DECO MAGAZINE 29
2/04
M A Y
ENGLISH

Think parts
Think TORNOS

APPLITEC
SWISS TOOLING

Energy
optimisation

TB-DECO ADV:
New Philosophy

Multispindle
Flexibility &
Efficiency
at John Guest

Motorex:
New cutting oil
technology

Think parts
Think TORNOS

Watch industry

IMPRESSUM
DECO-MAGAZINE 29 2/04
Circulation: 12000 copies

Industrial magazine dedicated to turned parts:

TORNOS SA
Rue Industrielle 111
CH-2740 Moutier, Switzerland
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

DECO-MAG is available in five versions:

English / French / German / Italian / Swedish

Summary

E

Material impacts

on the precision machining industry

Typically this space is devoted to a report from one of TORNOS' subsidiaries. However, this month we wanted to provide you with an update from the Precision Machined Products Association about an issue that is impacting our industry on a global scale: the enormous surge in raw material costs. Most everyone is busy quoting jobs today in part because rising material costs are causing buyers to seek defensive pricing in hopes they can secure a lower price.

The following article has been abridged and reprinted with permission from PMPA's Ideas At Work, April 2004.

Material impacts on the precision machining industry

Materials markets in March 2004 saw record pricing surges in a number of materials and commodities. Continued demand from China remains convincing that these are structural market changes, not merely price spikes. In addition to exponential growth in demand from automobiles in China, the need for materials there are also driven by equipment and infrastructural developments for the 2008 Beijing Olympics and the 2010 Shanghai World Expo, as well as the nation's continuing economic transformation. Decrease in value of the U.S. dollar has also contributed to higher prices for many commodities.

Aluminum – Up 29.95 % since June 2003

Automotive is the largest market for aluminum. Demand for greater fuel efficiency and lighter vehicles are expected to increase by one half aluminum's current per vehicle share by 2010. As with steel, China is a major global influence as a consumer of 20 % or more of global aluminum output.

Brass – Up 79.58 % since June 2003

In 1999, 866 million pounds of copper alloy scrap were exported, and China was 10 % of that total. The 1.2 billion pounds of copper-based scrap shipped to China last year exceeded the total shipped to all countries in 2002.

Copper – Up 81.17% since June 2003

Petitions to restrict the export of copper and copper alloy scrap were filed with the U.S. Department of Commerce by Copper and Brass Fabricators Council and the Non-Ferrous Founders Society on April 7, 2004. The petition points to rising demand for copper and copper alloy scrap in China as "responsible for the excessive drain of the scarce metal materials and the resultant price increases and shortages in the U.S. market."

Nickel – Up 73.55 % since June 2003

Currently the world market is operating in a nickel deficit. If nickel continues to be in short supply, look for quotes of manganese/copper substituted for 203 Austenitic Stainless for the typical grades we're used to seeing.

Stainless – Up 9.46 % since June 2003

While stainless is primarily made of chromium, nickel is less abundant and far more volatile. Generally speaking, the pricing of stainless closely follows the cost of nickel. With the U.S. currently neither mining any nickel or ferrochrome, nor maintaining its stockpile of nickel, the U.S. is now 100 % dependent on foreign imports for these two key ingredients of stainless steel.

Steel – Up 167.84 % since June 2003

The global demand for steel is driving the current high demand for scrap. Scrap is over 90 % of the feedstock used by most minimill and electric furnace producers of steel. Long lead times and poor availability of finished stock are additional steel related concerns. Steel production by Asian producers is up, but prices have also increased.

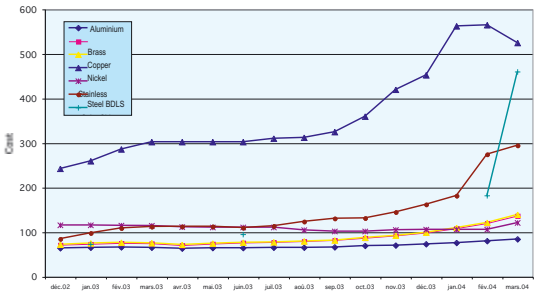
Coke – Up 384 % since June 2003

Delay and limitation of export licenses for Coke in China have bid the prices up as high as $460 per tonne (metric ton) according to reports from Great Britain. Demand and increased production and transportation costs in China are likely to maintain pressure on Coke prices for the foreseeable future. Coke is used in blast furnaces to make hot metal iron for use in the basic oxygen steelmaking process.

China Developments

***C**hina Facts:* World's largest importer of scrap; ITC reports China purchased almost 2.8 million metric tons, or 30 % of U.S. scrap steel exports in 2003. China accounted for 90 % of global steel growth since 2002, and 25 % of the world's output of steel last year.

Price Trends PMPA Raw Materials Chart



***A** Tale of Two Chinas:* While the containers of finished goods for export continue to move like clockwork through China's modern container ports, shippers of bulk cargoes into China are reporting extended delays, waiting for the opportunity to unload. Shortage of railroad cars and loss of priority for rail shipments are cited as the major factors.

***W**all Street Journal* reported March 11, 2004 that "China's industrial production soared 23.2 % in February from a year earlier to 370.93 billion yuan ($44.82 billion)…growth in China's annual gross domestic product of 9.1 % from a year earlier, the highest rate for six years." *(WSJ March 11, 2004 China's Industrial Production Surges)*

Miles Free
Director, Technology Services
Precision Machined Products Association

We are hopeful this article has been informative about the current market and resource conditions that are contributing to rising material costs. For the complete article, visit

www.pmpa.org.

Mark Saalmüller
National Sales & Marketing manager
TORNOS Technologies US Corp.
msaalmuller@tornosusa.com

APPLITEC

SWISS TOOLING

Several innovations complete a range of high-performance tooling.

More dynamic than ever before, this cutting tool manufacturer is now launching a new series of tools, a new general catalogue, not to mention an attractive Internet site. At the same time, new sales partners are reinforcing the distribution network, the efficiency of which contributes towards customer satisfaction.

Since 1988, the APPLITEC company, with its base in Moutier, Switzerland, has specialised in the manufacture of high-performance tooling for the small parts turning. In particular, the company's products serve as a reference for operators of automatic, tailstock lathes, with a bar passage capacity not exceeding 26 mm (or one inch).

APPLITEC now has a workforce of around fifty and exports the bulk of its production within Europe, to America and South East Asia, as far as Japan, which is currently its largest export market.

It is mainly because of the company's innovative developments that APPLITEC tooling rapidly became known for its performance. The original solutions (patented) of fixing the cutting inserts to the insert holder meant that an extraordinary level of strength could be achieved.

