

# INSIGHTS

ISSUE **2** 2015

## NEW: C 52 U MT

Milling and turning in one clamping – pallet changers with up to 2 tonnes of capacity.

## NEW: HIMS

Hermle “Information-Monitoring-Software” facilitates the monitoring and control of Hermle machining centres.

## METAL-CUTTING MANUFACTURING

Investment in new production facilities – a pillar at Hermle.





## Preface

Dear business partners and customers, colleagues and employees,

2015 is now drawing to a close and it is with great pride that I can report that it has been a successful year. Despite some flagging markets and the ongoing sanctions against Russia, Hermle AG has been able to maintain its position on the market competently.

Since its unveiling at the Open House in April, the C 52 has been upgraded with automation with pallet changers up to a handling weight of 2000 kg. We have also been able to integrate the TNC 640 control across the board. Hermle's proprietary software tool HACS (Hermle Automation-Control-System) has been adapted for all machines with pallet changers and is already being employed by many users. In this edition, we will be presenting yet another software tool. HIMS (Hermle Information-Monitoring-System) facilitates the monitoring and control of the Hermle machining centres. This and other tools such as the Hermle machining set-ups help you to optimise and increase the cost-efficiency of Hermle products.

In addition, the world's most important trade fair for machine tools and metalworking, the EMO, was also held recently in Milan and proved a great success. With three machine models including an automated machine, we were able to exhibit a good selection of our product range. From our perspective there was a considerable international presence at the EMO, and we were delighted to welcome visitors from all over the world, with the Italian contingent of course being the largest. Preparations are now already under way for the 2016 trade fairs and we hope once again to be represented at a wide range of events both in Germany and abroad. Yet again the highlight is bound to be our Open House in April, at which we will as always be unveiling new products and presenting innovative manufacturing technologies supported by a whole host of exhibitors.

One significant investment focus in 2015 was and continues to be the modernisation of the machinery in the metal-cutting manufacturing department, which consisted of the installation of six new, automated machines – all from Hermle of course! The modernisation of the offices for the entire administrative division with a new furniture and workplace concept is also currently under way.

As you can see, there's never a dull moment and we always have plenty to do. On that note, I would like to take this opportunity to wish you and your families a very Merry Christmas and a Happy New Year. Here's to a successful 2016!

Kind regards,



Franz-Xaver Bernhard  
Director of Sales, Research and Development





## C 52 U MT – Leading the way in automation!

The new machining centre from Hermle offers simultaneous high-performance milling and turning in one clamping! The MT version (Mill/Turn) complements the existing C 52 range. Pallet changers can move up to 2 tonnes automatically.

In the C 52 U MT, the A axis is powered by two motors in mechanical tandem drive operation making it possible to move workpieces weighing up to 2000 kg and measuring up to 1310 mm in diameter in the working area. On the C axis, this is achieved directly using a torque motor. The swivelling range of +100°/-130° offers a very high level of freedom for machining. This and the advantages of the modified gantry design with 3 axes in the tool and 2 axes in the workpiece are just some of the many advantages offered by the C 52 U MT.

A working range of 1000 - 1100 - 750 mm (X-Y-Z) and a vertical table clearance of 950 mm make it possible to machine workpieces with a diameter of 1000 mm and a height of 810 mm in the working area without any restrictions. With the 1310 mm collision circle in the working area, it is possible to produce even larger parts on the C 52 U dynamic with 5 axes.

Of course, an extensive automation concept is also available for the C 52 with two pallet changers. The PW 2000 as an entry model comes with two pallets whilst the PW 3000 features an individually configurable number of pallets and pallet storage layout as well as being able to move up to 2 tonnes automatically.

The C 52 U MT provides 60 tools (HSK A 63 / SK 40) or 42 tools (HSK A 100 / SK 50) in the standard magazine integrated into the machine bed on the rear. Several versions of additional magazines mean it is also possible to increase the total number of tools to as many as 385.

