

DECO

MAGAZINE

31

4/04

DECEMBER

ENGLISH

Think parts
Think TORNOS

2005	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
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Series volume:
only 15 parts!

TB-DECO ADV 2005:
A logical extension
to the range
adapted to customer
requirements

Air: a priceless
wealth
Cleanmist® S.R.L.

PX Tools,
the special
applications
specialist

Happy new year of innovations





Summary



Think parts
Think TORNOS

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TORNOS SA
Rue Industrielle 111
CH-2740 Moutier
Internet: www.tornos.ch
E-mail: contact@tornos.ch
Phone +41 (32) 494 44 44
Fax +41 (32) 494 49 07

Editing Manager:
Pierre-Yves Kohler
Communication Manager

Graphic & Desktop Publishing:
Georges Rapin
CH-2603 Péry
Phone +41 (32) 485 14 27

Printer:
Roos SA, CH-2746 Crémines
Phone +41 (32) 499 99 65

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2004 – a year

of market improvement for TORNOS UK subsidiary

Editorial



Since October 2003 we at TORNOS Technologies UK have seen a gradually improving market place. Our core business sectors of Medical, Electronics, Automotive and General Sub-contract have all taken more positive steps towards investment once again. Despite the strong competition from the Far-East and Eastern European countries, the experienced skill base in the UK still means we can be very competitive with "high tech" products.

Over this period the team at TTUK have worked hard in developing solutions with many of our customers to help them gain a competitive edge in the global market place. Right through from controlling the machining environment for difficult materials to components with micron tolerances and seemingly impossible machined features expected from a turning center. As designers look more and

more towards miniaturization, cost reductions through elimination of numerous operations on several machines, zero defect, etc, etc, then the challenges for our customers to produce turned components become even greater.

As one part of its response to the new customer challenges, TORNOS SA in Moutier has reviewed the communication links with all its subsidiaries. What this has meant for TTUK is a new simpler reporting structure to the various business units based in the Swiss Headquarters. We in the UK are no longer a satellite subsidiary but a fully integrated company within the TORNOS Group. This has the effect of faster information channels and experience sharing for the service, applications and sales team, thereby giving the customer better access to the TORNOS Groups wider experience.

To further boost the strength of TTUK, Area Sales Managers John Hejdner & Mike Whiles have joined the Team to work closer with customers in the North and the Midlands respectively, with Mike also assisting our Irish Agents Premier Machine Tools.

Due to the increased work load in recent months Steve Johnson is also a new addition to strengthen the Engineering department.

In the oncoming months we will be informing you all about the new DECO product launches that TORNOS have in 2005 and where appropriate, helping you identify which of these new or existing DECO products will help give you that competitive edge.

If in the meantime however you require to discuss a manufacturing solution for your turned parts or simply just require additional capacity, please contact us on

01530 513100 or

mail us at sales@tornos.co.uk



*Wishing you a successful 2005
John McBride
Head of Subsidiary
TORNOS Technologies UK*

E

Series volume: only 15 parts!

How can the versatility of the DECO be used to a competitive advantage ?

With this somewhat provocative title, the editorial team of DECO magazine decided to introduce Bandi SA, from Courtételle in French-speaking Switzerland. Attracted by the company's reputation for quality and extreme versatility, DECO magazine wanted to know more.

Our editor and Mr. Kurt Schnider, head of sales for Switzerland went to the Swiss Jura.



From left to right Messrs Kurt Schnider, Yves Bandi, General Manager and Jean-Jacques Bandi, Board Director.

Established in 1970, the company first started producing polished parts for the watch industry. From 1980 onwards, small parts turning work gradually started to replace polishing. The company now employs 38 people and has a fleet of seventy automatic lathes, including 34 DECO machines.

Bandi SA is located in an industrial estate and what immediately struck our journalist was the high level of security surrounding the company, with its surveillance cameras positioned everywhere and its electronically controlled entrance gate...

Are there any secrets that have to be safeguarded in this enclosed area? We'll soon find out ...

DM: Good day Mr. Bandi. Thank you for agreeing to meet us. We've just come across your surveillance system, which seems to be highly sophisticated. Is this to protect your know-how?

Y.B.: Hello Gentlemen! (Smiling) No, we're not protecting our know-how but because we work a lot with luxury watch industry and jewellery, we have to machine very

high quality materials, which require a high level of security.

DM: Thanks Mr. Bandi. The main subject that brings us here is the company's flexibility. This is something you seem to be most efficient in. We'd like to find out a little more about the versatility you seem to portray. Could you perhaps tell us, for example, the number of start-ups you carry out each month?

Y.B.: As indicated at the outset, we are very active in luxury small parts turning for the top-of-the range

watch industry sector. This makes us subject to two main constraints: firstly, the quality of parts executed in terms of tolerance and surface finish and, secondly, lead times. It is not unusual to have to produce small series runs for the day after receiving the order. This is why we have to be very flexible.

To give you some figures, we carry out 200 start-ups on average per month on our DECO machines.

DM: *200 start-ups a month on 34 DECO machines – this means roughly 6 start-ups per DECO machine a month... and what about your other machines?*

Y.B.: We also have TORNOS ENC162 and 164, and the ENC74 machines, which we use for larger series runs. The programming and operating systems of these older machines no way come near to the versatility provided by the DECO machines.

DM: *For your DECO machines, what is the average series run?*

Y.B.: We execute average series runs of 500 parts but what often happens is that we also have to execute series runs for 2 to 15 parts. (The telephone rang during the interview and an order was placed for 4 individual parts).



An operator in front of the tool storage system.

DM: *This is incredible – what do you do to achieve such versatility? We're sometimes told that the DECO machines are not really adapted for small series runs,*

but you are blatantly contradicting this – what's your secret?

