

INSIGHTS

EDITION **2** 2014

COMPACT MACHINING CENTER

C 12 U dynamic with RS 05 robot system

THE ADDITIONAL MAGAZINE

The Hermle additional magazine in monolithic 8-corner design

CUSTOMER STORIES

from the metal and plastic processing, metrology,
optical systems and tool technology industries



Preface

Dear business associates and customers,
Dear employees,

An eventful year is now almost behind us, and we are already looking forward to 2015 with anticipation. We are pursuing a stable course at Hermle AG and expect, as previously announced, to post an increase in revenue and profit approaching ten per cent.

We are absolutely on schedule with the construction of our new assembly hall, which commenced in the spring. This structure will house the assembly of the C 50 and C 60 machining centers and the automated systems of Hermle-Leibinger Systemtechnik (HLS). After it is inaugurated at the beginning of December, the first machines are due to be assembled and HLS is due to build its first automated systems soon thereafter. At the same time, both HLS development departments from Gosheim and Tuttlingen will move into the offices, training facilities and meeting rooms, which total more than 2000 square meters. Concentrating our expertise in one location not only promotes the feeling of togetherness, but also strengthens the integration of HLS into the Hermle team.

The C 12 U dynamic, our smallest machining center, has been well received on the market. We have been able to place the model in the intended industries of medical technology, precision engineering, and tool and mold making, among others. At one of Hermle AG's most successful trade fairs, AMB in Stuttgart, we have already introduced the C 12 U dynamic with the adapted RS 05 robot system (for more information, see pages 2-3 in this edition).

Already, the initial preparations are ongoing for our Open House that will take place from 22-25 April 2015 in Gosheim. We will provide more detail on this in our next edition.

With this in mind, I would like to wish you and your families a wonderful festive season and health, happiness and success in 2015.

Sincerely yours,



Franz-Xaver Bernhard
Management Board

Sales, Research and Development

C 12 U dynamic compact machining center

The C 12 U dynamic compact machining center with the adapted RS 05 robot system.

By adapting the complete RS 05 robot system, the installation area will be increased by no more than 2 m², while offering users an enormous economic benefit.

The fully automated production system can now operate round-the-clock either with few or no operators. The C 12 U with the RS 05 robot system is intended to be used particularly in industrial sectors such as medical technology, precision engineering and for the production of electrodes in tool and mold making.

The entire system consists of the two main modules, i.e. the C 12 U machining center and the RS 05 robot system. The RS 05 is adapted to the C 12 U on the left side and consists of a pallet storage module for up to 12 dies which are vertically arranged at a variable height. These dies can be custom fitted with workpieces or ITS 50 pallets, for example. Depending on the gripper design, the robot can load and unload up to 10 kg pallets or workpieces directly from the dies into the C 12 U working area. To do this, the C 12 U moves its Y axis into the tool change position and simultaneously opens the left partition wall between the working area and the robot. The robot pulls the controlled die out of the die storage and uses the single or double gripper to change the pallets or move the workpiece blanks directly into the working area. Customized clamping devices can be adapted on the NC swiveling rotary table in order to clamp pallets or workpieces securely and quickly.

The pallet storage is loaded from the rear during production time. To do this, the door only needs to be pushed upwards and the dies need deposited on the storage compartment and manually pushed into the storage. At the back of the machine there is also the C 12 U tool loading and unloading position.

The standard tool magazine holds 36 tools. Optionally, tool pockets can be almost doubled from 36 to 71 and without taking up additional space. This is very advantageous especially in the automated machining process, as spare and replacement tools are often used here to maintain a reliable workflow. An additional 19" control panel facilitates the inputting of tool data into the convenient tool management.



shows the compact working area of the C 12 U when loading a workpiece using the RS 05 robot system

Compact



Shows the setup mode with the robot control module



Shows the working area, the lateral robot position with die during the change process (from above)

FACTS C 12 U DYNAMIC

Traverse path X-Y-Z:	350 - 440 - 330 mm
Speed:	12000 / 15000 / 18000 30000 / 42000 rpm
Rapid linear traverse X-Y-Z (dynamic):	30 (50) m/min
X-Y-Z acceleration (dynamic):	4 (8) m/s ²
Control unit:	TNC 640

