

DECO MAGAZINE

6

3/98
SEPTEMBER



TRAINING: AN IMPORTANT STEP...



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IMPRESSUM DECO-MAGAZINE 3/98

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What More Can Be Done!

Since Feb.28 1996, the launch date of the DECO 2000 7/10 mm machines there have been enormous changes in the Tornos-Bechler market place.

How can this be continued?

Yes it is only just over two years since Tornos-Bechler launched the DECO range. Since then there has been tremendous changes both at TORNOS Moutier and in the various markets around the world.



In DECO-Mag 1/97 we introduced the DECO concept, the coordination between computer technology and hardware design to give PNC and its advantages. We showed the training facilities available with TB-DECO.

In DECO MAG 2/97 we highlighted the new variants:
The DECO 2000 20/25,4 machine
The MULTIDECO 26/6.

We mentioned the effect the DECO REVOLUTION had on our own companies and we invited you to our open house exhibitions and to EMO Hanover. Thank you for coming in some high numbers. The Tornos-Bechler stands were full to overflowing. Sorry if you couldn't see as much as you may have wished. We hope this has since been rectified.

In DECO MAG 3/97 we started to show how life could be made easier by programming tips. This has continued and is being expanded. Further details of the MULTIDECO 26/6 were given showing how it could be made even more adaptable and flexible by fitting compound slides, dual speed spindles, spindle locking and Counter operations.

In DECO MAG 4/98 we continued offering useful tips, customer comments and innovations.

WHAT NOW!

We have done it again. We have further expanded the range. The NEW DECO 2000 26/32 mm machine is now launched. As the name suggests 26 mm capacity without bar end preparation and 32 mm capacity with bar end preparation.

We have increased the stroke length by 20%.

F37 collets are standard but you can still use your F30 or F25 collets if you elect to do so.

Headstock power and torque increased over one third.

Maximum contour spindle power increased by over two thirds and max. torque by over three, yes three, times.

The machine is available in the 10 axis version giving maximum flexibility.

We are sure that this will perform many operations previously being performed on fixed head machine.

But we haven't finished yet!

The DECO REVOLUTION continues. Our designers are constantly readdressing improvements and new developments. Did you see the GEAR HOBBING on the DECO 20/25,4 at SIMODEC?

Impressive wasn't it. There are more coming.

We will let you know as soon as possible.

In the meantime we hope to see you at the International, National and Local shows.

David Wollock



E

New units for the DECO 2000

Development continues...

The range of facilities offered by the DECO 2000 is growing unrelentingly...
we would now like to introduce the latest series of options.

Let us, first of all, look at some of the "old" innovations which were launched in May '98:

Option 3300 – Unit with a long rotating drilling/milling spindle for the ESX 25 chucks

Application – This unit is essentially designed for eccentric drilling and milling the end of the part, using the guide bush. Small sized tools can be used with the maximum length spindle, thereby dispensing with extension pieces.

Characteristics:

Chucks: ESX 25 (maxi Ø 16 mm)

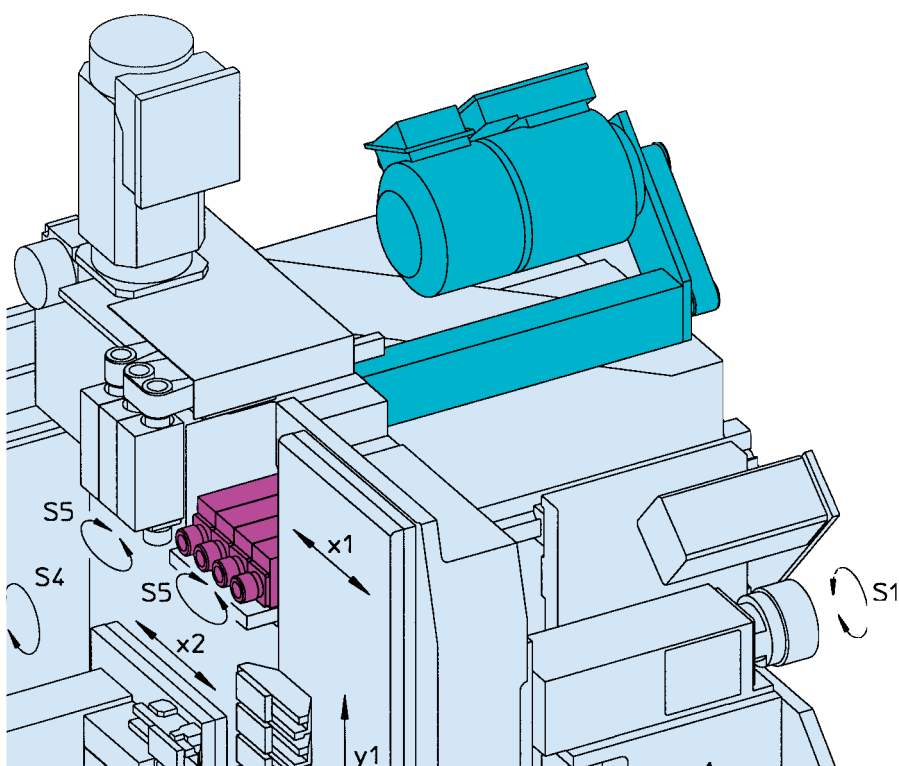
Assembly positions

Unit at end: Positions T31 à T34.