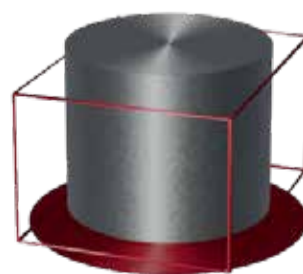
In this way, the C 52 U MT machining centre is blazing new trails in the continually advancing automation of machine building and contract manufacture with high cutting efficiencies. However, the new machine also looks set to succeed in other demanding sectors such as the aerospace industry as the predominant employment of milling and turning in one clamping increases in popularity. And, last but not least, there is the tool and mould making sector, where heavy, voluminous workpieces need to be machined with high precision.

With the C 52 U / MT machining centre, Hermle AG is now presenting the new generation of its tried-and-tested C 50 U / MT series. The C in the name stands for Centre, the 50 for the size, the 2 for the next generation, U for Universal (5 axes) and MT for the mill/turn version.

**Hermle's no. 1 priority and most important benchmark: Precision!**



### TECHNICAL DATA C 52 U / MT:



Traverse path X-Y-Z	1000 - 1100 - 750 mm
Body	Dia. 1000 / H 810
Collision circle	Dia. 1310
Vertical table clearance	950 mm



# COMPANY.

## Automation: Hermle takes the next step with HIMS

New Hermle "Information-Monitoring-Software" (HIMS) facilitates the monitoring and control of Hermle machining centres.

Imagine it's a Wednesday night. You're sitting at the glass control station in your production hall sipping a cup of coffee and eating a sandwich, enjoying the emptiness of the hall and taking in the ballet of perfectly functioning, fully automated production unfurling before your eyes. Every now and again you pause to check the screen of your PC, laptop or tablet, and then resume your other duties in your own good time. Not a chance? Oh yes there is! With HIMS.

Unmanned, automated production at night and on a weekend is already a reality. Parts requiring the

use of minimal tools and associated with minimal tool wear can already be produced without staff needing to be present at all times. With the new software HIMS from Hermle you can rest even more assured that your machines really are doing what they should be. And should they ever not, you will be informed surely and reliably to allow you to take appropriate steps as soon as possible.

How HIMS works: The machines report errors and events to the HIMS server, which forwards the information on to a PC in the office or an SMTP server.

E-mails are then sent from there to the intended recipients of the information, who can take action if and as necessary.

This guarantees longer machine running times, higher utilisation, greater yields and a rational, modern production concept. And, of course, restful Saturdays, Sundays and night shifts for your operators.



### HIMS' PREMIUM FEATURES

#### Status monitor

- Compact overview of the machines with live status
- Detailed evaluation of the status history
- Display of the message history
- Export function of the status data to Excel

#### Event-Messenger

- E-mail notification of machine events and errors 24 hours a day
- Definition of groups (machines and users)
- Calendar function to define the notification periods

Your machines must fulfil the following requirements for you to be able to use HIMS:

- Control-neutral tool – functions with iTNC 530 and TNC 640 as well as Siemens 840 D sl

#### HIMS requires the following infrastructure

- Network for communication Machine – Server (static IP addresses)
- Requirement for the HIMS server:  
CPU: Min. 3 GHz (2 processors)  
RAM memory: Min. 4 GB  
64-bit operating system  
Windows Server 2012 R2, Windows 7 Professional, (Windows 10)  
5 GM free disk space
- To be able to send e-mails, the server must be authorised to send via SMTP
- Network access for web displaying from an external source must be implemented by the customer's IT infrastructure.

#### Other information that may interest you:

- HIMS is provided on a data carrier along with our machine deliveries
- Languages: German and English





## Metal-cutting manufacturing: Investment in new production facilities – a pillar at Hermle.

This is where the precision in our products originates. This is where cutting efficiency is a top priority. But this is also where flexibility and automated working have been being continually improved and refined for many years. Plenty of reasons for always keeping the production facilities up to date and employing state-of-the-art technologies. In fact, it is one of the areas where our own products are being used more and more and replacing old and outdated machinery. In 2015, we integrated six new, fully automated 5-axis machining centres. All of the machines are equipped with the new Hermle Automation-Control-System (HACS) and monitored using the Hermle Information-Monitoring-System (HIMS).