NC SWIVELING ROTARY

Clamping surface:	Ø 320 mm
Swiveling range:	+/- 115°
Output type of rotary axis C:	Torque
Speed of rotary axis C (dynamic):	40 (80) rpm
Speed of swiveling axis A:	Mechanical on one side
Speed of swiveling axis A (dynamic):	25 (55) rpm
Table load:	Max. 100 kg

TOOL MAGAZINE

(integrated into the basic body of the machine)

Standard ring magazine:	36 tools
Additional magazine:	35 tools

FACTS ABOUT RS 05 ROBOT SYSTEM

Robot:	6-axis industrial robot
Transport weight:	up to 10 kg
Gripper:	Double gripper for ITS 50 pallets and workpieces
Pallet storage:	Holds up to 12 dies, which can be custom configured with ITS 50 pallets or workpieces
Robot control panel:	For the robot set-up mode

COMPANIES.

THE ADDITIONAL MAGAZINE

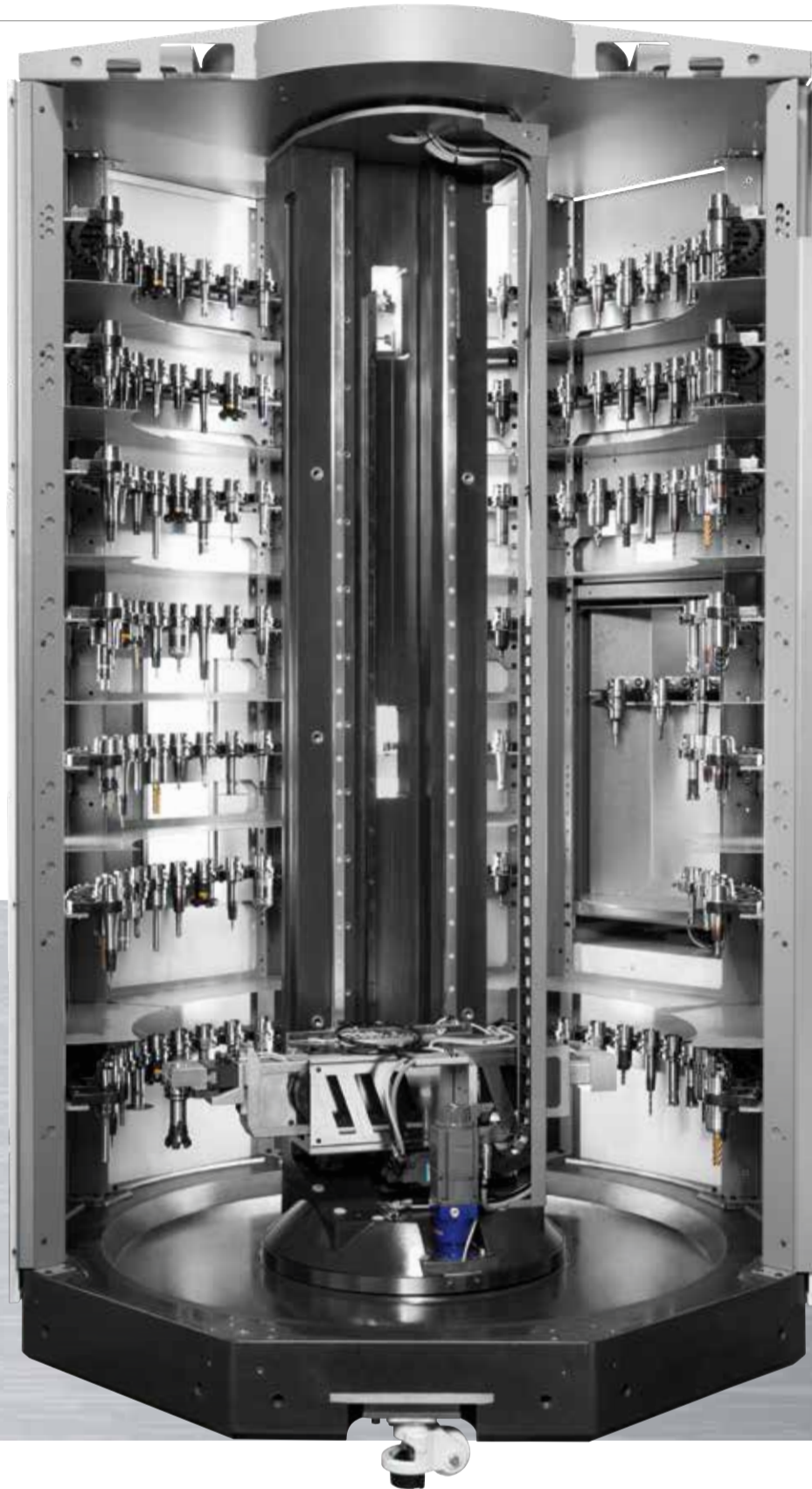
ZM 92 - ZM 108 - ZM 115 - ZM 135 - ZM 192