Y.B.: The whole company is geared towards this versatility – this is a fast and personal response to our clients. We derive the maximum benefit from the DECO concept. We program in hidden time, we pre-set in hidden time and starting-up takes us on average, between 1 and 3 hours. The computerised management of all data relating to the parts means that we save a lot of time. The programs and information relating to the 5000 parts we have just produced are instantaneously available in our database. With respect to any new part, we often proceed on the basis of an existing part that has already been optimised and we execute the necessary changes. The TB-DECO has been upgraded but compatibility is maintained. This is a fantastic advantage.



Series volume: only 15 parts!

DM: *But do the staff manage to follow this rhythm? What about training?*

Y.B.: All our staff were initially trained at Moutier and then within the company. We do not have machine-dedicated operators – they are versatile and have a wide range of skills. They go from one shop to another depending on requirements and are able to perform miracles with the machines. We have several mobile programming stations in each workshop and the men can simply use these as required. We operate a three-shift system 6 days out of 7 and the average age of the workforce is around 30 years. All our operators are “immersed” in the DECO machines and share their know-how – they really are a high-performance team, who help each other out as required.

DM: *Such versatility is absolutely fantastic, but how do you manage logistic flows in terms of tooling and material? This must be quite complicated.*

Y.B.: Our company does not have a “wardrobe”! All our materials and tooling are stored in gigantic hinged storage racks that are electronically controlled. Everything is controlled by the “GPAO” system and we always know exactly what is available and what is not.

D.M.: *Fine, but if you have to react quickly, I presume your materials and tooling stock must be consistent...*

Y.B.: The parts we produce are normally between 0.8 mm and 5 to 6 mm diameter ... and we have 20 tonnes of materials in store... this is, therefore, quite consistent.

DM: *Apart from pure production, do you offer any other services?*

Y.B.: Our entire philosophy is geared towards top-of-the-range “perfect” parts. We also have all the facilities required to meet the most stringent of demands. For example, the polishing division helps us achieve visually perfect parts,

which is extremely important for horology. We carry out very strict controls. Each produced part is inspected by one of our operators. We also have 3D inspection devices so that we can guarantee the quality of our work. We also have a perfect system of parts tracing and inspection reports.

This is also a service that is sometimes requested. Regarding the packaging, we pack according to requirement, for example, individual packs, vacuum packs and so on...

DM: *Apart from watch industry, do you work for other sectors?*

Y.B.: Watch industry represents 70 % of our sales and the remaining 30 % is assigned to electronics and sub-contracting. But always top-of-the-range. Our parts are quality parts. For example, we are heavily involved in the luxury telephone sector.



The inspection department

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DM: *Still on the subject of "luxury", how to you secure your services with your clients? In other words, what do they require? What do you have to do to keep them?*

Y.B.: In fact, quality and lead-time requirements are of great importance, like everywhere else, but we also comply with process and security requirements. This is not a life-long guarantee but non-the-less means that our skills and performance are acknowledged. If necessary, the manufacturers have recourse to their approved suppliers, with our company being one of them.

DM: *If I were to say that you are a jeweller in high precision turning?*

Y.B.: You could say that, especially as we are frequently asked to produce one-off parts for top-of-the-range watch repairs. In this sense, we are the direct partners of the jewellers.

DM: *To summarise, I would say that one of your strengths really resides in your ability to react. In this context, do you have any anecdote you may like to mention to illustrate this point?*

Y.B.: (After long reflection) It's very difficult to give you an answer because this happens all the time... but I'll tell you about when one of our clients, who was at the Basle trade fair, phoned me at 14.00 hours to order a part... At 17.00 hours, the part was on the booth,

assembled and ready to be displayed. We really are partners with our customers and the versatility of the DECO really helps us to provide customer satisfaction.

DM: *We noticed that everything was air-conditioned. Is that a compulsory requirement?*

Y.B.: In our case, precision is something that is vital and has to be complied with. Air-conditioning is also a very important benefit for the repetitivity of our process. In an environment where versatility is critical, as it is here, this is something that contributes to one of our main strengths.

DM: *To come back to what we were talking about at the beginning of this article, we referred*

to the size of your series runs, as well as to protection and secrecy. Finally, is that not something you protect the most?

Y.B.: As already indicated, the security measures are obviously dedicated to the precious materials, but the image is, in fact, quite good. Our secret is based on our skills – the "man-machine" combination means that we can maintain a good position in the market. Our staff are very competent and also very responsible and I would like to thank them for this. The DECO machines have extraordinary cycle times and our operators exploit their working capacities to a maximum in hidden time – they know the machines inside out ... this allows us to offer top-quality services.

DM: *Thank you Mr. Bandi. Do you have any particular comments about the title of this article "Series volume: only 15 parts!" that you would like me to add?*

Y.B.: Yes, I believe that many small parts turning companies have different goals but the DECO really lets you tackle everything. As far as I'm concerned, it's a pity that the DECO machines are only used for large series runs, especially as its such a powerful system...



Bandi SA
Avenir 25
CH-2852 Courtételle
bandisa@bluewin.ch

TB-DECO ADV 2005

A logical extension to the range adapted to customer requirements...



The present



TORNOS launched a new product on the market in the summer of 2004, namely the TB-DECO ADV, which completes the TB-DECO range.

This new version provides improved ergonomy, an extension of the programming language so that highly complex or parameterized parts can be produced, a tool path display together with all its data, as well as the ability to be incorporated into the pre-setting system. In other words, it offers simplified programming and wide-reaching facilities to achieve exceptional performance.

The introduction of a new version of this product is anticipated for January 2005. Those operators already working with the TB-DECO ADV 2004 will automatically receive a free copy of this product when it is released.