Speed: 6000 t/min. maxi.

Counter-operations: Positions T41 à T44.

Speed: 8000 t/min. maxi.



Option 4550 – Longitudinal S5 motor for driving revolving units in positions T41-T44.

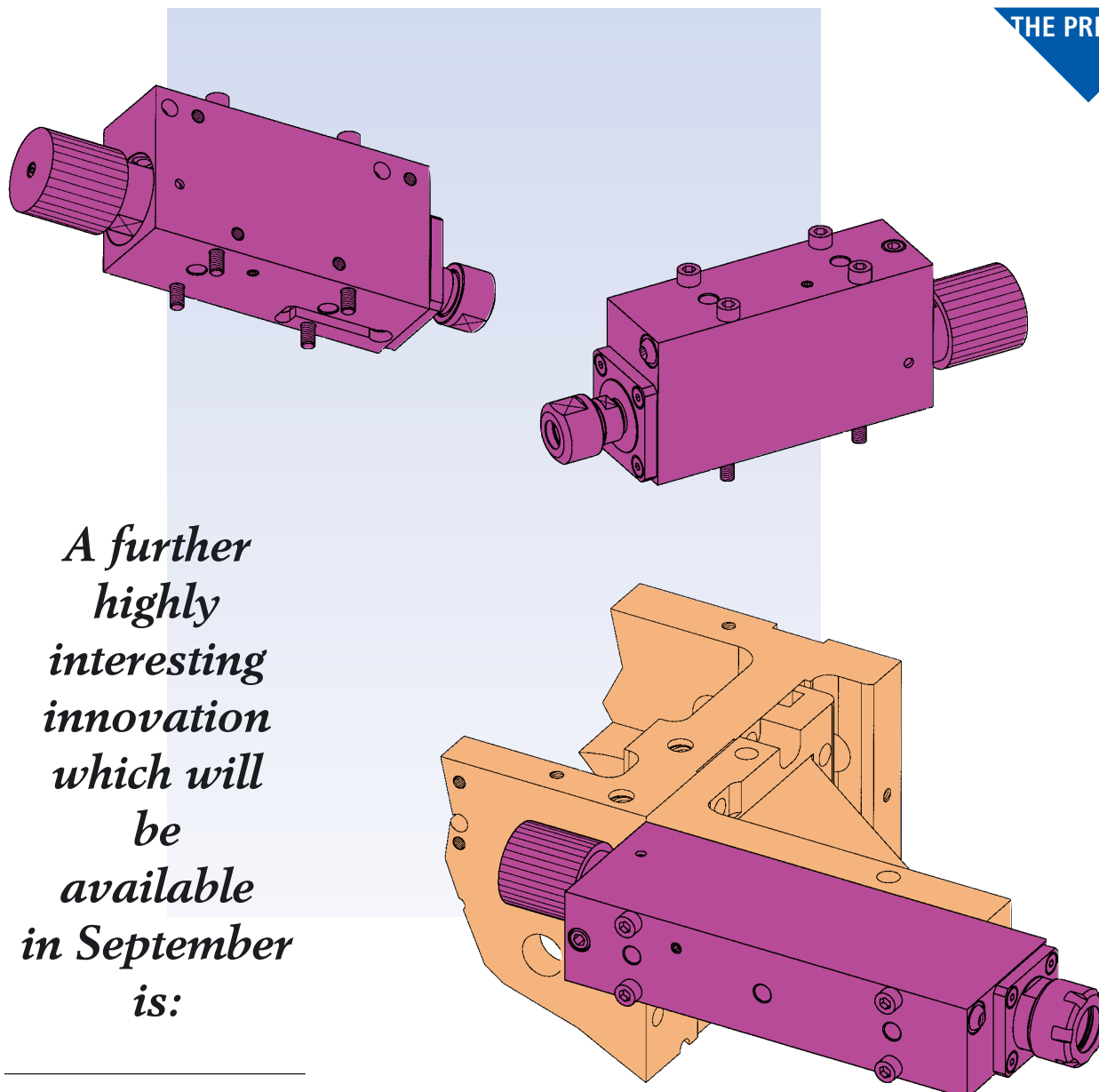
Application – This option enables eccentric machining at the end of the part for counter-operations, such as drilling/milling using standard units with revolving spindles. The DECO 2000 is increasing the scope of operations without let-up.

Characteristics

Assembly positions: T41 à T44.

Maximum number of units driven: 4

Speed: 8000 t/min. maxi.



*A further
highly
interesting
innovation
which will
be
available
in September
is:*

Option – Differential spindle

Application – This new facility will now make it possible to carry out differential tapping / threading.

Characteristics

This option comprises a mandrel which slides into a spindle, with the differential travel being a max. of 30 mm.