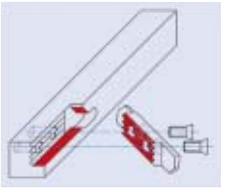
The products

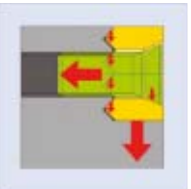
The APPLITEC products, which you can now discover in the new general catalogue and by consulting the company's website on

www.applitec-tools.com

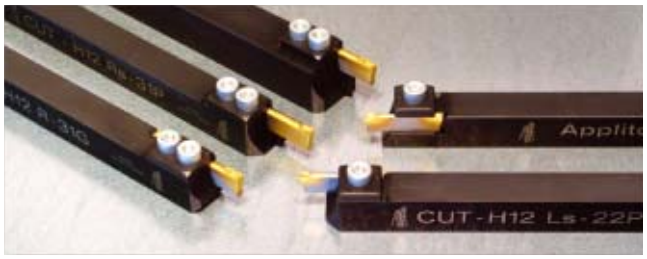
are broken down into 5 product lines:

1. The **TOP-line** series (type 300/700). This tooling line with inserts combines maximum performance with a vast choice of geometries and dimensions (more than 800 references available, not to mention the different qualities).

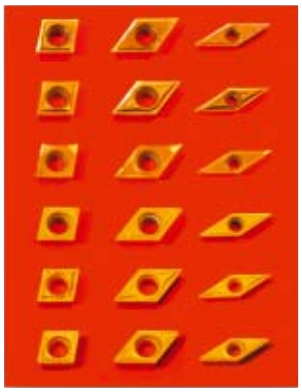




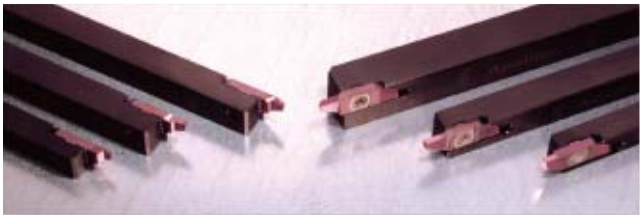
2. The **CUT-line** series. A very strong and economic range of tools for machining grooves and for turning and cutting, with excellent chip control on account of the sophisticated insert geometries.



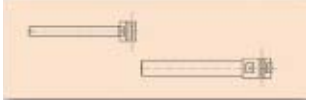
3. The **ISO-line** series of ISO type tools, especially adapted to small parts turning with insert radii available from 0,05 mm and with square section tool holders of 8 x 8 mm to 20 x 20 mm.



4. The **ECO-line** series – a very economic range of tools that can meet the latest restrictions in some sectors of the market. A new insert clamping concept ensures easy, precise and rigid assembly.



5. The **TOOLING-line** series offers a vast choice of small right or left cutting tools, together with tool holder and mandrels, which are essential to complete the tooling equipment for an automatic lathe.



APPLITEC SWISS TOOLING

The company

APPLITEC now has a workforce of around fifty employees. The buildings currently occupy 1800 m² of useful surface area.

Main building housing the cutting tool production facility, the stores and administrative offices.

New building for manufacturing steel parts (tool holders, mandrels and accessories).

Modern production shop.

Finished products store. Standard items are generally available from stock.

APPLITEC
SWISS TOOLING

Contact

Applitec Moutier SA
Chemin Nicolas-Junker 2
CH-2740 Moutier
Tél. +41 (0)32 494 60 20
Fax +41 (0)32 493 42 60
info@applitec-tools.com

The Internet site
www.applitec-tools.com
also provides details of the various partners in the APPLITEC sales network throughout the world, as well as all product-related information and documents (catalogues can be downloaded in PDF format).

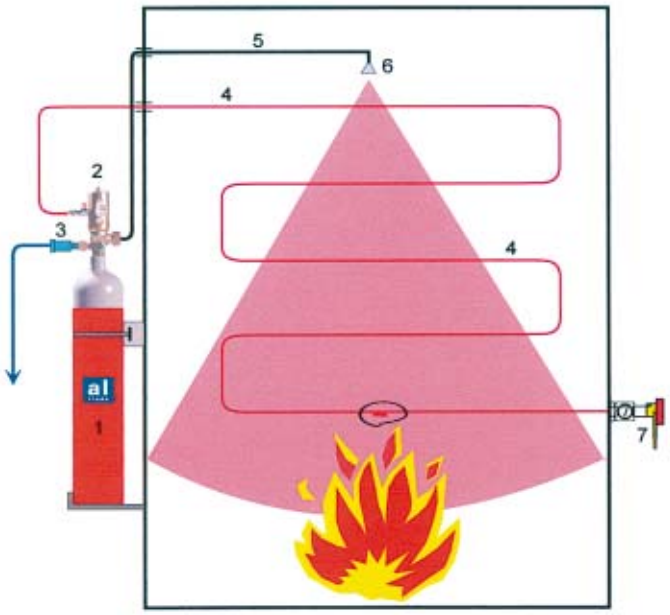
The greatest physical threat to companies involved in the machining sector.

Fire !

In recent years, fire risks have constantly increased in the machining sector. The reasons are, in fact, obvious. The rapid development of machines and tools has resulted in a steady increase in cutting rates. Requirements have also risen sharply in respect of materials. This means that many companies have been compelled, for reasons of cost, to make full use of their fleet of machines by operating a phantom shift.

Our experience with companies in this sector shows that every 4th company has had to put up with one or more fires over the last 5 years. It is not unusual for the consequential costs to amount to several hundred thousand francs or even reach the million mark.

In spite of this, automatic extinguishing systems have, up to now, only been used in isolated cases. One reason for this is the high price of conventional systems and another is the deregulated insurance market with premiums that do not reflect the risks. It must be assumed that in future, insurers will no longer be willing to bear such high risks, without making corresponding demands of their customers. It should be a vital aim of a company to keep to a minimum the extent of damage and hence loss of production by deploying appropriate means.



Main components:

1. *Extinguishing container*
2. *Special valve (IHP)*
3. *Reversed contact free of potential for alarm*
4. *Detection pipe*
5. *Fire extinguishing pipe*
6. *Extinguishing nozzles*
7. *Manual switch*

Quotation from a court judgement:

*"**I**t is consistent with our experience of life that a fire must be expected to break out at virtually any time. The fact that no fire has broken out in many buildings for decades, does not prove that there is no risk, but rather that it is a matter of luck for those people concerned, and is a situation that must be expected to change at any time".*

Gelsenkirchen administrative court, Münster higher administrative court.

al-deco, the optimum, flexible solution. The al-deco extinguishing system, with its unique price-to-performance ratio, provides the solution. Thanks to the amazing simplicity and robustness of this system, it is precisely pre-destined for applications in this field. The cost of efficient fire protection, in the form of a retrofit to a machine tool, is less than 1% of the machine's capital investment, depending on the size and nature of the machine.

Practically one in ten of all Al-trade installed extinguishing systems has already proved itself in the real thing. All these fires were extinguished within a few seconds and production was resumed within a short period thanks to the extinguishing gas, which leaves no residue and is non-corrosive.

Method of operation

The «al-deco» fire extinguishing system from Al-trade is unique in its technical design. The core is a hose, made from specially developed, high molecular polymer, which is positioned, according to fire risk, as a linear sensor in the item being protected. This detection hose, which is connected to a bottle of extinguishing agent by way of a special valve, is permanently under pressure. As soon as its ambient temperature exceeds 110°C it bursts. The drop in pressure causes the pneumatically-operated bottle valve to open, thereby triggering the extinguishing system. A separate line and appropriately located nozzles are used for extinguishing.