Before speaking of the future, we'll briefly scroll through the menu to show you the main new features of the TB-DECO ADV 2005.



Angle programming

With the older versions of the TB-DECO, angles were programmed via an assistant referred to as the "Simplified contour". The 2005 version now means that an angle can be directly programmed in the ISO code. This does not basically change the concept but simplifies the work for those people wishing to use the ISO code.

Axes programming

With the 2004 version, inputting the ISO code was simplified by the automatic display of the axis label (axis number). This function has been extended to copy an operation into another operations line (channel). The axis reference (axis number) is automatically updated.

Tool catalogue

With the TB-DECO ADV, the values shown on the pre-setter can now be input without having to bother with intermediate calculations. With the 2005 version, the nominal tool values are automatically displayed when creating a new tool.

What is more, the facility of sharing the same tool catalogue for several part programs is also available. In the same way, several tool catalogues can be used for only one part program.

This function allows you to define a single tool line for the production of several parts, thereby dispensing with the need to change tools on the machine.



TB-DECO ADV 2005

A logical extension to the range adapted to customer requirements...



Summary for the DECO machines

In order to make full and unlimited use of dispensing with all calculations when pre-setting the tools, the following must be available:

- ◆ either a 2003 pre-setter or later.
- ◆ or an updated comparator for the pre-setters sold between 1997 and 2002.

Kit in mm: TORNOS spare part No. 380068

Kit in inches: TORNOS spare part No. 380069

Interface with commercially available pre-setters

Another step towards networking the commercially available pre-setters with an integral PC (Zoller, Kelch..) has been taken. An initial version of the ADV software interface with these pre-setters is now available. If you are interested, please contact Mr. Wyss at wyss.m@tornos.ch.

Option: Interface with FAO software

The most ambitious project of this 2005 version is a first step towards opening the TB-DECO to FAO software. This allows those companies operating such a system to work with all the machines imaginable.

A TB-DECO ADV 2005 software option is available to read part programs from the FAO "PartMaker" software (only available in the USA and in the UK). TORNOS is currently working with the software editors GibbsCAM, Esprit, GOelan, Master-CAM, Gewatech and AlphaCAM in

order to open out the possibilities of working in symbiosis with TB-DECO. These platforms will follow in the summer of 2005.

The logic of solutions...

When adopting a client-oriented market approach, the principal way of developing new products is by listening to customer requirements. Nowadays it is possible to machine parts, which a few years ago would have been quite inconceivable. The role of the machine manufacturer is to make it easier for its customers to produce such parts. TORNOS has always been a market leader not only in offering high-performance machines but also in providing complete solutions that incorporate their know-how. During the course of 2004, the manufacturer reinforced its range of services with respect to know-how. The latest macros sold with each machine (CNC option) will increase the capacities of DECO products and respond more accurately to demands.

◆ Elliptical milling macro

This family of macros makes it possible, in particular, to machine the inclined cones of dental implants.

Comments:

The use of such macros requires the TB-DECO ADV.

For elliptical milling in "transmit" mode, the "transmit" machine option is essential.



◆ **Macros – inclined machining or eccentric turning**

This family of macros enables different types of machining operations:

- drilling/milling of inclined holes according to a fixed angle,
- inclined thread milling (thread whirling) according to a fixed and/or eccentric angle in relation to the part axis,
- turning eccentric diameters.

Comments:

Using these macros requires the TB-DECO ADV option.

When questioned on the TB-DECO ADV, Mr. Marc Wyss, product head, talked about the "software" policy of TORNOS. "The software side for our solutions is likely to develop. The current machine kinematics mean that we can 'juggle' the power of the TB-DECO and NCs so as to achieve performances well beyond the norm. Whether we are talking productivity, precision or completely new machining solutions, it is our duty to find customer solutions".



Brief interview

DM: Good day Mr. Wyss. You are showing us a solution with the TB-DECO ADV 2004, which seems to be really interesting, but now you are talking about a 2005 version... Does this mean that the current version may be unstable and that it would be best for the customers to wait?

Mr. Wyss: Not at all! The thinking behind this staggered launch is closely related to our aim of providing customers with adapted solutions. We are now ready with these macros and with the entire interface for our TB-DECO ADV... So why should we now deprive our clients of these facilities?

DM: It is true that the "software" concept is somewhat different and could be difficult for a machine manufacturer to adapt to. But how do your clients react to this?

Mr. Wyss: I believe that it is important to respond to the requests as accurately as possible. The beauty of software solutions is that we can develop quickly. If we can provide rapid and improved customer satisfaction, then why not?

DM: Thank you Mr. Wyss. Would you like to add anything to conclude?

Mr. Wyss: Yes, thanks... Technology allows us to offer fine-tuned and adapted solutions. I would suggest that readers of DECO Magazine should contact us at the following address: software@tornos.ch. Together we shall try to search out the best solutions.

DM: Mr. Wyss, thank you very much.

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DECO Magazine:

A tool for all!

The present

Ladies and Gentlemen,
Dear Readers,

Since 1997 and 31 editions later, we have published many articles, tips, options and so on. Our aim is to provide what we consider pertinent information to all our users.

DECO Magazine is the magazine for its readers!

It is our aim to provide you with real added value! Unfortunately, it may happen that our magazine may have been lost or filed away without necessarily all the operators of the DECO and MULTIDECO having had a chance to see it.

To overcome this problem, we decided to offer a free subscription to DECO magazine to all operators of the DECO and MULTIDECO throughout the world, who would like to receive it.

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It will come your way soon...

*Pierre-Yves Kohler
Editor in chief*

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CLEANMIST® S.R.L.