*Assembly positions: T31 - T34 on the combined end working at-
tachments*

Max. speed: 8000 t/min.

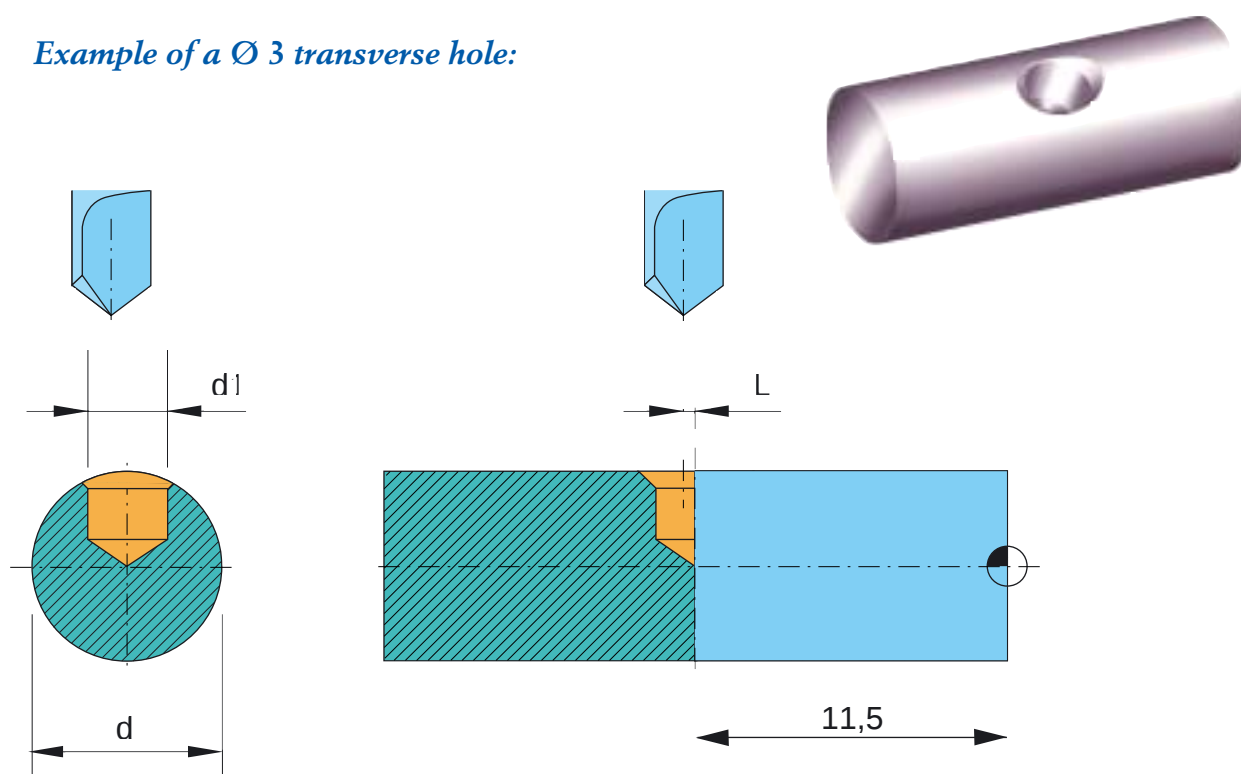
This option can also be used for longitudinal counter-operations.

Table summarising the new features

Option	Designation	DECO-Mag. no
1650	Unit with revolving spindle for ESX 25 chucks	1/98
2100	High-frequency rotating spindle, 15000 rpm	1/98
3240	Triple end tool holder	1/98
5010	Higt pressure drilling device	2/98
1800	Cutting/hobbing unit by generation	2/98
3300	Long revolving drilling/milling spindle unit for ESX 25 chucks	3/98
4550	Longitudinal S5 motor for driving the revolving units in positions T41-T44	3/98
	Differential spindle	3/98

To avoid using an expensive tooling (e.g. form bore bit) and to save on a machining station it is possible to chamfer a cross hole with the tip of the bit using the C1 axis.

Example of a $\varnothing 3$ transverse hole:



Chamfering takes place in 4 stages:

FIG. 1 = STARTING POSITION WITH THE BIT IN THE CENTRE OF THE HOLE

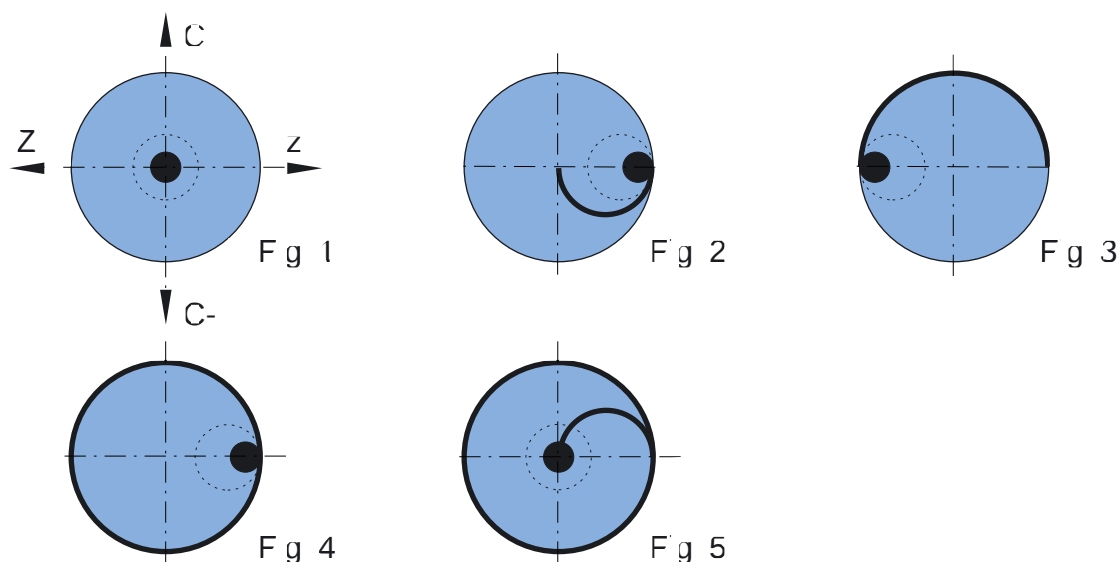
FIG. 2 = APPROACH BY CIRCULAR INTERPOLATION

FIG. 3 = INTERPOLATION $\frac{1}{2}$ CIRCUMFERENCE AXES Z1/C1

FIG. 4 = INTERPOLATION $\frac{1}{2}$ CIRCUMFERENCE AXES Z1/C1

FIG. 5 = WITHDRAWAL BY CIRCULAR INTERPOLATION, END OF CHAMFERING

Description of the movement seen from above:



Programming data:

1. Establishing the D argument for M198:

The D argument is used to define the part diameter so that work can be executed with the C1 “unwound” rotary axis. In our particular case, if the form is unwound, the result obtained is an ellipse. In order to obtain a satisfactory result, the default value to be introduced in argument D as the starting basis, must be equivalent to the diameter d. In order to optimise the result obtained for the part, it may prove useful to change this value by reducing it until a satisfactory outcome is achieved.

2. Offsetting the bit for chamfering:

Chamfering is executed using the tip of the bit. Consequently, an offset L is required. This offset value depends on the extent of chamfering. In the above example, $L = 1 \text{ mm}$.

ISO code for milling operations:

1. M198 D7
2. G4 X0.5
3. G1 Z1=-11.5 X2=10 G100 T22
4. G1 C1=0 G100
5. G1 X2=7.5 G100
6. G1 X2=5.5 F300 G94
7. G3 Z1=-10.5 C1=0 R0.5 G191
8. G3 Z1=-12.5 C1=0 R1
9. G3 Z1=-10.5 C1=0 R1
10. G3 Z1=-11.5 C=0 X2=5.5 R0.5
11. G1 X2=10 G100
12. M199

Programming features

Line 8 - 9: Circular interpolation G3 (Figs. 3 and 4) is programmed along a 1 mm radius (R1). This value corresponds with the offset L used in this example.

Comments

In order to proceed with chamfering, a new operation line containing axes C1 and Z1 must be created as the master and an X2 line as the slave. (To add a new operation line, see the tricks of the trade in DECO-Magazine, number 2/98).

Training: an important step...



As is well known, one of the stumbling blocks when adopting a new system is man's unwillingness to adapt to change. With the aim of overcoming this often unfounded reticence, information and training are highly important.

For TORNOS-BECHLER, the DECO 2000 comes within this category because of its completely new design. This is why the company is providing as much information and training around the DECO 2000 and TB-Deco as possible.

In order to highlight this subject at TORNOS-BECHLER, we arranged a meeting with Mr. Lovis, head of Customer Training, so that he can tell us a little about the training activities associated with the DECO 2000.

DM: Hello Mr. Lovis! Could you provide a brief summary of the training activities at TORNOS-BECHLER (at the TORNOS Training Centre):

SL: Hello. The training centre at TORNOS has been in operation for more than 25 years, during which time we have acquired considerable teaching experience. More specifically, with regard to the DECO 2000, from an equipment aspect we have two training classes, nine PCs, one DECO/10, one DECO/20 and one MULTIDECO, so that we can provide our training courses under the best possible conditions. As far as staff are concerned, we have six full time instructors who teach the courses in French, German, English and Italian. Regarding the pupils, we aim to have groups of 8 to 10 per course. Generally speaking, we get the customers to work in teams of 2. We organise roughly 30 courses a year.

DM: In concrete terms, how many people do you train per year?

SL: 350 people attended training courses at Moutier in 1997 and we anticipate more for this year.

The ideal time would be a short time before the client proceeds with acceptance of his machine.

DM: What does the training course involve exactly?

SL: DECO 2000 training takes place in our training centre over an 8 day period – 5 days being spent on programming and 3 days on operating the machine. At the end of the course, the operator is capable of creating a DECO program based on an existing model and of setting the machine for this particular program.

DM: So the training programme will provide familiarisation with the DECO 2000 but what types of parts are you working on?