Visit us at the SIAMS, Hall 2/Stand C-08. You can obtain further information from:

ALTRADE AG
Baarerstrasse 112
CH – 6300 Zug
Tel. +41 (0)41 760 40 00
E-Mail: info@altrade.ch
www.altrade.ch

Energy optimisation

Operators of DECO single-spindle machines constantly use this function, which has featured in the TB-DECO since version 4. It also brings more to the multispindle users.

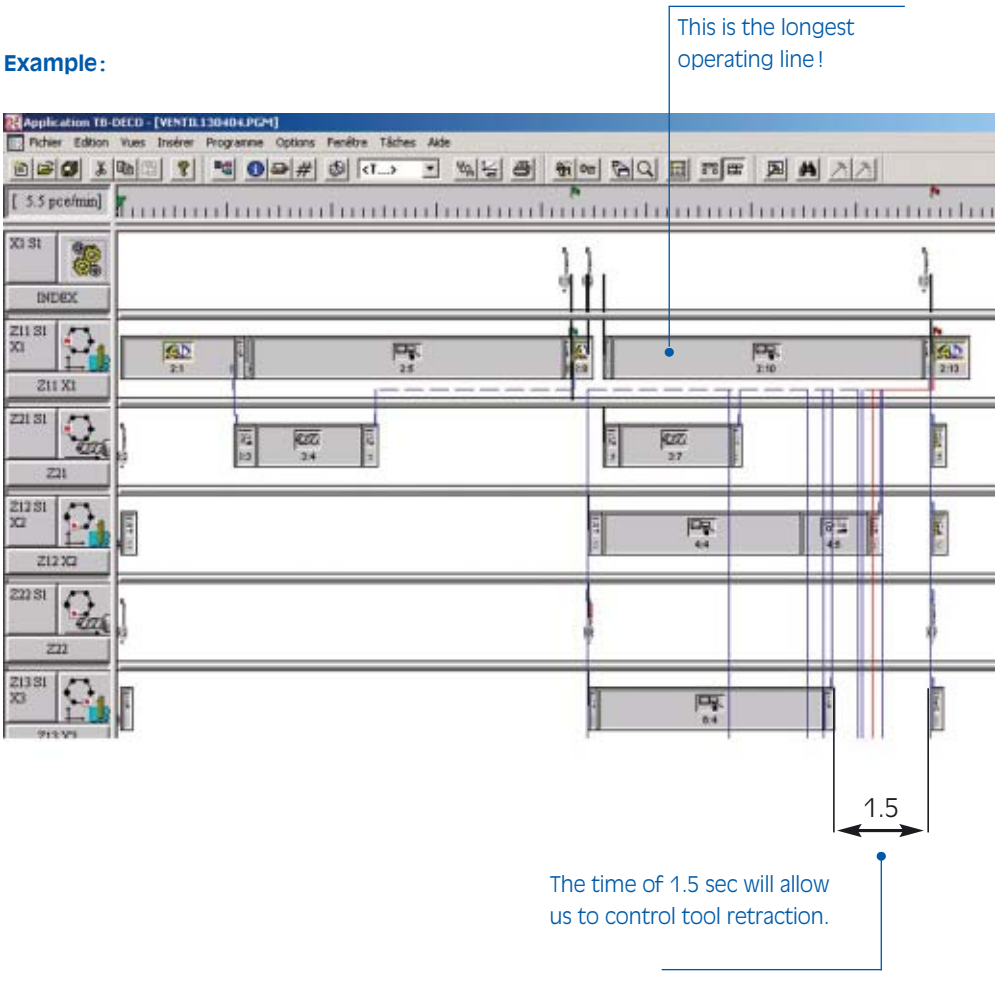
It will be necessary to go back a little in time to understand the usefulness of this function.

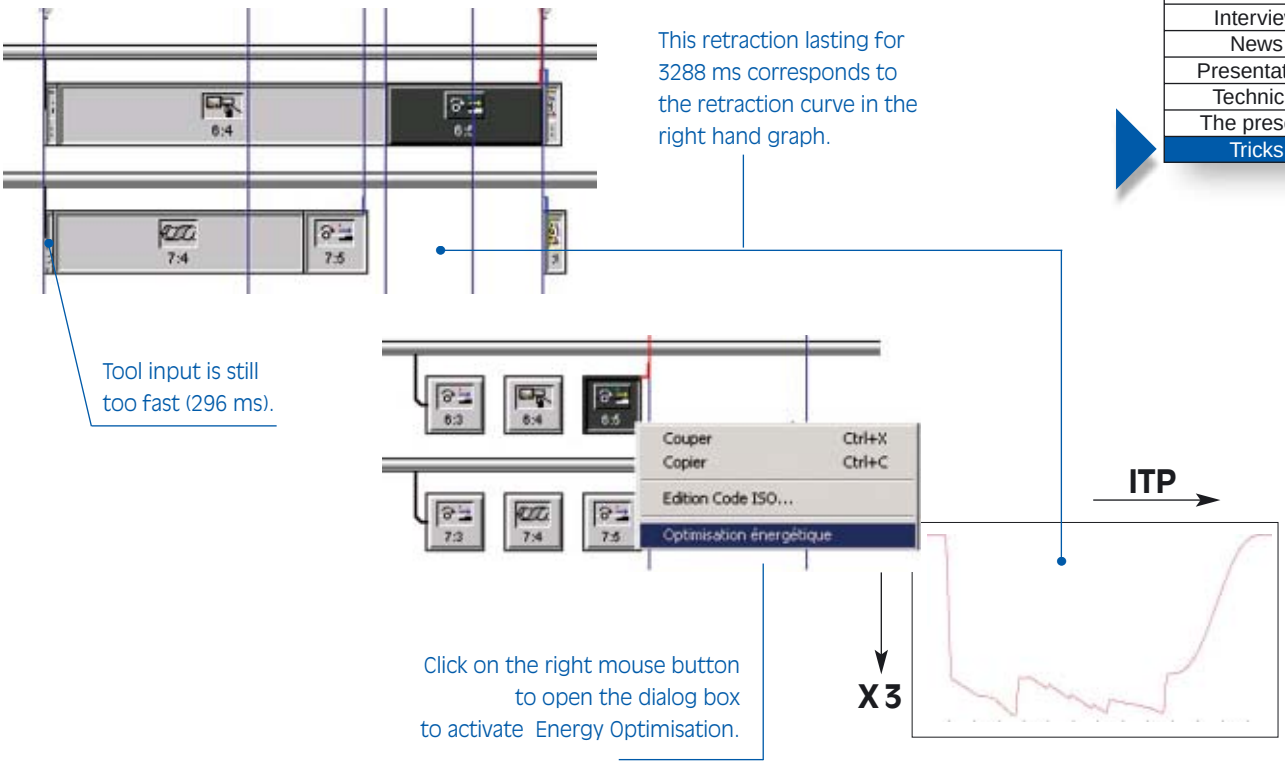
What user of conventional multi-spindle machines does not keep at the back of his mind the fact that a roller, cam or other machine element suffers premature wear?

Nowadays, this type of problem is quite unknown with the MULTIDECO. However, we must be aware that the ongoing research into optimum output again puts the smoothing of inputs and retractions on the agenda. Axis dynamics is such that the use of ENERGY OPTIMISATION leads to substantial savings by keeping those components forming the kinematic chain of axes (i.e. belts, bearings, ball screws etc.) in tip-top condition.