The Hermle additional magazine in monolithic 8-corner design for attachment to the Hermle machining centers C 32 to C 60 in a space-saving manner. With up to 192 tool pockets over a surface area of 3 m².

The base pedestal and A axis basic support are configured in mineral cast design and stabilize the magazine. Adjustable feet with integrated transport rollers enable it to be attached to the machining center more easily.

HIGHLIGHTS

- Available for all C 32, C 42 C 50 and C 60 models
- Only 3 m² footprint
- Monolithic 8-corner design
- Base pedestal and Z axis base support in mineral cast design
- Up to 192 tool pockets (interface-dependent)
- Loading and unloading position with 2 x 2 or 3 x 3 tool pockets (interface-dependent)
- With additional control panel on the C 50 and C 60
- Adjustable feet with integrated transport rollers
- Two magazines can be combined



Configuration for the C 50 / MT and C 60 / MT with additional control panel



Configuration for the C 32 and C 42 / MT.
Machine control panel can be swiveled to the loading and unloading position



Schütz GmbH, the medium-sized service provider in the field of CAD/CAM, prototyping and metal-cutting technology, has placed its faith in the high-performance nature of Hermle CNC machining centers right from the outset

From left to right: Reinhard Schütz, founder and proprietor of Schütz GmbH, and Franz Baier, machine operator for CNC machining centers and – as a „founding father“ – long-standing employee at Schütz GmbH



When people with creative ability and expertise feel either under-challenged at work or restricted in what they can do, they actually have only one choice: to become self-employed. Reinhard Schütz is one of these people and heads up Schütz GmbH, which has grown to employ 20 specialist workers. This is a result of him reaching the conclusion in the late 1990s that he was literally stuck in a rut and could not express himself. As a consequence, he took the plunge and founded his own company. His plan was for the business to handle everything relating to CAD/CAM applications, manufacturing prototypes, constructing devices and injection-molded specimen tools, as well as complete machining of elaborate single parts and small series.

HIGH-QUALITY EQUIPMENT FOR REPRODUCIBLE QUALITY RESULTS

“At the company in which I worked for many years, one day the milling machine had to be replaced. Hermle was the frontrunner at the time. In the subsequent period, this decision proved to be absolutely correct. Therefore, it was clear to me that I would use Hermle machines in my own company. For reasons of affordability, we purchased a pre-owned Hermle UWF 1002 H universal milling machine initially, which we then soon followed up with a U 630 as our next machine. We went flat out for a few years with both of these precision tool milling machines, which already boasted partial automation. We then chartered new waters in 1999 with a C 600 V CNC machining center,” Reinhard Schütz says, reflecting upon his company’s early phases. The customers were evidently very satisfied, as they called for the company to increase its capacities – both in terms of machining capaci-

ty, but also in machining larger workpieces. The company obliged by building a new production hall and by making further investments in Hermle universal milling machines and CNC machining centers (in the shape of a U 1000 A and a C 800 V in 2001). In the subsequent period, Schütz’s specialist workers pushed the boundaries of what the Hermle machines can achieve, and obtained the maximum performance from the 3 and 4-axis universal milling machines, CNC machining centers and auxiliary devices, as well as with creative clamping and tool solutions. Wholly new opportunities were then opened up in 2003 when a C 40 U CNC 5-axis high-performance machining center was purchased.