SL: Quite important examples, including the operations and equipment most commonly used, which are studied for programming and commissioning purposes. I must point out that the parts machined are standard parts. These courses do not include any "client part" modules. However, it is always possible to benefit from personalised comments and advice.

DM: What are the minimum requirements to take part in a DECO course?

SL: Let me emphasise this point once and for all. There is absolutely no requirement to be a genius in computers to follow such a course. In the first place, the student must be a mechanic in small parts turning or even a small parts turner. He must also obviously be qualified to work on a DECO because he will

be directly involved in the programming. This is why we ask the operator to tell us of his experience in programming in ISO codes and his basic knowledge of Windows (handling, using the mouse etc...) before he joins the course. These are the only pre-requisites and not Excel or any other program as one regularly hears of. The ideal step for a beginner is to join a local 2-3 day Windows introductory course (not provided by TORNOS-BECHLER).



DM: In real terms, a professional involved in small parts turning – whether on a cam-operated lathe or numerically controlled lathe – has an adequate basis for following such a course.

SL: Quite so a good mechanic running cam-operated machines or numerically controlled machines who knows his job thoroughly, fares far better than a computer engineer. However, prior training in Windows is important as well, because the training is relatively short and if one has to spend two days explaining what a screen or mouse is. What is more, such a case would hold up the entire class...

DM: In order to participate in such courses, do the customers have to provide their own equipment and if so, what equipment do they need?

SL: TORNOS-BECHLER provides all the equipment needed for training. Consequently the customers need bring nothing.

Discussion
with
M. Simon Lovis,
head
of Customer
Training
at
**TORNOS-
BECHLER**



Obviously, if a customer uses a portable PC, then he can bring it along and work on it. The benefit of such a case is that the TB-Deco is directly installed in the client's PC, meaning that he can access this at all times (evenings, week-ends) as opposed to a student using the equipment made available to him.

DM: DM What's the position with the training CD ROM?

SL: The training CD ROM is distributed during the course but also very often when sales are being negotiated with the customer.

We found that people coming to participate in the course make far quicker progress if they have already played the CD beforehand.

DM: You therefore recommend that both the customers and company's sales force should encourage distribution of the CD to the final user?

SL: Indeed. This real, virtual teacher is a valuable aid which would prove beneficial if supplied to the user.

DM: Is it possible to participate in DECO courses other than with TORNOS-BECHLER?

SL: All countries with subsidiaries provide training which is generally similar to what we are offering here in Moutier.

(NDLR:

TORNOS Technologies France	04 50 038 333
Germany	07231 910 70
UK	(0) 1530 814 112
USA	(203) 775-4319
Italy	02 45 77 1701
Spain	(3) 84 65 943

For all others, training takes place here in our centre.

a "TB-DECO training" CD ROM, paper and pens. The working tools, overalls and ancillary equipment are loaned.

This price does not include accommodation and meals, but TORNOS-BECHLER would obviously offer facilities.

DM: After training.. what happens next?

SL: On completion of each course, the student will be given a list of telephone numbers to call in the event of queries. Contacts who will deal with these, are available in our subsidiaries and our SAV department. It is also possible to call up the SAV Internet pages on the TORNOS site, which offer customers round-the-clock trouble-shooting services (www.tornos.ch).

DM: Once he has completed the course, does the student have to take a test?

SL: Training, in fact, takes place in small groups following a logical progression of exercises and demonstrations. The students are, therefore, permanently surrounded by their teachers. A student who completes the course is automatically qualified because he has been actively involved in the exercises on which he is tested.

TORNOS-BECHLER will issue a certificate.

DM: When exactly should a customer attend the course - at the time of order or once the machine has been installed?

SL: The ideal situation would be before acceptance of the machine; in this way, the client will know his machine and, once it is installed, can put his knowledge into practice and start producing very quickly, thus achieving a far quicker return on his investment.

DM: Regarding the customer with a DECO 2000, 10 mm capacity for example, who wants to attend an additional course after purchasing a DECO 2000 20 mm capacity, would you propose additional training?

SL: Absolutely! We would suggest an additional course dealing with:

- ◆ programming differences
- ◆ tool geometry
- ◆ more specific machine operations

DM: What are your conclusions from the last months of training on the DECO 2000?

SL: The vast majority of our customers leave Moutier very happy. We believe that it would require a further 3 months or so for an engineer fully to master all the small details of setting up and programming the machine.

On those rare occasions where a few people were dissatisfied with the course, this was because they were unfamiliar with the pre-requisites (Windows and ISO).



DM: To conclude, we can say that everything possible is done to maximise the operator's knowledge so that they can draw the maximum benefits from their remarkable DECO 2000 tool. Deco Magazine is also committed to supplementing this training, and with each edition supplies the latest tips on programming and information on the new options.

Mr. Lovis, we would like to thank you for this interview. Would you like to make a final comment to our readers?

SL: Yes, a detail which is especially important: tell our customers about the weather in our region. As a small piece of background information, a student from a hot country arrived in Moutier last winter, wearing only a short-sleeved shirt...