Presentation



The reason that mankind runs the risk of facing certain demise is because atmospheric pollution has now reached an almost irreversible stage. The emissions produced from industrial processes, which unrelentingly pollute the atmosphere, day in and day out, without any checks whatsoever are far too high. Believing that these emissions will be diluted in the atmosphere is also a fallacy.

The error of believing that atmospheric pollution has now become part of our daily life could mean that we, quite unwittingly, will one day find ourselves with a distinct lack of oxygen to breathe.

In fact, during the day, the human being has to inhale a specific quantity of oxygen – he can survive for three weeks without food, one week without water but only three minutes without air.

- ◆ A human requires 3,600 litres of air per day;
- ◆ A human breathes 23,000 times every 24 hours;

- ◆ A human inhales 5,000,000 particles of dust per minute;
- ◆ Air pollution is one of the greatest problems of our time;
- ◆ 90% of human life takes place within an enclosed environment;
- ◆ the number of people suffering from CNSLD (Chronic non-specific lung disease) is increasing;
- ◆ the flora and fauna suffer considerably from air pollution.

This is why any system enabling “clean respiration” is very important to humans.

CLEANMIST is one of these systems – a “weapon” ready to effectively combat the oil mists generated by mechanical and industrial processes in general.

Air:

a priceless wealth

CLEANMIST® S.R.L.

CleanMist – growth and development

In 2003, CleanMist – a young company of a number of years standing and established on the basis of the experience gained by the inventor of the CleanMist unit, which filters and extracts the oil mist and fumes produced by machining operations (see DECO Magazine 4/2003), – achieved its first important targets.



The company's initial and most significant success was its ability to penetrate an international market where the competition is extensive and cut-throat. The "successful weapon" of CleanMist resides, above all, in the technological innovations made to the suction and filtration units designed and patented by the company. These consist in the production of a mobile crown with a specific hole conformation which, by way of a VENTURI effect, brings about a compression of the radial speed whilst considerably increasing mist separation efficiency. In addition, the special "pyramid" confor-

mation of the panels located inside the mobile crown, increase the contact area of the equipment with the oil mist undergoing treatment.

Added to this is the commercial research conducted over the past year, which led CleanMist to expand its own distribution network at national and international level and see its own product being marketed in many countries.

Spain and France were amongst the first countries of the Economic Community to market the CleanMist filter. These countries showed full confidence in the product and believed that the new suction and filtration system would soon be highly praised by major clients, including market leaders in the car sector. The same also applied to important machine manufacturers, which recommended that their customers should also install the CleanMist system as an indispensable means of purifying and re-introducing purified air into the working environment. This was testimony to the quality of the product.

Switzerland: thanks to TORNOS and its considerable contribution in promoting the CleanMist centrifugal filters, these latter have now been included as part of its own range of "recommended accessories". This means that other companies are now getting to hear about the CleanMist filtration unit and are installing the CleanMist centrifugal systems. The European CleanMist market speaks highly of the new distribution network, as do Norway, Portugal, Germany and



Austria. Important contacts are also underway with those countries, which have recently joined the EU.

In Italy, the sales and distribution network has already extended over the entire country, where major companies are already making use of these new filtration systems.

However, the most important aim, without which the above results would never have been achieved, is to offer a highly innovative product from a technological aspect, at a highly competitive price. Besides which, it should not be forgotten that the CleanMist filter, which was designed to improve the impact on the working environment of machine tools, is very easy to install and requires only very basic maintenance.

The stage of expansion has, of course, only just begun and very important markets (like the USA and Far East) also form part of our targets, which we hope to achieve by the end of 2004. Major Far Eastern companies, with subsidiaries throughout the world, have already requested deliveries of a few CleanMist units, which they want to put to test.

This, coupled with other important steps taken in the past year, will help CleanMist consolidate its objectives reached and put in place new strategies, in order to expand its own international customer base exponentially.



Air:

a priceless wealth

CLEANMIST® S.R.L.

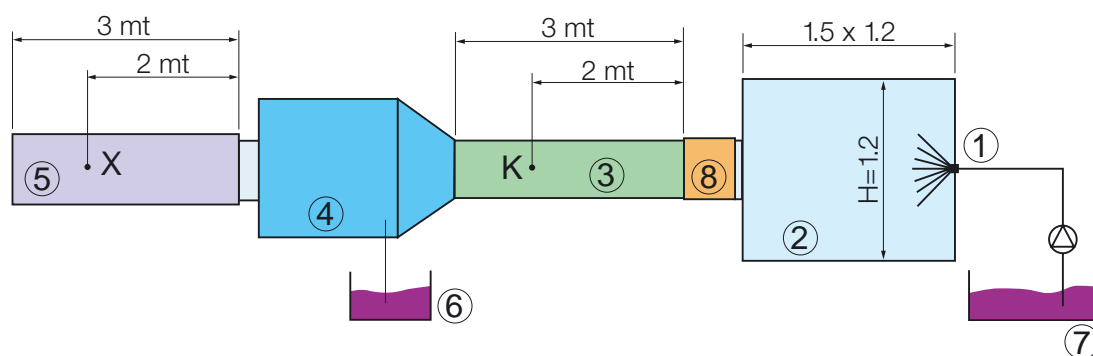


TESTING THE CLEANMIST CENTRIFUGAL FILTER

The test is carried out to determine the efficiency of the CleanMist filter.

The purpose of the CleanMist filter is to suck in the air and oil mist (water/oil and internal oil) that is produced during machining.

The impact of the cooling liquid on the part being cooled and the heat generated by machining, produce oil mists, which are normally made up of particles in the range of between 0.3-0.5 and 10 microns.