It goes without saying that optimisation would only be of interest for a restricted number of positions and where production runs involve several weeks. Its use must be reviewed on a case-by-case basis.

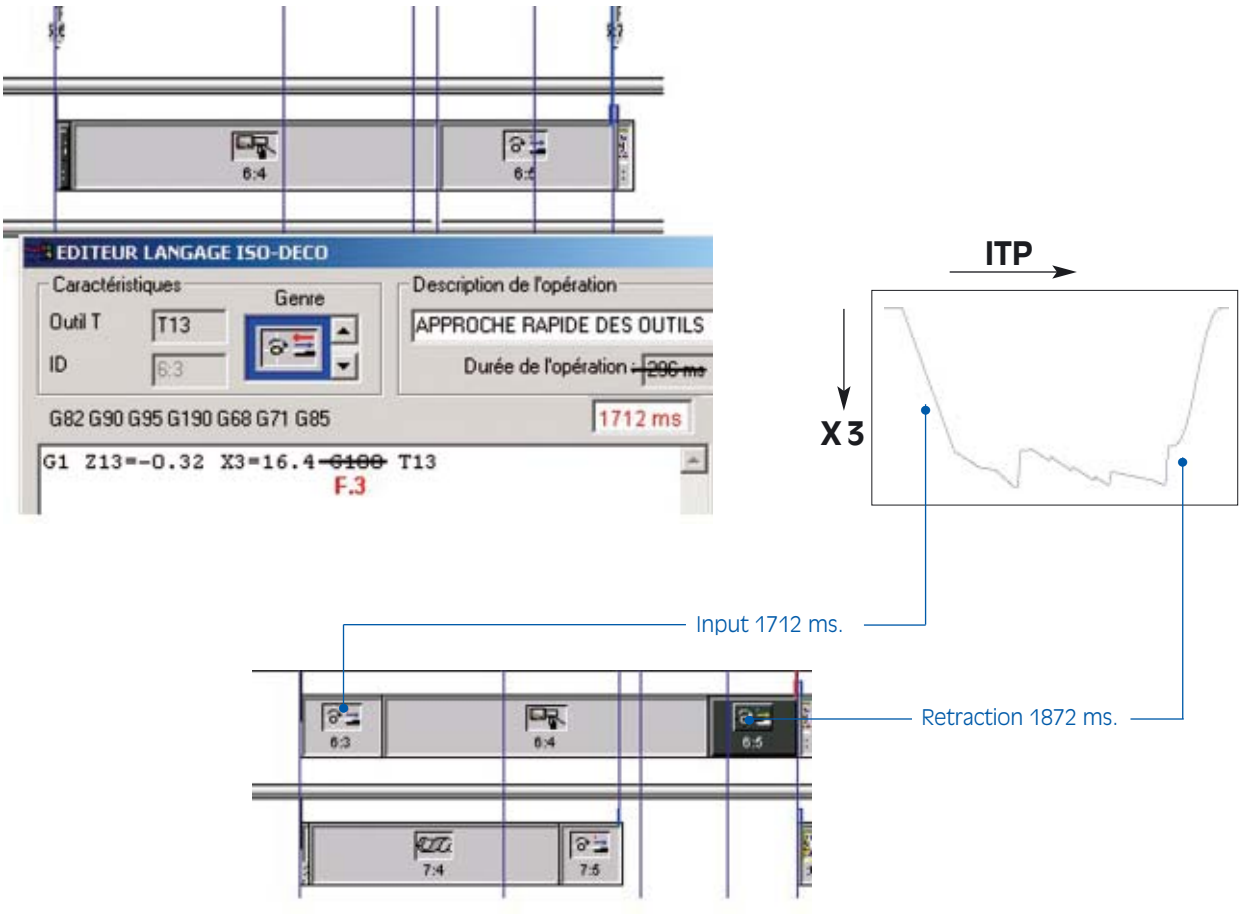
Example:





We can see that EO only becomes effective during retraction. To slow down the input rate, we program a feed in mm/t, so as to balance out input and output.

Example:



«TB-DECO ADV»:

New philosophy

The latest in TORNOS software solutions!

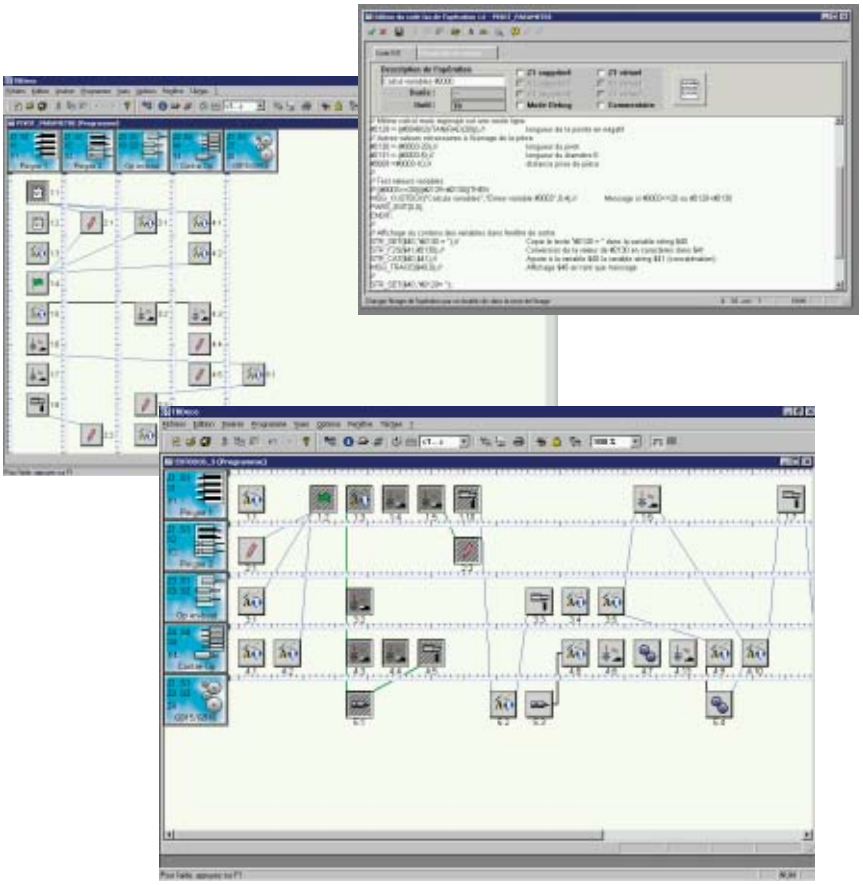
In order to shed some light on the rumours of innovations that have been reported to the editor of DECO Magazine, our journalist met Mr. Marc Wyss, product manager of TB-DECO products. He wanted to find out more about this development and the manufacturer's organisation in this respect.

DM: Good day Mr. Wyss. You are in charge of the newly created TB-DECO products job. What does it entail?

MW: Just like the machines, the TB-DECO must be managed in a business-like manner and the job I am now holding, has been created with this in mind. TB-DECO is a product that allows the TORNOS solution to be acknowledged as amongst the most efficient on the market. It is an integral part of the success of TORNOS machines and consequently, benefits from a clear upgrade strategy.