Two Hermle C 42 U MT dynamics each with pallet changer PW 850



### HERMLE C 12 U DYNAMIC

We use the C 12 U with pallet changer PW 150 and additional magazine ZM 35 to train our apprentices and the employees who have recently completed their training in metal-cutting manufacturing. After all, if you can operate the C 12 U, you can operate all of the automated Hermle machines in the production department.

### HERMLE C 42 U MT DYNAMIC

Three new 5-axis machining centres. Two C 42 U MTs each with one pallet changer PW 850 and a double additional magazine ZM 462. One C 42 U MT with a pallet changer PW 850 and a simple additional magazine ZM 192. The focus here is on highly flexible work, as there are 500 tools stored in the magazine per machine. This avoids machine downtimes caused by unavailable tools. The workpieces can be produced on either machine 1, 2 or 3 with minimal efforts.

### HERMLE C 52 U MT DYNAMIC

The C 52 U MT with pallet changer PW 3000 and double additional magazine ZM 212 can be used for highly flexible production as there is room for 8 different workpieces weighing up to 2000 kg in the workpiece storage. Thanks to the double workpiece magazine, flexibility is a priority. With the C 52 U MT, the focus was on expanding capacity and, above all, automated work in the night shift.

### HERMLE C 60 U MT DYNAMIC

An additional C 60 U MT with pallet changer PW 3000 and double additional magazine ZM 212 increases capacity in the fine machining segment even further. The C 60 can be used to produce a whole range of different workpieces with Y-slides, Z-slides, table housings and table plates for the most varied of machine models.

Hermle C 52 U MT dynamic with pallet changer PW 3000



The second Hermle C 60 U MT dynamic with pallet changer PW 3000



The Hermle C 12 U with pallet changer PW 150 is our training machine of choice in metal-cutting manufacturing



# USERS.



## FLEXIBLE 5-AXIS MANUFACTURING CELL FOR TIGHTLY TOLERANCED, OPERATORLESS MACHINING

A production technician at Reliance Precision operates the pallet storage in order to start an automated production run.

"The Hermle C 22 U machining centre is so precise that it prompted us to question the results we were getting from our existing shopfloor co-ordinate measuring machines. It led to the purchase of two new Zeiss Duramax CMMs – one for milled components and another for turned parts." (Kenny Marsden, Reliance Precision)

The company has operated three five-axis vertical machining centres for several years, but wanted to upgrade this area of production to meet customers' demands for ever higher precision.

Alex Greenhalgh, Estimating Manager, commented, "The flexibility and high level of spindle utilisation possible on the Hermle C 22 U were prime reasons for selecting it. We wanted to increase productivity while reducing manufacturing costs, which the automation equipment enables by allowing extended periods of minimally manned machining." The company was already very impressed with the precision and reliability of a 4-axis machine from Hermle installed in 2013 for the production of a tightly toleranced part for a customer in the aerospace industry. In addition, the support offered by Geo Kingsbury ([www.geokingsbury.com](http://www.geokingsbury.com)) with regard to the installation, commissioning, user support and training had been exemplary, and an excellent working relationship had developed between the two companies. These factors combined played a considerable role in the selection of the latest machines.

Reliance Precision's milling department team leader, Kenny Marsden, said: "Even though the C 22 U has been producing for only a few months, its accuracy is already evident. This has been proved by the on-machine probing, which verifies that tolerances have been achieved."

He added that manufacturing processes on the Hermle are 'right first time' and remain within tolerance from first- to last-off, allowing the machine to be run largely unsupervised.



The 5-axis swivelling rotary table of the C 22 U

Most of the five-axis machining at the factory in Huddersfield, UK, relates to prismatic components, where access to multiple sides of the workpiece with a high degree of accuracy is the primary requirement. It ensures that the tool can machine the component more efficiently in fewer operations, without the need for costly fixturing.