1. Vaporisation pipe
2. Suction chamber
3. Inlet pipe
4. CLEANMIST
5. Outlet pipe
6. Separated oil collector
7. Cooling liquid trough

*K = inlet sampling point
X = outlet sampling point*



Via Andrea Zappellini, 11
21052 Busto Arsizio (VA) - ITALIA
Tel./Fax +39 0331.44.19.53
e-mail: info@cleanmist.it
www.cleanmist.it

Tests carried out previously on machine tools, using the CleanMist unit alone, produced efficiencies of 98% on emissions and when the final electrostatic filter was also used, these values exceeded 99%.

In all instances, the emissions were less than 5 mg/mc required by current standards. The purified air can also be re-introduced to the working environment.

Fifty eight years old

and still young



It is surprising to see two young dynamic entrepreneurs putting their trust in the experience of older operators to execute very high-tech products. At Pöschl, a company manufacturing precision-made turned parts, located at Germering, near Munich, things have always been a little different compared with conventional companies. The two current managers and creators, Jürgen Palombo and Erwin Zitzmann, are pursuing this tradition and demonstrating their success by applying unconventional methods.

Josef Pöschl, the youngest foreman of Friedrich Deckel GmbH, had just turned 30 when he set up his business in 1960 in Munich, in a garage fitted with two second-hand Bechler lathes. Over the next 30 years, his modest workshop changed to a well-performing sub-contractor, capable of producing small turned parts of all kinds. When his two like-minded colleagues, Jürgen Palombo, commercial manager and Erwin Zitzmann, technical manager, took on the management of the company, they were able to build upon a solid base. They clearly benefited from this and have created a company that now produces 20 million small turned parts on more than 50 lathes. But note – this was not achieved by run-of-the-mill, cheap products but purely through high technology. “We’re not in the least bit interested in mass cheap products”, Erwin Zitzmann explained, “we only start becoming interested when the others throw in the towel”.

800,000 parts for the Atlas experiment

Jürgen Palombo and Erwin Zitzmann are very proud to have received an order from the CERN laboratory of Geneva. This European research establishment into particle physics launched an international invitation to tender to develop a special twister, for the core of its centre – the Atlas detector. This involves centring 400,000 thin metal wires in 4 metre long tubes and passing them through in such a way that they are absolutely parallel to one another. The essence of this twister

is a visual hole with a diameter of 0.6 mm and a tolerance of ± 0.1 mm. Many major groups have been knocking their heads together about this project without success, except for Erwin Zitzmann. During the evening, when things were quiet in the company, he sat in front of the TB-DECO program of TORNOS and “tinkered around” until he found the solution. “In my opinion, the TB DECO control by TORNOS is the only means of overcoming such a complex problem”, Erwin Zitzmann now stated.



The most difficult thing was measuring the precision and repetitivity and especially documenting this. There was no measuring program for such type of part. In co-operation with the Max-Planck Institute, the company developed a measuring process, which checked the quality by approximation. "We needed a lot of confidence in our TORNOS machines", Jürgen Palombo added, "because had we failed in executing this order, this would have cost us our existence". Nowadays, the 800,000 parts are supplied to assembly plants scattered throughout the world and not one has been returned.

A rate of return in the order of one in a thousand

Apart from the complexity of their parts, Pöschl is also very proud of their quality. The rate of return is in the order of one out of every thousand, which, the managers explain, is mainly due to the fact that they only employ specialist operators. "We don't retire anyone at 58 years. We can all benefit from the experience of a colleague of such an age. We endeavour to meet a balance between the older and younger workforce. We invest considerably in training and pay great attention to the atmosphere prevailing in the company". It's enough just to see the production shop: well lit, well arranged with a logical positioning of the 50 lathes that are grouped into production units. It goes without saying that the automatic TORNOS DECO single-spindle lathes are one of the strong features. "Our father-in-law started to purchase this brand and we have a lot of confidence in their machines. Thanks, in particular, to their intelligent control, these machines have all the advantages that cannot be found elsewhere. What is more,



Fifty eight years old

and still young

they are extremely accurate and, as we have come to expect of a Swiss make, their quality and availability are exactly what we are looking for".

"We do not assess any specific part"

When he talks about the TB-DECO control, Erwin Zitzmann is full of praise. The company now has more than 500 programs, carefully filed and accessible at any time. This explains why Pöschl is so efficient when it comes to submitting its quotations. "We don't, in fact, evaluate any part as such, but rather produce an accurate cost price. This goes well beyond what is normally carried out. Our cost calculation generally includes up to 100 parameters", according to Erwin Zitzmann, "as well as 'machine' parameters, the time involved and equipment time. For some parts, the bar change can take up to 30 % of production time and any small parts turner who fails to take

account of this, will see his costs rocket. As regards equipment time, our colleagues and the TORNOS machines obviously give us an advantage, but we've still got to find new ideas practically every day. This is why we minutely examine the purpose of all machines, so that we know what part can be turned on what particular machine and for how long. This planning phase is always an organisational performance of the ultimate degree." To carry out such work, Erwin Zitzmann benefits from the diversity and compatibility of the TORNOS machines. But despite this precise planning, versatility nonetheless remains an ever important factor. Without warning, the client suddenly turns up and wants his parts – usually immediately. And this is where it is necessary to improvise – an art-form Pöschl has also been able to master.

This philosophy has always been behind the company of Jürgen Palombo and Erwin Zitzmann during its expansion. Only during

the past two years, they invested at least 3 million Euro in new CNC machines. "We must stay at the forefront in order to continue winning", Jürgen Palombo stated, "and with TORNOS, we have found the partner we need at our side".