DM: I understand that software is treated more like an independent product rather than forming part of a whole. How then should the TB-DECO be considered as a product when its use is interlinked with the operation of TORNOS machines and, what is more, is included in the price of the machine?

MW: You are quite right to raise this question. In fact, TB-DECO is an integral part of the solution provided by TORNOS and there is no question of separating it out. Where our approach is interesting is that we can develop associated products, such as the "TB-DECO ADV", which will complement the basic TB-DECO version supplied with the machine. We can say that "TB-DECO ADV" is an additional product that provides more.



DM: As a user of TB-DECO version 6 or older, how do you upgrade to "TB-DECO ADV"? What is more, if I do not use this version, what will be the consequences?

MW: First of all, I must underline the fact that there will be no negative consequences of not purchasing this new product. This is not a new compulsory or complementary version that has to be deployed in order to uphold the current level of service. It is truly a new product, which provides undeniable advantages. However, those users not wanting to purchase it will not experience any reduction in the current capacities of the TB-DECO.

DM: So what you are saying is that it is a new product that provides that bit more. What are these new features? Can you provide us a few details of these updates?

MW: "TB-DECO ADV" works at several levels: firstly, the ergonomy is improved and is very similar to the Windows philosophy; the undo /redo buttons are displayed, the facility to copy and paste is more intuitive and the user can even copy and paste information from one program to another. From a visual aspect, one can easily see the tool paths with all the data relating to them.

DM: The product mainly provides benefits in terms of ergonomy but are there other advantages for the clients?

MW: Of course, this is not a cosmetic operation. We are, in fact, providing more in terms of ergonomy but also more benefits at programming level. What we are offering to clients using the recent TORNOS pre-setters (2003 models) is the facility of completely deleting all calculation operations. The software will deal with these operations, which are often a source of potential error.

DM: And what are you doing for the other users?

MW: We are offering them the facility of updating their pre-setter in a very straightforward way, without limitation.

DM: And what about other upgrades and innovations?

MW: The most powerful upgrade is a new language for the macros, in order to execute programming operations, which were completely impossible up until now. This allows us to execute parameterised programming in a very straightforward manner. This is an undeniable benefit to the medical sector, for example.

DM: "TB-DECO ADV" will be available from July 2004 onwards. How will you operate in terms of licences?

MW: The "TB-DECO ADV" licence is a multi-user licence, because, for the time being, this is a customer-based licence.

DM: We also heard that other possibilities were being offered to customers and that the DECO system would lead to new systems. Is this true?

MW: News travels fast... we are, in fact, embarking on a new era as far as the software is concerned. Our solution will communicate better and will, in future, be incorporated into an even larger software system. We are offering those clients, who are interested, the facility of interfacing machines with SPC (Statistical Process Control) software. With this in mind, we are offering a CNC interface, which allows automatic correction of the dimensions using a parts measuring system.

DM: Are you therefore offering this system?

MW: We are offering the CNC interface and the facility of automatic, in-production dimension correction. We do not produce parts measuring systems or statistical process control software. However, we do offer the possibility of using these in the most rational manner possible.

DM: Are there any other upgrades?

MW: As things stand now, I've quoted the main developments but, as I've indicated, we are on the threshold of a new era and TB-DECO will certainly undergo permanent upgrading to offer its clients more and more functions.

New functions of «TB-DECO ADV»

- **Windows**
  - undo / redo
  - Ctrl+A: ISO and operations
  - copy / paste: group of tools or operations with their timings
  - ISO: select required font
  - parts files saved in any folder (short-cut)
  - open several operations at the same time
- **Program + synchronization**
  - direct deletion of synchronization
  - shifting synchronization with the mouse + Shift
  - synchro. Phase displacement
  - rapid introduction of the ISO code
  - horizontal / vertical operation lines
  - reduction of operation lines
  - easy reduction of the scope of operations
- **Nouveau langage macro**
  - PELD: highly efficient for parameterized programming
- **Ignore an entire operation**
- **Display actual path per operation**
- **DECO: tool geometry**
  - X: multiplication by 2
  - Y and Z: symbol management
  - end operation and counter-operation: no Z shift
  - graphic tool to compensate for the radius
- **Contouring linked to G191**

«TB-DECO ADV»:

New philosophy

DM: Talking of clients, how will you guarantee the transition between the software for those wanting to change over to the "TB-DECO ADV"?

MW: All the standard functions are, of course, more simple, more intuitive and logical but we are talking here of evolution, not revolution. A document will be produced concerning these various elements, which will show users the differences at a glance. With respect to the advanced macro programming, training will be provided for those users willing to further their knowledge in this new language.

DM: What about compatibility?

MW: The growing compatibility is managed in the same way as for the software sector. With the new version, it is possible to open programs executed using the old software without problem. The only restriction concerns those highly advanced operators, who created specific macros. As they have been produced using a less powerful language these will have to be rewritten.

DM: So, to summarise, this new product can be "grafted" onto the conventional TB-DECO system and provide even more facilities. But if I were to ask you to tell me in three words why I should go ahead and buy this, what would you tell me?

MW: Well that's quite easy – it's more powerful, more accessible and much faster.

Reminder of salient points of "TB-DECO"

- **No limitation during parallel machining**
  - operation line
  - Display of axes and spindle resources
  - G95 feed management
  - unlimited combination of axes (X3-Z1 threading)
- **Synchronization and locking graphic axes**
- **Assistant for new parts**
  - standard models
  - models for long parts
  - program examples
  - global variables (parameterized programming)
  - TB-DECO macros
- **Energy optimisation**
- **Precise cycle time display**
  - complete program
  - per operation
- **Graphic tools catalogue**
- **Trigonometric calculation**
  - tangential point, point on the circle
- **Windows functions**
  - copy / paste: part file, ISO
  - search / replace function
  - help with «F1» search
- **2D simulation**
  - collision control
- **ISO code syntax control**

DM: Thank you, Mr. Wyss, for all the information on this highly promising development. I'll leave the last word to you.

MW: I would also like to point out that TB-DECO has a hotline on number +41 32 494 46 99 for French and English and number +41 32 494 42 13 for German. Also, our specialists in the subsidiary companies are always available to answer any questions. This is a plus point we offer all our clients so that they can see that the TB-DECO comes with all the necessary performance guarantees.

Update of previous DECO pre-setters

- Kit mm: TORNOS replacement part number 380068
- Kit inch: TORNOS replacement part number 380069

If you require further information on the TB-DECO, contact the following address:

software@tornos.ch.

MULTIDECO 20/6b:

Always demand more…

TORNOS consolidated the MULTIDECO range in 2004, which led to many benefits.

According to Mr. Willi Nef, manager of the Business Unit, this is a new step in the long process, which started back in 1998 with the unveiling of the first MULTIDECO machine. Incorporating the productivity efficiency of cam-operated machines, these machines also have the exceptional versatility of NC machines.

With its 6-spindle machines with capacities ranging from 20 to 32 mm, or even 8-spindle machines with a capacity of 20 mm, the company was able to put its know-how and experience to good use and present the MULTIDECO 20/6b. This latest machine replaces the MULTIDECO 20/6, which has been marketed up until now.