DM: Well, here is a summary of the weather in our region:

November-February:

Winter, snow, temperature which can drop to -20°C in the morning!

March-May:

Spring, frequently rain, temperature between 0°C in the morning and 15°C in the afternoon.

June-August:

Summer, sunny periods, temperature reaching up to 30°C during the day.

September-October:

Autumn, frequently rain, temperature between 0°C in the morning and 15°C in the afternoon.



DM: What does the training course cost?

SL: The cost is CHF 400.-/day/person, i.e. CHF 3200.- for a DECO training course.

The price includes the actual training and equipment supplied, i.e. programming instructions, using the TB-DECO, operating the machine, memory joggers, practical exercises, a 3 1/2" diskette for saving programs,

ISO 9001

TORNOS-BECHLER SA has just been awarded its SQS ISO 9001 certificate!

This successful achievement, which is the result of a lot of hard work, is encouraging TORNOS-BECHLER to pursue its major "renewal" project (see *DECO-Magazine No. 1/98*) and justifies its striving for continued improvement. (Further details in the next edition).

TORNOS-BECHLER AND THE YEAR 2000

The dreaded date for a good number of computer systems is fast approaching...

TORNOS-BECHLER would like to inform its users, customers and other parties interested in the state of machines and software distributed by the company about the change-over to the year 2000.

All our current products, including our lathes and bar feeds previous to the TORNOS-BECHLER make, are all 100 % "year 2000 compatible".

The change-over to 2000 will have no effect on their operation whatsoever.

With respect to software, the TB-DECO is also "year 2000 compatible".

This is good reason to face the new millennium with confidence in your relations with TORNOS-BECHLER.

Let us all face up to the challenges of the future...

A CALL FOR READERS' COMMENTS

DECO Magazine would like to act as a link between the company and its customers. We are now willing to deal with certain specific or problem areas encountered.

Please don't hesitate to let us have your comments, requests or suggestions!

The new ROBOBAR SSF 532



In line with its policy of diversity, which includes providing overall solutions as well as products, TORNOS-BECHLER launched a bar feeder for the DECO 2000, 26 mm capacity, which was presented at the first world fair at Düsseldorf in June 1998.

New for TORNOS-BECHLER, this bar feeder was developed by a partner specialising in this type

of product. The new ROBOBAR SSF 532 with its FMB system is a model exclusively dedicated to the DECO 2000, 26 mm capacity machine, designed to guarantee complete interaction between machine and bar feeder.

TORNOS-BECHLER SA will provide the complete after-sales service.

Main technical characteristics:

Manufacturer : FMB

Name : ROBOBAR SSF 532

Only one power source

Robust structure

High rotation speed

Quiet operation when connected to oil bath

Capacity dia. 32 mm

Exact positioning of the bar in relation to cutting tool

Complies with CE/CEM standards

Transport and installation facilities

Hexagonal / square bar change-over

THE MACHINING TIME PER PART AND THE COST OF THE MACHINES:

This is the dilemma facing the MULTIDECO salesman!



During sales negotiations, one frequently has the impression that the only two underlying factors when purchasing a multi-spindle, cam-operated machine, are the machining times per part and the purchase price. Only in rare cases is it a matter of availability, tooling change-over costs and the machine utilisation.



*Erich Schmid,
Sales & Marketing
Director
TORNOS-BECHLER*

1. Machining times per part versus production volume.

We should, in fact, not place too much importance on the machining time per part, but rather count the number of parts produced which correspond exactly to customer requirements within a given period of time.

But let's quibble a little more.

The deciding factor at the end of the day is not the actual number of parts produced, but the number of parts produced during one working day which correspond to customer requirements. What is the production cost for such parts, including the costs of the operators, tooling, machines and so on?

Without doubt, the number of parts produced is an essential factor, but is not the overriding aspect to be taken into account.

2. The cam-operated, multi-spindle lathe or "Stop/Go" production.

Cam-operated, multi-spindle lathes are characterised, on the one hand, by their good productivity and, on the other, by their numerous stoppages during production. It is quite true that every so often the machine has to be stopped to adjust the tooling, change the bars and sometimes even the tools, remove swarf and so on...

In other words, the more complex the machining operation, the tighter the tolerances and the more difficult the materials are to machine. This frequently leads to a complete shut-down of the machine.

This is often referred to as a "Stop/Go" form of production. It is quite common for a cam-operated, multi-spindle lathe to operate for only 70% of its production time in real terms. For an eight hour working day, actual production time would equate to 5.6 hours, thus meaning a daily loss of up to 2.4 hours for the reasons outlined above.

3. Design objective of the multi-spindle MULTIDECO.

Our aim with this MULTIDECO design was to achieve a marked improvement in production time over downtimes, without this affecting the productivity of parts per minute. In other words, for a given period of product, it is our intention to produce a greater number of parts complying with customer requirements, than is possible with a conventional cam-operated, multi-spindle lathe. We are now promoting the MULTIDECO concept which will be used as a basis for dispensing with this "Stop/Go" form of production. Our objective with this lathe is to produce a production tool providing a regular, yet increasing output, whilst at the same time reducing manual interventions.