***Pöschl Drehtechnik GmbH
Industriestrasse 10
D-82110 Germering
Telephone (+49 89 44 54-0)
Fax (+49 89/89 44 54 -44)
E-mail : info@poeschl-gmbh.de
www.poeschl-gmbh.de***



PX Tools,



the special applications specialist...

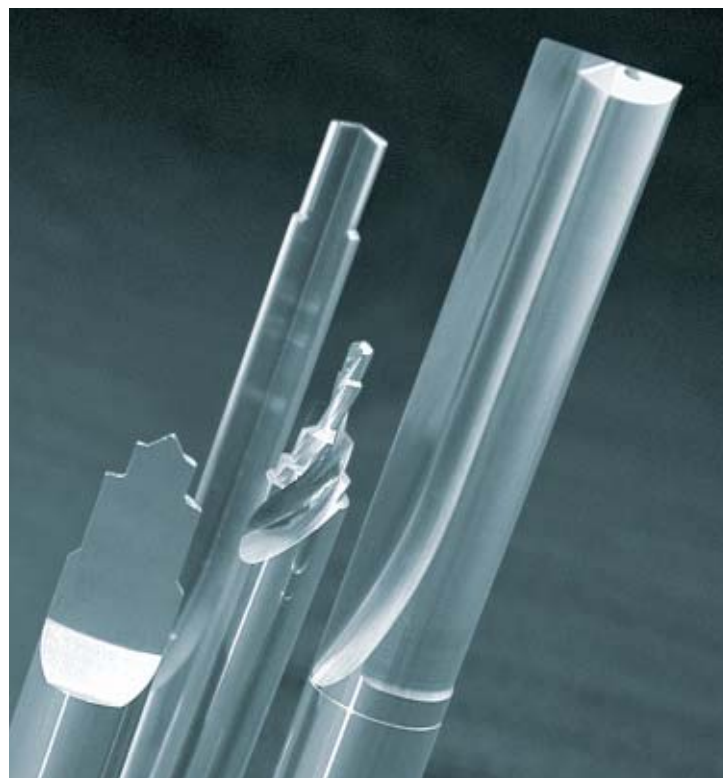
**A manufacturer who specialises in extreme applications ?
That was enough to send DECO Magazine off on their enquiries.**

Mr. Auderset, manager of the company, talked about the key skills of PXTools: "A tool that you can't get hold of, a tricky machining problem... we are here to be of assistance. When we help out, we guarantee very short lead times".

(Photo 1 and 2)

To illustrate the know-how of PX Tools, i.e. the execution and marketing of tools and miscellaneous parts made from heavy metal, HSS, ceramics and PCD as well as grinding wheels and abrasive diamond pencils and CBN, we wanted to know the main areas these tools were deployed in and what their strong points were.

1



DM: Mr. Auderset, could you specify the areas you are involved in?

DA: We have solutions for many areas that make strong demands of us, such as the medical sector. We produce machining tools for dental implants, bone implants, eye implants, internal prostheses, internal fixing devices and bone fixing screws. Our other fields of application include watch industry, precision engineering, the machine sector, automotive industry, aeronautics, jewellery and glasses etc.

These sectors make stringent demands on machining solutions. The acquisition of a CNC, 5 axes Zoller measuring machine – the so-called

"genius 3 micro" meant that we were able to provide complete test protocols.

PX Tools can even provide tools together with special data registered on a bar code label, which is directly incorporated into the packaging. This guarantees perfect traceability.

2



DM: You seem to have acquired vast experience of materials...

Indeed! PX Tools is a company of the PX Group, the purpose of which is to produce and work the material. Consequently, PX Tools benefits from the support of the R&D PX Group laboratory to analyse the materials and optimise the cutting tools. This enabled us to acquire even more information.

PX Tools,

the special applications specialist...

DM: *Could you give us a few application examples for your tools?*

DA: These examples will, inevitably, be limited since our know-how is truly based on our skills of being able to produce a fine response to extreme requests, but here are a few examples.

Form milling with logarithmic clearing

As soon as the useful life of the tool becomes a decisive criterion, the obvious solution is logarithmic clearing because this is the only technical means available for increasing regrinding operations without having to change the geometric parameters of the tool.

The reduction in the number of passes resulting from the use of the form tool produced by PX Tools, is translated by a reduction in cycle time and hence has a direct impact on production costs.

(Photo 3 and 4)

Thread whirling

Thread whirling is more economic and precise than conventional methods and has now become a vital part in modern machining processes. It is applied both in the dental and medical sectors, as well as to such sectors like horology and general small parts turning.

The thread whirlers offered by PX Tools, machine very small threads and produce exceptionally high quality surface finishes. The threads in titanium or stainless steel parts can be worked in a single operation without reworking. The minimum possible internal radius is 0.02 mm.

(Photo 5)

4



3



Broaching tools

Available in all shapes and dimensions, these PX Tools broaching tools and punches are characterised by their extreme precision and very long useful life.

(Photo 6)

Exceptional results:

The GEMINI company, located at Bevaix (NE Switzerland) challenged us with the following problem: to optimise drilling a blind hole with a diameter of 0.9 0/+0.02 mm in copper. The aim of the manager,