As a result of this development, the entire MULTIDECO range has the same optimum design and ergonomy. The engineers at Moutier worked on various aspects when designing this machine, including user-friendly operation, ergonomy, precision and the overall productivity of the solution offered.

MULTIDECO 20/6b Trade fairs in 2004

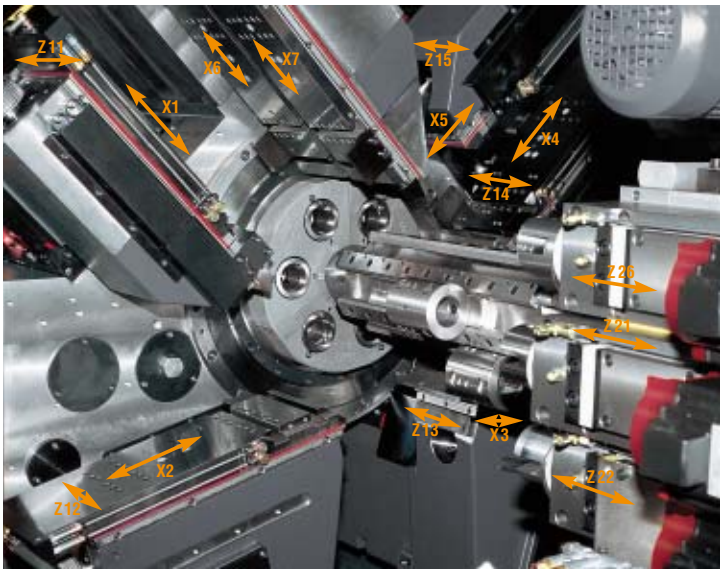
- SIMODEC – La Roche-sur Foron
- MACH – Birmingham
- SIAMS – Moutier
- METAV – Düsseldorf
- GEWATEC – Wehingen
- AMB – Stuttgart
- BIMU – Milano
- TTFrance – Internal exhibition
- PRODEX – Basle

Three major benefits

User-friendly operation

Regarding user friendliness, the design, which was refined with sprinkling solutions, considerably simplified access to the work area, which, by definition, is usually "overloaded" in a multispindle lathe. The facility to proceed with adjustments outside the cowling is something that is very much appreciated by the operators.

Once all the oil in the machine has been used up, the inside of the machining area remains covered with oil for a number of minutes. The horizontal slide door and the clearance along the roof dispel the risk of a sudden outflow of oil onto the operator. The new swivel control with its colour monitor and considerable power, allow operation from both sides of the machine, thereby completing this first chapter.



Precision

The correct machine temperature is always achieved and maintained with the new spindle cooling system. The system considerably reduces all problems associated with haphazard temperature management, especially when shutting down the machines. The incorporation of this cooling and filtration system ensures good fluid distribution, thereby guaranteeing optimum heat transfer. A guarantee of precision !

The cross-slides are of ultimate strength; they not only execute the highly demanding chip removal operations, but also contribute towards extreme precision.

Productivity

The productivity of the machine in terms of "good end-of-day parts" – otherwise referred to as OEE (overall equipment efficiency) – takes account of several factors, such as the production of parts per minute, the actual rate of machine use, non-productive times, machine downtimes and so on …

We shall now add the aspect of "hidden time" and system incorporation to these already well-known parameters. The many synergies between single and multispindle provided by the DECO concept, mean that many "conventional single-spindle" users can now envisage the transition to the "multi-spindle" system without problem. The latest MULTIDECO machines of TORNOS, have the same programming system and offer the same flexibility and machining capacity as a single spindle machine, for example, long turning machining using standard commercial tooling. This dispenses with incorporation problems and training !

The MULTIDECO machines considerably reduce machine downtimes, since offset and correction take place during real time, without having to stop the machine. Programming in hidden time and the DECO system also ensure very fast changeovers.

This point is quite important when compared with a cam-operated multi-spindle lathe.

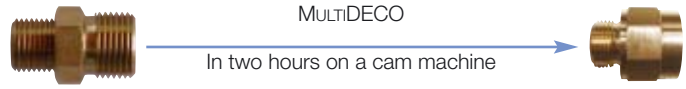
In a recent example, a tool change on a MULTIDECO took 6 hours, compared with 24 hours on a cam-operated lathe. The two machines then went into production and the cam-operated lathe showed a production advantage of 3 parts per minute (35 parts per minute compared with 32 parts per minute). Notwithstanding any machine downtimes or the generally higher tooling costs associated with cam-operated machines (specific tooling etc..), which have a negative effect on their output, it can be seen from this case, that the MULTIDECO solution is more efficient than the cam-operated solution for series runs of up to 491,500 parts.

Production comparison according to batch size

	Series time in hours			Total time for the series in	Batch size	Time saving
Cam-operated multispindle m/c. Startup timie 24 hrs + production rate of 35 pts/min.	63.8		**MULTIDECO 20/6** setting up time 6 hours + production rate of 32 pts/min.	11.2	10 000	**82%**
	47.8			32	50 000	**33%**
	71.6			58.1	100 000	**19%**
	262			266	500 000	**-2%**

NB: The more the series is broken down, the greater the difference in favour of the MULTIDECO

The price difference is compensated by the specific tooling required for cam-operated machine, even after a few series.



With regard to executing parts within one and the same family, the setting-up and program changes may take far less than 6 hours in such cases. During recent trials, the changeover of two tools (pre-set in hidden time) and a change to a new program (also in hidden time), took less than 5 minutes!

This would allow multi-spindle production for numerous potential markets hitherto badly served.

Changing the program and two tools in less than 5 minutes (Refer to the small box showing the 2 parts on page 12 of the MULTIDECO 20/6b, 20/8b, 32/6i brochure and insert it here, under this point.)

Global solution

But these elements alone are not sufficient! Incorporation in a complete fluid treatment and chip removal system that guarantees fail-safe operation is an undisputed asset leading to efficient production.

The many peripherals available for the MULTIDECO 20/6b, i.e. incorporated bar feeder, universal conveyor, pre-setting system and many more, mean that the MULTIDECO

provides the solution to meet the actual requirements of modern industry. The many industries in the car, electronics or fluid technology sectors already using this machine, are the best proof of this!

This latest MULTIDECO solution was presented throughout the world in 2004. Would you like further information on the MULTIDECO or on the range of services provided by the company? Please do not hesitate to contact the TORNOS specialists or download the pertinent documents on

www.tornos.ch/downloads.

The new service packages available for the MULTIDECO 20/6b (and all the other machines in the company's portfolio) presented in DECO Mag 28 offer purchasers the opportunity to avail themselves of the ancillary benefits, based on a choice of different alternatives and services. This means that clients will be able to benefit from a proposal that is even more finely targeted towards their requirements.

Main technical characteristics of the MULTIDECO 20/6b

Capacity	:	4-20 mm (24)
Max. length of part	:	100 mm (120)
Max. spindle power	:	11 kW
Max. spindle speed	:	6.000 rpm
Number of numerie axes	:	18
Axis C in position 4 and 5	:	Max. 2
Cross slides (X, Z pos 1 to 5)	:	6
Cutting slide (X6)	:	1
Back-operation slide (X7)	:	1
End units (Z21-Z25)	:	5
Counter spindle with axis C (Z26)	:	1
Programming system	:	TB-DECO
Machine connection	:	Ethernet or Memory card

Micro electronics and connector industry:

A cyclical yet promising market!

