing Tornos Deco 20's that had been running for over 13 years, Westwind Air Bearings was familiar with the reliability, machine build quality and service support that Tornos is renowned for.

Since the arrival of the Deco 10a in February 2012, it has been running 24/7 to produce 20,000 thrust and journal jets a week, as well as running development batches for new spindle designs. As Westwind's Manufacturing Engineer, Mr. Steve Somers comments: *"The Deco 10a is running 24 hours a day. We are so confident in the uptime and its ability to retain tolerances that we only conduct twice daily inspections on a two-day product run. Despite being a production machine, we run batches from as small as 50 off up to 100,000 on the Deco 10a, so a combination of flexibility and productivity is critical."*

With a 3 m barfeed, the 2 mm diameter brass jets have the OD turned, faced and drilled on the main spindle whilst the sub-spindle simultaneously turns, drills and uses a form tool to complete each jet in

Deco 10a with Westwind's Manufacturing Engineer Steve Somers operating the machine.

Delta 20/5 in operation.

Deco 10a & Delta 20/5 operating side-by-side for production & development parts.

Close up of Steve Somers holding the 2 mm long brass jets that are installed into the high speed spindles

Steve Somers in front of Deco 10a holding some of the 2 mm long brass jets that are manufactured in quantities up to 30,000 per week.

Completed spindles in the testing department.

20 seconds. The three jets per minute productivity is credit to simultaneous front and back end working as well as the use of a high frequency 20,000 spindle for drilling the micro holes through the brass jets.

As Mr. Somers recalls: *"Our productivity rates enable us to comfortably satisfy our Kanban schedules as well as produce for stock without the cost, confidence or product control issues created from subcontracting the work out. Our quality and tolerance bands are very tight. We have 23 different types of jet running on the Deco 10a and the maximum set-up time for each job is never more than 5-10 minutes. This is because we have a top and bottom tooling platen that are optimised with the top platen consisting of turning, boring and spot drilling tools and the bottom platen holding parting, turning, drilling and spotting tools. With an optimised configuration, we have a production machine with outstanding flexibility."*

Producing specialist spindles for processing Printed Circuit Boards (PCBs) with rotational speeds from up to 350,000rpm, high-precision linear and rotating equipment for the semi-conductor processing industry, spray paint spindles and additional high end spindles, Westwind is continually evolving and developing its product range. To support this, the company invested in the Tornos Delta 20/5.

As Mr. Somers continues: *"We bought the Delta 20/5 to produce small intricate parts such as screws, rivets, restrictors and other spindle parts that are small production runs or development batches that were previously modified externally. By bringing this work in-house, we have full control over the development and testing of parts for new spindles without the involvement of subcontractors."*

"The Delta 20/5 gives us full process control over all the specialised parts we now manufacture internally. The set-up time can be up to 30 minutes compared to 5 minutes on the Deco, however this takes into account collet and tooling changes that are required for processing bar from 2 to 16 mm diameter from a diverse range of materials that include brass, stainless steel, monel and aluminium alloys. The Delta now has over 50 different types of job regularly produced and this is constantly growing, which is testament to the flexibility of the machine," says Mr. Somers.

With over 60 staff on the shop floor, the Dorset manufacturer conducts production as well as R&D work whilst the company's second manufacturing facility in China is a volume manufacturer.

"The new machines have saved us considerable sums in subcontracting fees, reduced our lead-times and improved the through-flow of work. Furthermore, we are in full control of our production and development work. From a production perspective, the Tornos machines support our Kanban system and from a development viewpoint, we have streamlined the process from drawing office to finished part. Our 13 year old Deco are extremely capable and productive and I have little doubt that the machines we have just purchased will serve us just as well," concludes Mr. Somers.

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MOTOREX INTERNATIONAL TRAINING

Around 60 active business partners from ten countries attended the Motorex International Training event which was held recently. The two-day training programme on the specialist subject of industrial lubrication technology also coincided with the launch of multimedia iPads which will be used in the area of customer service.

Equipped with high-performance iPads, Motorex sales partners can now present all their information and complex processes to their customers in a way that is easy to understand. There are currently more than 1300 pages of technical documents loaded onto the tablets.

Motorex business partners from far and wide met for two days for a comprehensive training course under the guidance of industry professionals. It came as no surprise that there were some similarities between the diverse range of international markets. The participants made active use of the opportunity to exchange ideas. After just a short time, tips and solutions were already being discussed and shared.

Looking to the future with iPads

The introduction of iPads can certainly be considered the highlight of the Motorex International Training. There are currently more than 1300 pages of information from Motorex about the lubrication technology industry loaded onto these pioneering tablets. Complex processes are also partially presented using moving images, either as films or animations. For example, the technically correct cleaning and sterilising of machine tools, the accurate mixing of cooling lubricant with water, and the correct measuring of water hardnesses or pH values, just to name a few. Of-course, there is also no shortage of clear implementations of the technological achievements of Motorex, such as PMC technology. With regular updates, Motorex customer advisors always have all the relevant information with them and can therefore provide customers with optimum support. Of course, the device does not do the work by itself but, in an increasingly faster-moving world, it contributes to supplying high-quality and consistently

Participation in the Motorex International Training event mobilised not only business partners from many different countries, but also the whole team of Motorex industry professionals.

Hugo Fisch, Managing Director of Motorex AG Langenthal, opened the conference with positive rates of growth from all markets, and with the charismatic statement "Motorex is simply brilliant!"

There was a great deal of interest in the explanations about Motorex cooling lubricants provided by Adrian Schoch in the various workshops, which, of course, made use of the iPads.

During the tour of the premises, the newest production facilities could be seen in action. Motorex relies on the production location in Langenthal and also makes use of a strong technical support department to assist its partners.

competent solutions for customers in the industrial lubrication technology sector.

A varied training programme

The organisation team, led by Adrian Schoch (Head of Applications) and Peter Oberli (Product Manager), was able to put together a perfect mix of theory and practice. The partners were therefore informed about, and trained in, the current organisational structure, the entire product range, water-miscible cooling lubricants and performance-orientatedcutting oils. The various practice-orientated workshops were particularly well-received. These covered topics ranging from the simplest actions, such as calibrating and measuring cooling lubricant concentrations using a refractometer, to calculations for a cost-effective changeover from several cutting oils, e.g. to one machining fluid which can be used universally. The participants circulated around the workshops and lectures in groups. The participants were particularly interested in the area of Research and Development – in the Motorex laboratory, the international members of the large Motorex family were informed about the latest findings and promising achievements.

Detecting major differences

During a laboratory workshop, the "trainees" also witnessed the sometimes striking differences between the different products available on the

With its industrial lubricants, Motorex leaves behind a trail of success the world over. All of the participants were very enthusiastic about the training event and returned home full of energy.

market, and their quality. Impressions and experiences were gathered and these will be valuable in the future for advising and decision-making processes at all levels. The participants were also able to see for themselves what is meant by "Made in Switzerland" during a tour of the production plant at the headquarters in Langenthal.

The Motorex International Training event therefore demonstrated perfectly that, today, optimal coordination of all specialist subjects and processes is an absolute "must". This is why Motorex will, in future, also be investing systematically in the further training and specialisation of its international business partners.

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