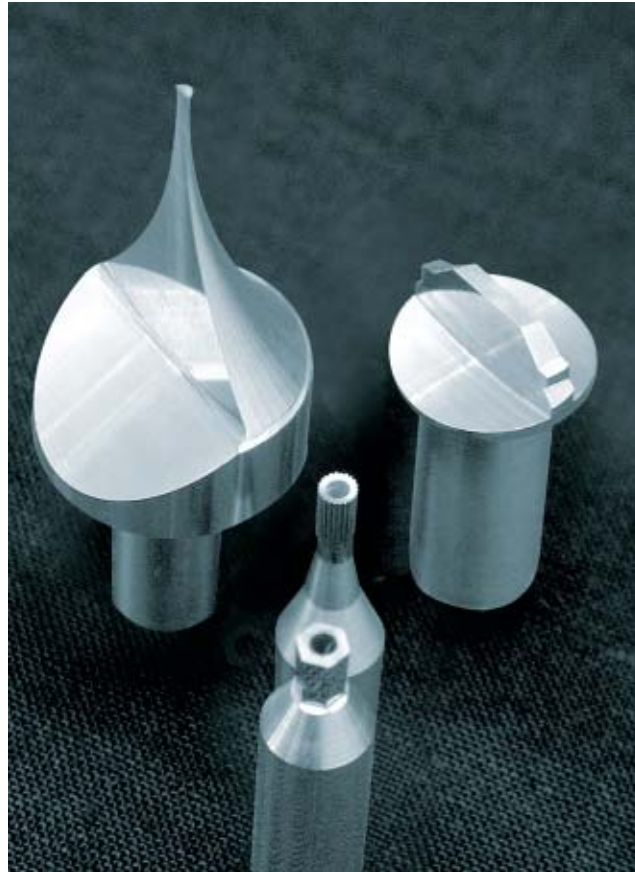
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Mr. Patrick Langel, was to increase the number of drilling operations and improve surface quality. In fact, at that time, the drills had to be replaced after less than 2000 holes.

Following an on-site investigation, we produced a PCD drill with pointing device (for use without pre-drilling). To date, 200,000 holes have been drilled and the drill is still working well!

It was possible to achieve this result owing to the upgrade of a new generation of PCD micro-drills, as a result of our co-operation with Colay Diamants ODI SA.



5



These tools are characterised by their high machining performance of complex materials, such as non-ferrous metals, platinum, precious metal alloys, plastics and glass fibre.

The savings made when using these highly stable tools that show considerable resistance to wear are even further increased, given the fact that they can be reground.

(Photo 7)

DM: *I would like to thank you, Mr. Auderset, for this information. Now if I had a machining problem, what should I do?*

DA: Our engineers are available and will gladly visit customers and future customers to give them advice

7



and help them overcome their machining problems. We are present throughout Europe and in Asia. In order to offer the best service and react quickly, we simplified our cross-frontier operations throughout Europe, since PX Tools France now deals with customs-clearance and invoicing. With regard to Asia, our agents in Malaysia act as the interface with our parent company.

Would you like further information? Please do not hesitate to contact:

PX Tools SA
Passage Bonne Fontaine 30
Case postale
2304 La Chaux-de-Fonds
(Switzerland)
Tel +41 (0)32 924 0900
Fax +41 (0)32 924 0999
E-mail: pxtools@pxgroup.com
www.pxgroup.com

More facilities

and greater control!

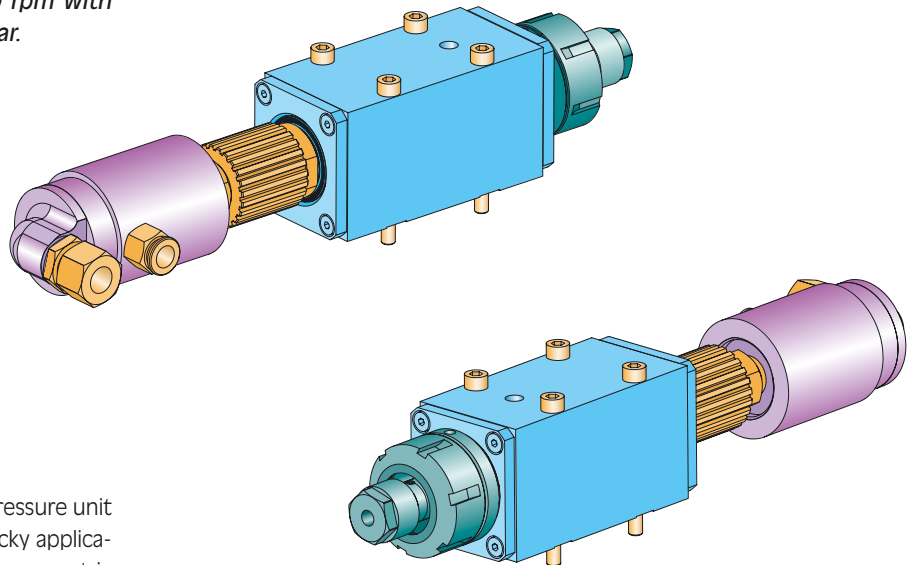
Two new options have just been added to complete the vast assortment available for the DECO range.

- ◆ Drill rotating at 8000 rpm with central cooling, 120 bar
- ◆ Automatic tool correction by RS232

Let us go to the menu and see the various strengths and characteristics of these new facilities.

Option No. 3310

Drill, rotating at 8000 rpm with central cooling, 120 bar.



Application

When using the high pressure unit for executing highly tricky applications or for executing eccentric bores, the conventional high pressure system is no longer adequate.

A rotary device has to be deployed in order to use the high pressure. Apart from executing eccentric bores, this option guarantees maximum quality in terms of concentricity and bore.

Remark

This option requires a high pressure unit.

Never rotate the unit with the drill if the latter is not guided.