In 2001, the electronics and connector markets represented roughly 30% of installed TORNOS single spindle machines. Towards the end of 2001 and during 2002, the world connector market suffered a major slump. This can be seen during the last quarter of 2001 where the order book volume dropped by more than 31% compared with the same period the previous year. The TORNOS solutions for this sector suffered the same effects, showing an order book volume of only 14% of single spindle machines installed in 2002.

The world connector market entered a phase of slight growth in 2003, which seemed to open up another positive phase in the cycle. The latest indicators point towards an improvement in this sector.

Strengthened by its keenness to serve this industry by offering dedicated solutions, TORNOS is now unveiling a new tool with its DECO 10a (2004 version), which is capitalising on the experience gained with the large number of DECO 10 machines already in service. This new lathe has numerous updates compared with its illustrious predecessors.

What is more logical for a machine designed for the connector market than to have modern and efficient connectivity? The machine has an Ethernet connector, which ensures high-speed transfer with the PC or the company's network.

Purely from a mechanical point of view, the motors have an 20% increase in power, thereby providing greater security and simplicity for all production runs!

This machine also has a new counter-spindle motor for polygon counter-operations carried out in hidden time.

But more than merely producing machines, TORNOS offers real solutions for highly demanding markets. A new document dedicated to 'electronics and connectors' has just come off the press. Based on the same concept as the "Car" and "Medical" brochures, this catalogue is designed around actual parts and the solutions used to achieve them.

Including numerous recent examples, it also has a section dealing with the "specialities" that can nowadays be achieved using DECO technology, like, for example, the 'point-test', 'TORX' or even the 'angled connector'.

This document is available from your normal TORNOS agents or by downloading it from the Internet at the following address:

www.tornos.ch/e/news/N.tml

Please do not hesitate to request further information!

Messrs. Cancer and Neff, managers of the single-spindle and multispindle business units, met DECO Magazine and talked about this matter !

Electronics and micro-electronics are constantly being upgraded and new requirements, with respect to precision, productivity and complexity, for example, are continually being demanded of innovative companies.

Technological development is fantastic and allows customers of the small parts turning industry to create innovative products with ever-increasing performance characteristics.

For suppliers of small turned parts, this is an on-going challenge. It so happens that this change is being mastered at TORNOS ! This allows customers to face these trends quite calmly.

Nowadays, single-spindle sliding headstock lathes are not the only ones that can provide solutions to these markets. The PNC MULTIDECO multi-spindle lathes operate according to the same concept as the single-spindle machines (long turning operations, programming, pre-setting) and, in some cases, can supplement the sliding headstock technology. In all events, the synergies created by the DECO concept considerably simplify production.

As a specialist supplier in these particular technological sectors, we are able to provide the solution that best corresponds to our customers' requirements.

C. Cancer
Manager of the
Single-Spindle Bu

W. Nef
Manager of
Multi-Spindle BU

Multispindle flexibility & efficiency at John Guest

The John Guest Group of Companies is not a name synonymous to the general manufacturing industry. However, to the pipe and plastic plumbing industry the company is considered as the world's leading manufacturer.

Based in West London, the company employs over 1,000 people and exports globally to a host of industries including the domestic plumbing industry, underfloor heating systems, compressed air systems, pneumatics applications, drink and beverage industry, fittings to the water purification market, plumbing for boats, yachts, commercial ships, motor homes, recreational vehicles, caravans and even coffee machines. To grasp some form of concept toward the scale of manufacturing at John Guest, the company annually produces in excess of 100 million fittings. The company produces over 3,000 products addressing virtually every tubing and pipe connection requirement imaginable.

The company is growing at an almost exponential rate due to its continuous improvement program, product quality, range, service and innovation. Machine Shop Manager Harjit Chhibber comments: "I joined the company over 10 years ago and we had 200 employees working in significantly smaller premises. Considering the amount of technology and automation, growth has been phenomenal. The demand for the products is so high we continually run out of space."

A high percentage of products are manufactured from plastic on the main production floor with injection moulding tools, the remainder of products are manufactured from brass and stainless steel in the machine shop. With the continual growth and expanding range of products, John Guest required a machine tool that would increase production rates significantly, improve flexibility and enhance product quality. The company approached a number of suppliers with three particular jobs and the quantities required. TORNOS was selected as the machine tool provider with the best solution for John Guest requirements. TORNOS provided a bespoke package to fit the company's production needs. To reach the required productivity levels, the package included a fully integrated bundle bar feeder with the capacity to hold 2 tons of material.

The TORNOS MULTIDECO 26/6 multispindle automatic lathe with parallel numeric control and barfeeder is the current highlight of the machine shop. The machine was purchased two years ago for a range of brass components with the aim of producing batch figures outside the scope of its predecessor and the current range of single spindle machines. Harjit continues: "The MULTIDECO 26/6 replaced a CAM Multi spindle machine with phenomenal results. The 26/6 significantly improved set-up times,

increased output and accuracy and reduced our reject rate to virtually zero."

To quantifying the productivity difference, the brass job the TORNOS was employed for was previously machined in quantities of 70,000 every two weeks on the CAM Multispindle; the MULTIDECO produces 120,000 in the same period. The 26/6 currently produces up to 250,000 components per month ranging across 10 different jobs with a minimum batch size of 30,000 ranging up 120,000 components; orders permitting, a batch size the company is hoping to exceed. The CNC confirms the brass component is currently machined in 8.1 seconds or 6.4 parts per minute, a time John Guest is always striving to reduce. Having such accurate processing time readouts also enables the company to carefully monitor production and stock control.

The other nine machines in the workshop are single spindle machines that produce up to 6-25,000 components per week. The current mix of single and multi spindle machines are ideal for the current workload at John Guest.

The changeover times and breakdowns on the CAM Multispindle machine were frequent because of CAM and roller breakdowns. The MULTIDECO has slashed the changeover times and breakdown frequency to provide John Guest with the confidence to run unmanned machining for up to 48 hours.

Despite machines running unattended, the machine shop staff, work a rotating shift. The high level of automation enables a number of workers to cover the morning and afternoon shifts while 3 employees are employed to operate machines at night in a machine shop operating 24 hours a day, 7 days a week.

Not only does John Guest have the confidence instilled to run unmanned, the TORNOS has also improved product quality. The CNC capability of the MULTIDeco combined with the TB-DECO user friendly Windows based programming software enables John Guest to simply generate the required forms with superior quality compared to CAM Multi's, which plunge the tooling into the workpiece leaving a poor finish. Harjit says: "The TORNOS gives us excellent forms. It is impossible to achieve better forms or finishes using form tools."