For example, complex aerospace parts in titanium and stainless steel frequently require bores to be accurate to within 5 µm and true dimensional positions to be within 10 µm, in addition to a 5 µm tolerance for squareness and parallelism.

The time savings are enormous. In one instance, an aluminium housing that used to take up to an hour to clock into position on another machining centre takes just 5 minutes to set up on the C 22 U. The cost savings on work-holding are yet another benefit.

Reliance Precision is so impressed with the successful Hermle installation to date that it has recently decided to order a third machine. Kenny Marsden said, "Hermle offers the kind of features that you only get with the very best machines."

[www.reliance.co.uk](http://www.reliance.co.uk)







## HIGH-PRECISION MACHINING: A WORLD OF DIFFERENCE

From right to left: Dave Pegues, Jim Durham, Simon Rodenberg, Butch Boland

Since procurement of a Hermle machine, turnovers at Seyer Industries have soared to new heights.

When World War II veteran Louis Seyer founded his tool and die shop in 1957 with seed money he made from catalogue sales of his innovative Easy Egg Cracker, he never imagined the heights to which the now third-generation family owned Seyer Industries would grow. Today, Seyer Industries' more than 150 employees specialise in manufacturing high-level subassemblies for the aerospace and maritime industries as a major supplier for Boeing, Lockheed Martin, Northrop Grumman, Gulfstream Aerospace and the armed forces of the United States. In contrast to Louis Seyer, however, they now have access to the 5-axis precision machining that Hermle made possible.

### NEW PERSPECTIVES. NEW REQUIREMENTS.

Seyer Industries supplies aircraft parts and subassemblies ranging from fixed-wing electrical subassemblies to flight control components for rotary wing aircraft. It is a long way from its days of largely providing ground support equipment that facilitated the loading of heavy ordnance. Before investing in its first Hermle, Seyer Industries' bread and butter was providing that ground support equipment. But in the world of aviation, 99% of the market is for component parts for planes or helicopters, leaving just a fraction available to those who supply ground support



equipment. Due to the excellence they demonstrated supplying best-in-class support equipment, Seyer began receiving requests from customers to expand its offerings into the components side of the industry. There was only one problem: support equipment was a 3-axis proposition. To meet the exacting specifications of precision aerospace parts, the company needed the capabilities only a high-end 5-axis machine could provide.

### ENTER HERMLE

By 2010, Seyer Industries knew it needed to invest in a 5-axis machine. The growing demand from customers simply could not be met by anything less than 5-axis machining. Seyer Industries looked at a number of options, but before long it was clear that Hermle was a machine with which they could both learn 5-axis machining and continue to grow their capabilities. When asked what stood out about Hermle, Seyer's lead engineer made it clear that it was all about precision. "Our team quickly realised the possibilities of a precision machine that can measure out to three decimal points", he said. The first Hermle purchased by Seyer Industries was a C 40 U, which greatly expanded its capabilities to deliver precision parts. As its ability to meet the supply needs of the aerospace industry grew, so did the demand, leading them to invest in three more Hermle machines. This time the team chose the C 400 U model. Among the strengths Seyer Industries has today, due to the ability of its Hermle machines, is the ability to manufacture components to high profile and perpendicularity tolerances far beyond the possibilities of standard machine tools. That level of precision has allowed the company to machine rotor bearings for various helicopters and arresting hooks used to land aircraft safely on carriers at sea.





# USERS.



## 5 AXES FOR OPTIMAL TOOL SETTING



From right to left: Jon Andri Jörg, CEO of Connova AG, Christian Simon, Regional Sales Manager for Hermle (Switzerland) AG, and Philipp Folghera, Supervisor of CNC manufacturing at Connova AG



Loading/unloading (complete with workpiece clamping device and workpiece) of a loaded workpiece pallet into or out of the setup station

Using the highly optimised milling system from Hermle AG, the technology company Connova AG realises productive quality and economic machining of demanding components in the area of high-performance fibre-compound materials.