Compatibility

DECO 20a and DECO 26a

Ex-works

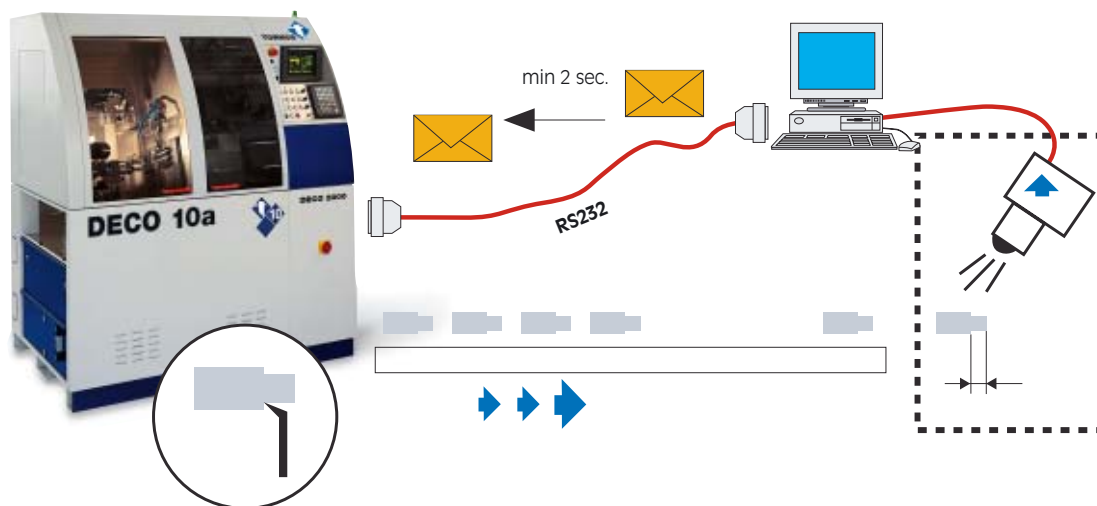
Technical characteristics

- Assemble in position T31 and T32 (use both positions).
- Position loss.
- Max. speed : 8000 rpm.
- Max. pressure : 120 bar.
- Drill $\frac{3}{4}$ dia. 10 with Weldon tail (BOTEK for example).
- Z adjustment approx. 30 mm.
- Max. drilling depth 115 mm (length of drill 130mm).
- An extension set (565373) is provided with the unit where the drills are shorter and can be used with drills of between 95 to 60 mm long.
- EX 32 clamp system, max. clamping diameter: 31.
- Min. drilling diameter: 2 mm.



Option No. 7051

Automatic tool offset by RS232



Application

In order to be able to monitor and compensate for machining operations on DECO machines in real time, TORNOS provided an interface with the parts measuring system (for further information, contact the Industrialisation Division, faivre.b@tornos.ch).

The operating principle is as follows: A unit analyses the edge deviations on produced parts and, via RS232, sends the tool wear offsets required to the machines for machining the following parts. These tool offsets are input and taken into account in the DECO machines without interrupting production and without the operator having to become involved.

Remark

TORNOS supplies the interface with the measuring systems but does not supply these particular systems.

The machine does not proceed with any "analysis" of the tool offsets received (mean, mathematical processing etc.).

DECO will only accept tool wear offset telegrams. A telegram will not be sent from the machine.

When the machine starts up, the system automatically comes on if it has previously been actuated. The offsets already registered remain active.

MDI mode must be selected on the CNC.

Compatibility

All DECO machines

Technical characteristics

Number of possible offsets:	8 (tools)
Connection:	via RS232 socket
Available from:	September 2004



MOTOREX

Reader service – Know-how on call

As a result of the close co-operation between TORNOS and MOTOREX a large number of real innovations have already been developed to date and many interesting subject areas have been tackled in small parts turning. Have you missed the odd article or would you like to learn more about a specific machining method and the products suited to it? This reader service will help you do this.



The correct machining fluid, be it cutting oil or cooling lubricant, is one of the main success factors in the production process, along with the tools and the machine tool. The constant changes have not stopped at small parts turning and only those, who keep themselves up to date, will be able to benefit from the advantages of the new technologies in practice.

Valuable experience collected for you

Experiences that you have had yourself often have a positive effect on the learning process. Unfortunately, this often also means paying money for an apprenticeship. However, for a com-

mercially aligned company this is nowadays out of the question. This is why it makes sense to learn from the experiences of others. At the after-sales service of MOTOREX AG in Langenthal, customers' experiences are therefore recorded anonymously and grids produced of basic pre-conditions and measures to be taken. The ever-growing bank of knowledge brought together in this way is used exclusively to develop products and processes. This means that the experts at MOTOREX can skilfully and rapidly assess and resolve recurrent situations. Many a technical challenge has already been overcome using the right product from MOTOREX.

Versatile and interesting: the world of small parts turning

Whether your questions are to do with the professional care of cooling lubricants or the evaluation of the correct cutting oil for hard-metal machining, the versatile collection of topics will most probably give an authoritative answer to one or other of your questions. Use the fax form on the opposite page and request a free copy, without any commitment on your part, of the article you are interested in, together with other valuable information.

The experts at MOTOREX will also be pleased to help you with any other problems:

MOTOREX AG Langenthal
Lubrication technology
Postfach

CH-4901 Langenthal
Phone 062 919 74 74
Fax 062 919 76 96

or send us an e-mail:
motorex@motorex.com
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Please send me information about the subject areas listed and the products used (please mark with a cross):

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Portrait of MOTOREX AG

DECO Magazine 13



Care tips for cooling lubricants

DECO Magazine 15



VOC-free corrosion protection

DECO Magazine 16



Comparative test ORTHO 400 cutting oil

DECO Magazine 17



TOPTECH care - and maintenance units

DECO Magazine 18



MOTOREX SWISSCUT cutting oils

DECO Magazine 19



MOTOREX SWISSCOOL cooling lubricants

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Economical machining of castings

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Detail: precise thread whirling

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MOTOREX 'max-Technology'

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Universal cutting oil ORTHO NF-X

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Noticeably reduce tooling costs

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High-precision reaming

I would also be interested in the following topics:

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Date: _____