A SIGNIFICANT SUCCESS FACTOR: EXPANDING THE 5-AXIS MACHINING PROVISION

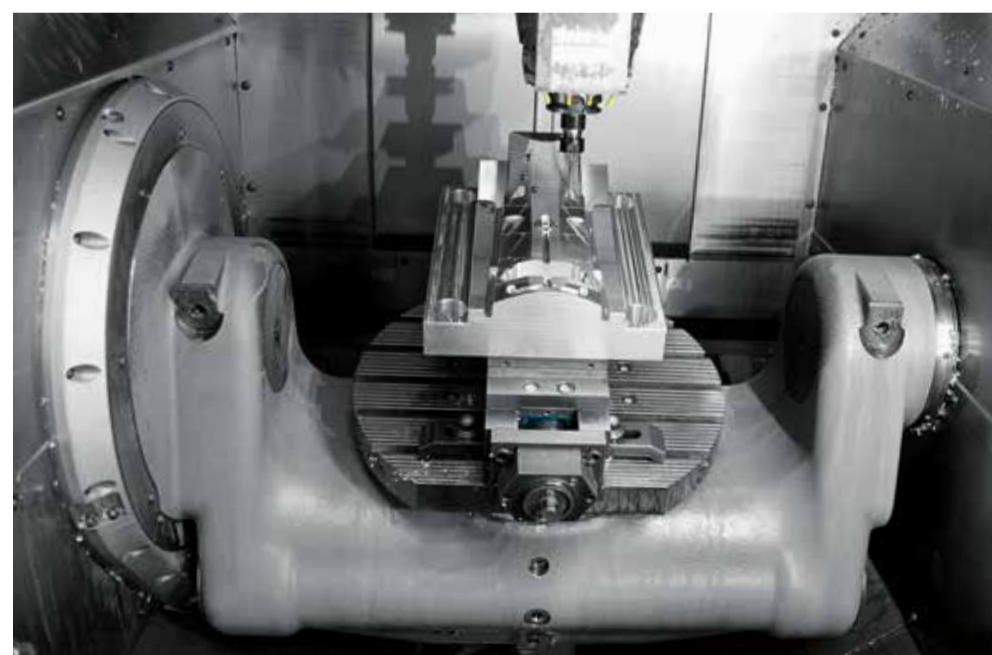
Armed with the experience of the preceding years after the company’s founding, and with

eyes continuously set on the future, the area of 5-axis/5-side complete/simultaneous machining has been successively expanded. A short time ago, a CNC 5-axis high-performance machining center of type C 60 U was ordered for manufacturing large parts. Reinhard Schütz is excited by this development: “We will then boast six 5-axis machining centers, which at least at the moment amounts to significant 5-axis machining and manufacturing capacities. This provides peace of mind both to existing and potential customers that they will receive their elaborate workpieces and solutions by the agreed deadline. It goes without saying that the Hermle machines’ high technical availability and the extremely good and reliable service play a decisive role here too. In the round, Hermle has been very committed to supporting us over the years. On one occasion, they even provided us with a machine on an ad hoc basis when we were under rather some deliv-

ery pressure due to a lack of machining capacity.”

THE “OTHER” WORKING PHILOSOPHY: GIVING THE STAFF SPACE AND TIME

Reinhard Schütz can explain why this principle is beneficial: “Our employees assume full responsibility for each project from beginning to end: right from the initial project discussion through to delivering the parts in documented quality. The demands on our employees are greater too, as they are not handling run-of-the-mill CNC machining tasks; they mostly have to get to grips with highly demanding 5-axis/5-side complete/simultaneous machining of individual workpieces made from a wide range of materials. In our experience, our customers in the automotive industry by all means require a fast turnaround from us in the form of available capacity. They request elaborate prototypes and components from us urgently, as important winter and summer tests are due or have been interrupted for a new vehicle generation. However, it is at least as important as this that the part precision and quality are correct; there are absolutely no compromises in this regard. Everything has to be “just so”, meaning that a certain amount of concentration is required. We are able to work profitably both for ourselves and our customers only if the employee does everything correctly and the machine functions exactly according to the specifications. Too much pressure is counterproductive in this scenario, and quality of the delivered product is the only way to win over the customer anyway.



Working area on the C 22 U with the NC swiveling rotary table diameter 450 mm and clamped machine vice

USERS.

To read the detailed article, visit www.hermle.de and see the "News/User reports" area.