### INVARIABLY CONNECTED COMPOSITES AND CNC MACHINING

Jon Andri Jörg, CEO of Connova AG, on the service spectrum of the employees of this specialist team, numbering now around 59: "We have great expertise in selecting and determining of materials such as carbon, GRP, Kevlar or natural fibres and possess the necessary skills and expertise for all manufacturing and machining processes. Particularly mechanical machining is of great importance in a time of great developments in the use of special composite components. It is therefore a decisive advantage for us to be able to prove expert knowledge, from CNC expertise to manufacturing of moulds and tools, including, particularly relevant today, 3- to 5-axis machining of composite components." For this reason, Connova AG invested in a flexible manufacturing system from Maschinenfabrik Berthold Hermle AG 15 months ago. In addition to reproducible machining precision and dynamics in multi-axis complete machining, expertise in system solutions and high performance in direct service were convincing aspects.

### COMPOSITE COMPONENTS (FAMILIES) PRECISELY AND EFFICIENTLY MACHINED

The flexible manufacturing systems from Hermle are conceptualised on a modular basis. The automatic milling system installed at Connova AG consists of a 5 axis CNC high-power machining centre C 50 U, a robot system RS 3 with linear additional axis, a pallet/workpiece setup station and four rack units to hold a total of 43 workpiece-pallets (33 pcs 800 x 800 x 540 mm and 10 pcs 1000 x 1000 x 540 mm). The Hermle machining centre C 50 U was selected because it has the largest working range of 1000 - 1100 - 700 mm (X-Y-Z) and therefore covers the majority of workpieces that have to be machined. For holding the workpiece pallets, a zero-point clamping system was installed.

### EXACT POSITIONING OF THE TOOL HELPS TO AVOID FRAYING ETC.

Following a relatively short training period, the workers and the supervisor of CNC manufacturing at Connova AG, Philipp Folghera, were using the flexible manufacturing system, optionally, in a manned one-shift operation, or unmanned in a second shift, as well as in unmanned weekend manufacturing. Jon Andri Jörg said: "The typical manufacturing batch for us lies at between 1 and 20 pieces but sometimes it goes up as high as 150. The flexible manufacturing system of Hermle contains between 30 and 40 extremely different tasks or extremely different workpieces which we process fully automatically, for example by all around engraving or milling of holes and gaps. The concept of the machining centre's C 50 U with 3 axes in the tool and two axes in the workpiece is ideal for composite machining, because the contours or milling tools, which depending on the form are often very long and jut out, always remain at a 90° angle to the laminated surface due to the 5 axis settings. This avoids delamination and fraying from the very beginning and we can produce quality workpiece for workpiece."



Robot system RS 3 with the linear additional axis for a total of 43 workpiece pallets



Right, the 5 axis CNC high-performance C 50 U machining centre, left of which is the connected robot system RS 3





Working range of the compact 5-axis C 42 UP machining centre with the NC swivelling rotary table 800 x 630 mm for holding differently stocked pallets. On the left there is a pallet stored in the magazine pocket

The Brink Group from the Netherlands – a specialist in die cast tools and production automation in thin-walled packaging for foodstuffs, cosmetics and chemical products, with a focus on plastic packaging with wall thicknesses from 0.25 to 2 mm and FFS (Form Fill Seal) turnkey solutions – has developed into one of the world's leading companies in the field in the last 40 years. As mentioned previously, the primary focus is on the development, design, manufacture and servicing of single, multiple and multi-stage tool systems for mass production of thin-walled packaging in die cast technology as well as the turnkey solutions. As the size of the packaging extends from 20 ml to 30 l, the corresponding multi-tools may be up to 1 m<sup>3</sup> and more in volume. The base plates and components for the die cast tools are just as large accordingly. The more so as customer requirements for cycle times/output, optimal material efficiency, reproducible quality and maximum runtimes in multi-shift operation can only be met by using multiple tool systems plus fully automatic parts handling.