4. Financial benefits offered by the MultiDECO multi-spindle lathe.

Let us review all the operating phases of the machine and establish when the MULTIDECO offers advantages over cam-operated, multi-spindle lathes.

Operation of the machine can be divided into the following stages:

- A) Setting up the lathe for a (new) part
- B) Process optimisation
- C) Production

We shall now look at these three points in detail:

Setting up the lathe for a (new) part.

In addition to the tool holders, tools, collets, counter-spindles, feed collets (if required) and specific, essential units, standard and/or special cams are also required.

The MULTIDECO only uses cams for repetitive tasks, such as locking the cylinder, opening and closing the collets, bar feed etc., and so guarantee the reliability and speed of these functions.

These cams operate irrespective of the machining process used – in other words, there is no need to change them. The PNC numeric control deals with all cam control operations, including those which are specific to the bar feed process. This dispenses with the large number of specific cams required for each production run, which have to be manufactured and stored in conventional "cam-operated" units, and with the costs relating to this. The time that is lost in changing these cams is also definitely something of the past.

Rapid collet changing systems and the facility to use preset tools have

helped to make considerable savings in set up times.

If the MULTIDECO has its own automatic magazine bar feed, then the feed collets can be dispensed with. No longer will these require changing and at the same time, this will do away with a delicate item, that is susceptible to wear and difficult to adjust. I'm sure that every small parts turner operating multi-spindle machines will know what I am getting at. What is more, the machine is now automatically loaded.

Process optimisation.

Just consider the number of times you had to modify the feeds and speed of rotation at the time of start-up and when optimising the process. This might even have led you to change the cam, if not the gearing. You may even have found yourself in a position of having to have a completely new cam manufactured.

With the MULTIDECO, it is the numeric control system which calculates the number of rotations and deals with the feed rate. The slightest change required is executed on the computer in less time than it takes to tell. This provides a dual financial benefit – firstly, reduced cam costs and secondly, a reduction in costs owing to the minimum amount of time needed to carry out the modifications.

With conventional cam technology, where the tool setting operations are very precise so as to meet the tolerances required, the machine has to be shut down and work then carried out on correcting the tool feed by manually re-setting the vernier scales. How many machine stops and how many such operations are needed to optimise the process for this particular type of lathe? Five, ten, one hundred or even more? And how much precious production time is being lost?

The MULTIDECO makes things very much easier and above all, much faster. Tool correction can be directly transmitted to the numeric

control via the Offset functions without having to stop the machine for any great length of time.

Production

Once the machine is finally operational, we still have to stop the machine due to tool wear, to adjust the tools relative to the vernier scales.

It is far simpler and quicker to input these new values directly into the numeric control system without having to stop the machine.

Although the process is stable, the next stage of improvement would be to automate tool adjustment based on wear or in relation to the number of parts machined or the production time.

It would also be possible to program tool feed so as to eliminate swarf build up where this is likely to cause problems.

5. Summary

The new, multi-spindle MULTIDECO is not content with purely shortening set up times and optimising the process in a dramatic way. It dispenses with the costs of cams and also achieves higher production times whilst severely reducing down times. This means that for one working day, you will have more machined parts which fully meet your requirements whilst at the same time, reducing staff costs.

To conclude, I would like to come back to the starting point of this article.

It is obvious that the number of parts and amount invested are two essential elements which must be taken into account when purchasing a multi-spindle machine. However, the machine utilisation (production/down time ratio) and staff costs are two factors which also have a strong, decisive influence on the future profitability of the investment. Ignoring these parameters will lead to the risk of not having opted for the most economical solution.



Gervasoni sets its sights on Europe for 2000

By Enzo Pitton

DECO 2000

Symbol of the future

Gervasoni SpA was established in 1961 and quickly grew to become a large industrial company. Now employing about 200 people.

Located in Brembilla in the province of Bergamo, the company has long been a major industrial player. It intentionally operates across all mechanical product sectors: Its production process technologies are geared to a changing market and it is able to ensure a consistent supply of top-quality products.



The company owes its impressive growth over a forty-year lifespan to an ability to keep abreast of technological change, which has been achieved through a far-sighted investment programme. As a result, the company has succeeded in gaining a foothold in all sectors where automatic precision lathes are used: i.e. the automotive, hydraulic, pneumatic and electronics component industries.

On the face of it, my meeting with Mr. Gervasoni was a meeting between two grizzled old men. We wear our grey hairs with pride as they indicate the many years of experience we have built up within the automatic lathe sector (three quarters of a century between us) Mr. Gervasoni is one of the most significant and distinguished European proponents.

Our mutual respect and Mr Gervasoni's perennial good relationship with his partner TORNOS-BECHLER made it easy for me to lead the conversation on to topics of common interest.