EXCELLENT ORDER MANUFACTURING

As the service center for mechanical and electronic manufacturing in the Rohde & Schwarz GmbH & Co. KG plant network, the Teisnach plant has placed its faith in automated CNC high-performance machining centers from Hermle as one of its processing solutions

Left: Martin Blüml, machine/system operator; right: Andreas Bauer, head of vertical CNC milling; both from the Rohde & Schwarz plant in Teisnach



"THE PLANT OF THE YEAR - EXCELLENT SMALL SERIES MANUFACTURER 2010"

This was followed up with "The Best Plant 2013" and this year with the Bavarian Quality Prize. Any company able to toast such honors surely has much more to offer in the broad sector of manufacturing technology than a traditional supplier of mechanical components and assemblies, for example. This is particularly since the products and solutions developed by Rohde & Schwarz GmbH & Co. KG are basically always from the sector of metrology and communication technology; mechanical manufacturing does not necessarily form part of the core business. Or does it?

SPECIALTY: COMPLEX PRECISION PARTS FROM A BATCH RUN OF 1 UPWARD

In the area of vertical milling, in which 38 employees are currently employed, this has the consequence that we need to pursue a consistent course of high-performance and competitiveness. This means in practice that we predominantly need to deploy automated 5-axis/5-side complete/simultaneous machining. "To live up to these requirements on an ongoing basis, a rationalization project entitled "automated (predominantly operator-free) part manufacturing" was launched in 2010. In this context, we were on the lookout for a partner with associated expertise. We found what we were looking for in the shape of Maschinenfabrik Berthold Hermle AG.

MANUFACTURING OPERATOR-FREE, WITH PROCESS SECURITY AND PRECISION QUALITY

The experienced practitioner Andreas Bauer explains: "Our declared objective of significantly and emphatically increasing the operator-free periods chimed with the Hermle concepts entirely. Perfect presentations were followed up by absolutely sound evidence of performance. In workshops, we defined the scopes of equipment and interfaces.

In the process, it proved to be a great benefit that we received complete systems from one supplier. This comprised in one case two C 30 U 5-axis CNC high-performance machining centers combined with a RS 2 robot and workpiece magazine system. In another case, this comprised a C 42 U 5-axis CNC high-performance machining center with integrated triple pallet changing system."