#### PRODUCTION AUTOMATION BOOSTS COMPETITIVE STRENGTH

C. J. van Heerikhuizen, Group Managing Director at the Group's headquarters in Harskamp, Netherlands, spoke about the challenges that come with full-service system business: "In our experience, optimum capacity is just as in demand in this business as maximum availability, and those are just two of the reasons why all the companies in the group rely on CNC machining centres from the German manufacturer Berthold Hermle AG, Gosheim. A total of



A change-pallet with assembled magnetic clamping plate and the multi-tool insert (20x) of a die cast tool system in finish machining

14 Hermle machining centres of various sizes and with different fittings (4 and 5 axes) are currently in use in the four plants. Johan van Veenschoten, Director responsible for mechanical manufacturing, added: "Until 2006, we produced with CNC machining centres. Then we also started using 5-axis technology with Hermle. That worked so well with support from the Hermle-Nederland service department and from the main office that within just six months we had arrived at spindle runtimes of 140 hours per week per machine. In the manufacturing of die cast tool systems, where we use six Hermle machining centres, we easily achieve spindle runtimes of over 600 hours per week."



## AUTOMATED PRECISION MACHINING IN TOOL MAKING

The Brink Group from the Netherlands has been reducing manufacturing costs for years with automated parts manufacturing and increased spindle runtimes, thereby boosting its competitive strength.

The flexible production package comprising the 5-axis high-performance C 42 UP machining centre (centre), the 5x pallet changer PW 850 (front and with setup station) and the additional magazine ZM 160 (rear on right)



#### 5-AXIS MILLING COMBINED WITH AUTOMATIC WORKPIECE MANAGEMENT

As the Brink Group occupies a very special position in the market as a specialist for the die cast tools and turnkey solutions mentioned above, but also has to ward off global competition, it is constantly on the lookout for additional ways to optimise production, and it

has found just that in more extensive manufacturing automation. This is evident for example in the latest investment in parts manufacturing using a C 42 UP 5-axis high-performance machining centre from Hermle. A combination of the longest possible spindle runtimes and automated 5-axis/5-sided simultaneous machining plus automated workpiece handling promises not only advantages in productivity, but also shorter throughput times. The C 42 UP was also equipped with the 5x pallet changer PW 850 for this reason. The 5-axis machining centre also has an additional tool magazine ZM 160. Together with the basic tool magazine which includes 42 pockets, there are now more than 200 tools available for machining the most complex workpieces. The NC swivelling rotary table measuring 800 x 630 mm in diameter provides the required flexibility for

5-axis machining and because machining includes drilling and face, shoulder or cavity milling in workpiece steels fully hardened to 52 HRC, the high-torque main spindle, which rotates at max. 18000 rpm, has an HSK A 63 tool holding fixture and can be fitted with precision drilling and milling tools appropriate for the performance level.

#### SUMMARY

Johan van Veenschoten noted in conclusion: "With the new Hermle manufacturing system, consisting of a C 42 UP 5-axis machining centre and 5x pallet changer, we have another productivity package to use that will definitely save us money. Especially with the help of Hermle's automated machining centres, we have been able to lower manufacturing costs continually and significantly for a long period of eight years, thereby protecting our competitiveness. Not only the machines and pallet changing systems played a large part in this, but also Hermle's excellent customer service, which can be on site quickly and is absolutely competent. When we have a problem, we need help quickly and the service itself should not become a problem, which was the case with previous machine suppliers. We offer a unit number guarantee of 3 million for our own tools, and we also expect the best services and guarantees from our suppliers. Because we have machining runtimes of one to eight hours for tool parts, some of which are very complex and correspondingly expensive, we have to depend on maximum technical availability and absolute long-term accuracy of the machining. We are on the safe side with Hermle's exemplary performance, reliability and service, and we save even more money."



# USERS.

Read the complete article at [www.hermle.de](http://www.hermle.de) in the Info Center/User reports section.



## SUPERB ORDER PRODUCTION

Johann Dietl, Head of the Mechanics Division at Zollner Elektronik AG at the main Zandt plant in front of the compact C 22 UP machining centre working area



"Zollner - Solutions for your ideas" - solution expertise for complex mechatronic systems from the development stage to after-sales services: As a globally active partner of major corporations as well as for small and medium-sized businesses, Zollner AG offers its customers complete cross-sector solutions for the entire life cycle of products and is now one of the top 15 providers of electronic manufacturing services (EMS).