MACHINE POOL

Gervasoni SpA owns 200 machines altogether. These are of the following types:

- ◆ 70 automatic cam lathes
- ◆ 32 CNC lathes
- ◆ 40 multispindle lathes
- ◆ 15 grinding machines
- ◆ 5 lapping machines
- ◆ 15 feed systems
- ◆ heat treatment systems

The numerical control machines include two Top 200 machines, which are greatly appreciated for their precision. These have recently been joined by six DECO 20 mm machines - the first stage of a bigger order.

PRODUCTION

State-of-the-art production and quality control processes allow Gervasoni SpA free access to every sector of the mechanical industry. The company is flexible enough to handle any type of mechanical component and it offers an all-in package that includes product research, quoting, production and delivery.

Customer requirements for flexibility and quality have been effectively met by greater investment. The production machines have now been backed by more up-to-date finishing and auxiliary operation departments, while up to 15 quality control testers now work in a climate-controlled chamber.

Production takes place over two working shifts, although some machines work over third shift.

MANUFACTURING PROCESS

Components are made to customer's specifications and internal corporate planning is centralised. The original drawing is consulted to determine the type of machine that should be used to make the component in order to meet price, quality, accuracy, cost and quantity requirements.

The operator is then given a set of cams (still produced internally) or a program to be used to make the component together with the tools required for production.

Finished components undergo a quality control procedure on 12 SPC stations.

The TORNOS-BECHLER DECO 20 mm machines reveal their true qualities at the programming stage. The TB-DECO program, which runs under Windows, allows the customer to plan and optimise every component to be produced on the machine on a central computer simulation program off-line.

While the machine is working, the DECO system can really use the Windows system to its full potential to assign codes to components and customers, store tool settings and – if the same products have been made previously – store details of companies supplying auxiliary materials such as cutting oil, bits, taps, plates etc.

The system acts as a database that can be referred back to at any time and updated for each individual customer component.

TYPE OF COMPONENTS AND MATERIALS PROCESSED

Gervasoni is currently able to produce an impressive 320 000 components per day. In addition to specialised production, it can also offer help with the design of customised products.

The company is active in all sectors of mechanical engineering and able to machine any type of material, from more easily-machined materials to tougher, more difficult materials.

Each material to be machined is tested to determine working parameters and the type of production equipment required.

DECO 2000, CAPACITY 20 mm.

Everything that happens at Gervasoni SpA before the final product is produced is part of the same overall process that include design, production and even delivery. The machine tool, as the means of production, is crucial to this process because it determines economic feasibility, productivity and finished product quality.

I asked why the company had chosen TORNOS-BECHLER and the 20 mm capacity DECO 2000 system.

Mr. Bono Gervasoni's replies were very detailed and precise as one would expect from a manager who is aware of the needs of his market and thus also of his company and continually strives to improve efficiency.

◆ The machine's drive options give a high number of independent axes, is able to operate up to 4 tools at the same time and includes three independent counter-spindle axes that work in hidden time. It represents the state of the art as far as automatic lathes are concerned.

◆ Because the machine can produce fully-finished components, we can do away with the need for

further machining off the machine. Further machining is costly and overall product quality cannot be monitored through the various stages.

◆ Results are very accurate and repeatable even after long production runs on more than one lathe.

◆ Non-productive times are lower than with conventional CNC machines.

◆ The system is flexible, i.e. it uses standard commercial toolholders, modular equipment and allows the option of central stand-alone planning on a Windows system. Yet all this is achieved with an appreciable reduction in the amount of time required to make each component – a particularly interesting benefit for long production runs.

◆ Access to the working area is considerably improved despite the high number of axes and the potential for fitting up to 15 motorised tools.

◆ It has a smaller footprint than by conventional machines of the same capacity.

◆ The mechanical system is sturdy enough to allow the use and development of specific equipment for operations such as deep drilling, production of multisided shapes and the tapping of threads from the middle of a bar.

◆ The program can be updated continuously through releases/updates. These open up new options to ensure the machine effectively never becomes obsolete. Software and hardware developments are immediately reflected by changes to the DECO system.

CUSTOMERS AND HUMAN RESOURCES

Sixty percent of the company's turnover, forecast to be Italian Lira 45bn in 1998, come from export orders. The customers include Ford Motor, Volkswagen, Magneti Marelli, Atos and others.

Gervasoni SpA obtained ISO 9002 certification from the Swiss company SQS in 1993 and it is now also able to train its own staff and – most importantly – its own machine operating engineers.

Because Mr. Gervasoni is aware that the DECO 2000 represents the technology of the future for many years to come, he hopes one day to provide his training centre with a DECO 2000 for practical lessons.

CONCLUSION

Mr. Gervasoni remembers that back in the Eighties, any machine you looked at may have had certain tiny features that distinguished it from the competition but by and large belonged to the same overall CNC machine family.

The cam machines that flooded the market before the Eighties also made up a homogenous family.

He believes that the DECO 2000 represents a leap forward to the next generation. During the Eighties, quality was all-important. At the beginning of the Nineties, delivery conditions – i.e. speed – was important. The crucial factors nowadays are reactivity and a top-quality service.

DECO offers all these advantages in one package. TORNOS believes that the three stages – cams, CNC and DECO – we have experienced so far are not all there is. The future beckons – who knows what will come next!