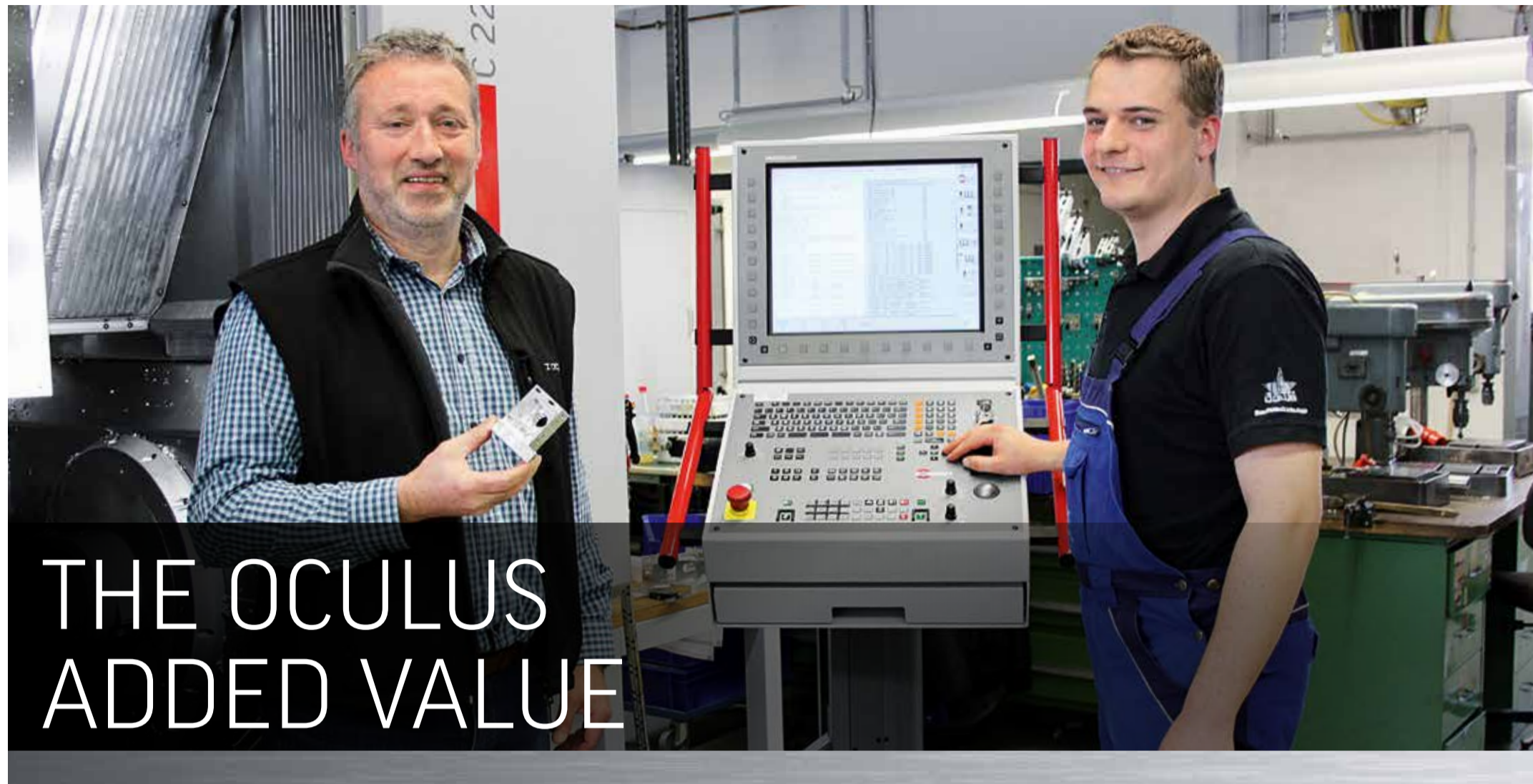
THE BOTTOM LINE

After gaining experience with the manufacturing system on both C 30 U machining centers and the RS 2 robot system, we required only a 3-month start-up phase to achieve a comparatively high degree of use of above 95 % with the milling system on the C 42 U machining center and triple pallet changer.

www.rohde-schwarz.de



Pallet setup station arranged at the front of the pallet changer; freely accessible from three sides and from above



THE OCULUS ADDED VALUE

From the idea to the product, or to put it another way: precision part manufacturing and high level of in-house manufacturing as central elements of corporate success when it comes to optical systems and devices for ophthalmologists and occupational medicine

Left: Uwe Wambach, manager; right: Andreas Theis, industrial mechanic; both from Oculus Optikgeräte GmbH in Wetzlar, standing in front of the Hermle C 22 U 5-axis CNC high-performance machining center



"YOU CAN SAY THAT YOU MASTER PRECISION IF YOU DO PRACTICALLY EVERYTHING YOURSELF,

have the necessary equipment at your fingertips,

and have qualified, committed specialist staff," Uwe Wambach says. The manager at Oculus Optikgeräte GmbH in Wetzlar was describing the manufacturing and quality philosophy held by the manufacturer for ophthalmologic devices. But to begin at the beginning: The medium-sized family company Oculus Optikgeräte GmbH was founded in 1895.

At that time, the business was established in Berlin, before later moving to the "optical valley" around Wetzlar. In its new location, Oculus developed to become a business operating worldwide, with its devices and complete solutions for ophthalmologists, optometrists and opticians being sold in more than 80 countries. 265 employees are on the payroll in the three plants in Wetzlar and neighboring Münchholzhausen. They harness scientific support to develop the complex mechatronic devices and systems and manufacture them according to the highest quality specifications. Besides traditional precision mechanics and precision optics, electronics and software are important too.

MACHINING PRECISION COMPONENTS EFFICIENTLY AND ASSEMBLY-READY TO BOOT

A total of 15 specialist employees are responsible for programming and operation on a two-shift basis. The qualified precision engineer Uwe Wambach explains:

"With 5,000 and 6,000 existing and often repetitive components, not to mention new components, we manufacture a very wide range of workpieces. In the process, the number of pieces can fluctuate wildly between 1 and 4,000, particularly since we manufacture the series parts in batch sizes from 25 to 250 depending upon the requirement and capacity. There-

fore, we have to be able to use the machines very flexibly. Furthermore, we have very tough requirements in terms of shape, angle and reference level (position of optical axes) precision. The fact that high machining precision and high precision are not mutually exclusive can be seen not least on the Hermle C 22 U 5-axis high-performance machining center. This has now assumed a type of benchmark function at our company, as we are able to use it to machine workpieces of all degrees of complexity through to surface treatment, and the workpieces are then assembly-ready.