MultiSpindle Flexibility & Efficiency at John Guest

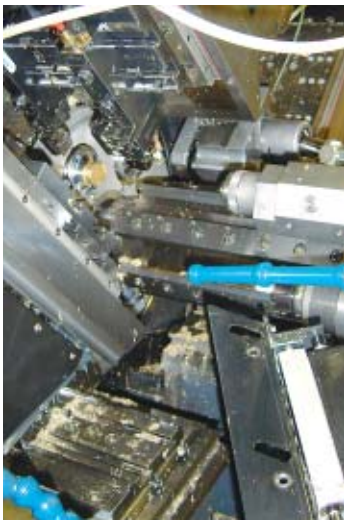
The surface finish has also improved on the initial brass components the machine was employed for. "The TORNOS cuts exceptional finishes on hexagonal flats, which has improved the aesthetics of the job tenfold. It is difficult to put figures on it, but the quality has improved and the scrap rate has reduced dramatically," continues Harjit.

The MULTIDECO has also improved spindle to spindle variation to an accuracy within 10 microns, a deviation that can easily be eradicated with the machine offsets. This is done through the MULTIDECO Hirth coupling, an innovation that meshes gears for the spindle barrel location. The coupling significantly increases accuracy, rigidity and also reduces vibration during heavy cutting in comparison to the CAM machine that relies upon pegs that locate into the barrel. This attribute enables John Guest to comfortably work within the 0.05mm tolerances it requires with the desired surface finish.

Another problem the TORNOS has overcome was the continual need for cleaning on the CAM Multi due to the fine brass swarf produced by cutting high quantities of brass. The MULTIDECO overcame this problem with a dual swarf conveyor.

The top band removes larger swarf while the bottom conveyor sits closely to a filtration unit that prevents the smallest particles from re-entering the coolant tanks. The sump itself contains an 80 bar and two 20 bar pumps, which flush the unit and provide high pressure coolant to the machining area. The coolant sump and pumps are contained in a unit alongside the swarf system and chiller unit, which ensure the work area, remains at a stable 22 degrees C. The fully enclosed unit enables John Guest to operate a clean and environmentally friendly machine shop with no oil mist or odours.

In such a production orientated environment, confidence in the machine's ability to conduct the task is one factor, but as important is the support and service backup that is provided if a fault ever occurs. TORNOS provides John Guest with service and back-up cover second to none. "Applications and service engineers have been on site within hours, the service is immense! It is an extremely important consideration to us when considering machine suppliers, as machine downtime is dead money," concludes Harjit.



For Reader Enquiries Contact:

John Stretton
TORNOS Technologies UK
TORNOS House
Garden Road
Whitwick Business Park
Coalville
Leicestershire
01530 513100

For Editorial Enquiries Contact:

Rhys Williams
Pulse PR
39 Ivor Street
Maesteg
Mid Glamorgan
CF34 9AH
Tel/Fax: 01656 730343
Mob: 07990 514937
rhys@williams3166.fsnet.co.uk

New cutting oil technology for noticeably lower tooling costs

If you analyse the production costs of a part in a contemporary small parts turning plant, it's a good idea to remember the old proverb: "The whole is more than the sum of its parts". If you make savings in the wrong place, then the assumed saving has a negative effect on the overall result ! MOTOREX examined the effects of cutting oil on tool life and production output.

Saving in the right place

This is something that happens to everyone sometime in their life: the intention was to make savings or make a cheap purchase, only to discover, in the end, that cheaper was in fact more expensive – quite apart from the inconvenience. Any professional undertaking in the metal processing industry simply cannot afford to make such experiments. Even in the case of the machining fluids used, price should not be the first consideration. Other interdependent variables, such as suitability for the machining processes, the maximum possible cutting data, the working life of the medium, as well as the effects on tool life should also be considered. If you target the savings in the right place, this will often have a multiple effect on the bottom line.

The influence of cutting oil

With the introduction of the new Vmax-technology (increasing cutting data and therefore productivity) MOTOREX has clearly identified the needs of the industry and is now launching the universal, high-performance cutting oil, MOTOREX ORTHO NF-X, which is new to the SWISSCUT ORTHO family. It is eminently suited to all materials, degrees of difficulty and operations. The product is free from chlorine and heavy metal and is available in three ISO viscosity classes: ISO 10, 15 and 22.

Sophisticated additives to the formulae of SWISSCUT ORTHO cutting oils, on the one hand, produce improved cutting values and, on the other, noticeably longer tooling life. Apart from the increase in productivity, the reduced tooling requirement highlights a significant savings potential and clearly shows where costs can be optimised in the long-term.

Figures that speak clearly

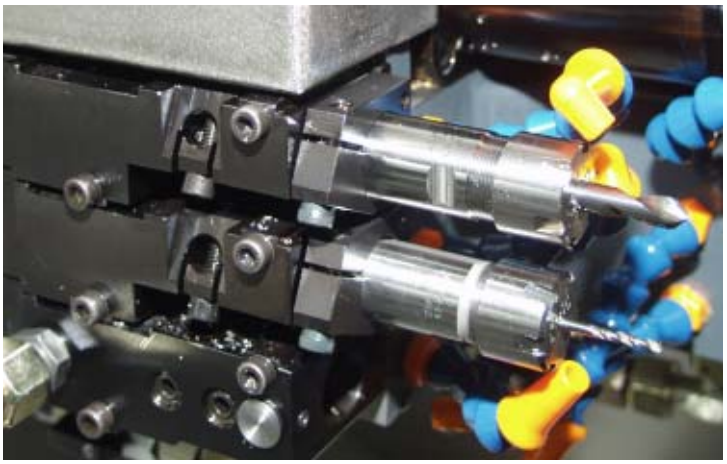
The savings potential over a long-term trial was impressively displayed at a company, which supplies one of the most important industrial sectors in Switzerland. The company currently has more than 68 machine tools, which are designed for demanding, multiple operations and series production. The team responsible arrived at the following result (see page 30):

New cutting oil technology

Potential savings in tooling costs relative to the cutting oil used

Modern standard cutting oil			**MOTOREX SWISSCUT ORTHO NF-X**		
Cutting oil 12,000 l/year	€	23,760.–	Cutting oil 12,000 l/year	€	35,400.–
Average tooling costs	€	438,700.–	Average tooling costs to date	€	438,700.–
Not possible to extend tooling life	€	0.–	Less tooling cost saving of 12 % through longer life	€	52,644.–
Costs to date	€	462,460.–	Optimised costs	€	419,656.–
Saving	€	**0.–**	**Saving**	€	**41,004.–**

Note: *At this point reference has deliberately only been made to the cutting oil and tool factors.*



It is not only cutting oils that have undergone marked development, more and more efficient tooling designs are also revolutionising the market. MOTOREX works closely with the leading tool manufacturers.

In order to lower costs noticeably, all production factors must be ideally matched to each other. ᵛmax-technology from MOTOREX has an impressive effect on tool life and the rate of production.

Whether similarly convincing savings and improved output are possible in your company in the area of cutting oils and tools, as a result of the latest technologies, can best be determined in a practical test. Suitable products are available for this !

We will be pleased to give you further information about the new MOTOREX ᵛmax-technology and SWISSCUT ORTHO cutting oils.

MOTOREX AG
Customer Services
Postfach
CH-4901 Langenthal
Tel. ++41 (0)62 919 74 74
www.motorex.com

TORNOS SA
Customer Services
Case postale
CH-2740 Moutier
Tel. ++41 (0)32 494 44 44
www.tornos.ch