### UNIVERSALLY FLEXIBLE 5-AXIS EQUIPMENT FOR A FASTER TIME TO MARKET

Factors of success that cannot be ignored include the creativity to make developments and the flexibility to realise traditional simultaneous engineering (SE) projects as well as the usage and capacity-oriented availability of production technology equipment for the prompt production of prototypes, sample series, and complex production parts. Johann Dietl, Head of the Mechanics

In prototype construction, sample series production, and tool making, the system solutions specialist of the mechatronics service providers - the Bavarian family business Zollner Elektronik AG - already relies on CNC machining centres from Hermle and their high level of automation.

Division of Zollner Elektronik AG at the main Zandt plant, explained: "In 2009, we started an investment project with the aim of rationalising manufacturing in the areas of prototype construction, sample series and tool making, carrying out comprehensive evaluations with regard to 5-axis machining centres. Following intensive, challenging milling tests, Hermle AG emerged as the victor, because we were convinced by the overall package of three tool axes and two workpiece axes, high dynamics for all conceivable milling and complete machining operations, individual set-up possibilities, cost-benefit ratio and the service concept, which has attracted all-round praise."

### 3-SHIFT USABILITY AND APPLICATION FLEXIBILITY

Today, the Hermle machining centres that have been gradually installed over the last few years cover a wide application range of 3-axis to

5-axis/5-side simultaneous/complete machining for workpiece dimensions of up to 800 x 800 x 550 mm and workpiece weights of up to 1400 kg. Johann Dietl says the following about the requirements and corresponding usage strategy for the Hermle machining centres: "Thanks to the high process depth that we use for manufacturing sheet metal, plastic parts and turned or milled components - with a good 3000 of these seeing changes each year - we require a really high level of usage, application and usability flexibility."

### THE FINAL CASE IN FAVOUR OF AUTOMATED SINGLE PART MANUFACTURING

Hans-Werner Hoppe, an authorised representative of Hermle + Partner Vertriebs GmbH and responsible for the company's major customer Zollner Elektronik AG, has the following to say about the features of the two further automated 5-axis high-performance C 22 UP machining centres in the Zollner Mechanics-Mechatronics Department in Zandt (MZ3): "With a working range of X-Y-Z 450 - 600 - 330 mm, the C 22 UP machining centres are compatible with the majority of the workpieces of Zollner's customers. The standard machining centres are equipped with 55 tools, and the additional magazines with 87 pockets expand the application areas to an extremely wide spectrum of parts and component families without any need for retrofitting. With spindle speeds of 18000 rpm and the HSK A 63 tool holding fixture, we can use optimum tools for highly productive roughing and precision finishing."

[www.zollner.de](http://www.zollner.de)

Setup station for (in this case) 320 x 320 mm pallets for the process-simultaneous setup of pallets with clamping technology or workpieces

## DATES

NORTEC HAMBURG / GERMANY

26.01.2016 - 29.01.2016

SAMUMETAL PORDENONE / ITALY

03.02.2016 - 06.02.2016

METAV DÜSSELDORF / GERMANY

23.02.2016 - 27.02.2016

SIMODEC LA ROCHE SUR FORON / FRANCE

08.03.2016 - 11.03.2016

TECHNISHOW UTRECHT / NETHERLANDS

15.03.2016 - 18.03.2016

MECSPE PARMA / ITALY

17.03.2016 - 19.03.2016

INDUSTRIE PARIS / FRANCE

04.04.2016 - 08.04.2016

CCMT SHANGHAI / CHINA

11.04.2016 - 15.04.2016

BIAM ZAGREB / CROATIA

19.04.2016 - 22.04.2016

OPEN HOUSE

GOSHEIM / GERMANY

20.04.2016 - 23.04.2016

### GERMANY



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### AUSTRIA



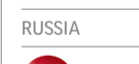
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