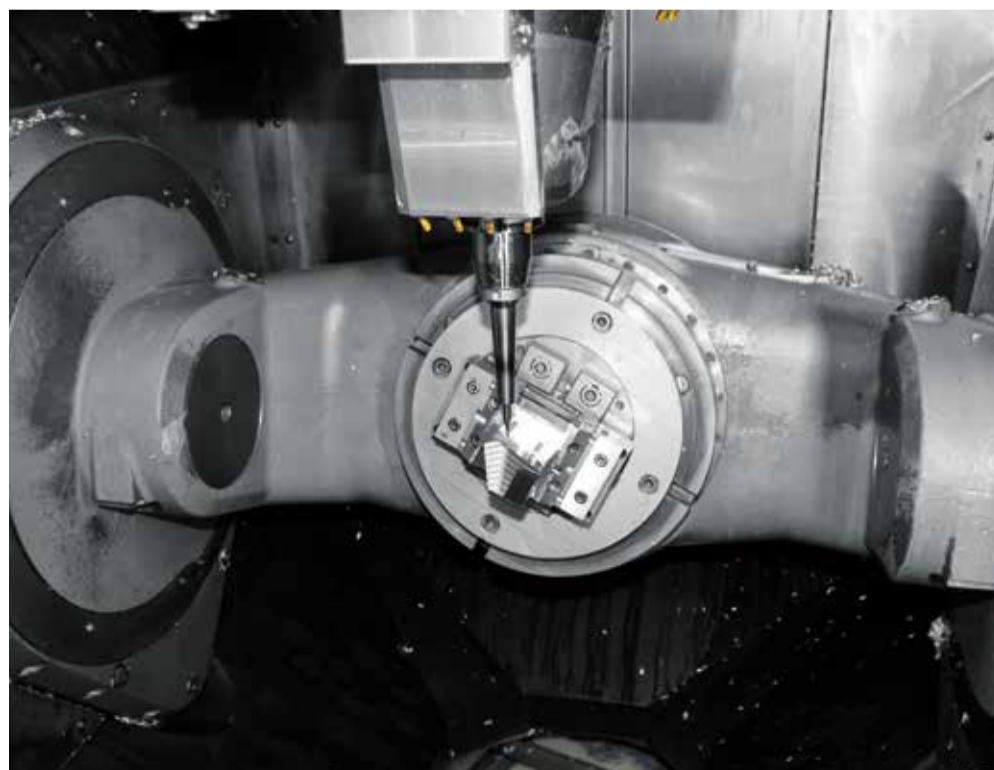


A complex optical carrier with multiple reference levels for optical axes. Completely milled on a 5-axis basis from one piece in two clamps (complete assembly on the right)

5 AXES AS THE KEY TO SUCCESS

Logically, Oculus took a systematic approach to invest in the shape of the C 22 U 5-axis CNC high-performance machining center. Uwe Wambach elaborates: The 5-axis concept and the machine structure won us over to as great an extent as the milling trials, chippings concept and options for custom equipping.

No other machine was able to achieve the desired precision in terms of 5-side complete machining with reproducible exact axis alignments for the optical industry as effortlessly as the Hermle machining center. We cannot afford any errors whatsoever, as we strive for assembly-ready manufacture of individual and series parts. Therefore, we chose the secure solution in the shape of the Hermle C 22 U.



Very large working area for the machining center compact class and the 320 mm NC swiveling rotary table for swiveling/turning positioning the workpiece(s) [two axes in the workpiece and three axes in the tool] for 5-axis/5-side complete machining complex optical parts

USERS.

To read the detailed article, visit www.hermle.de and see the "News/User reports" area.



FASTER TO ROI WITH 5 AXES



Left: Reinhard Hackler; department manager for mechanical manufacturing; right: Lukas Garthe, cutting machine operator, in front of „his“ C 60 U 5-axis CNC high-performance machining center with Heidenhain control

Meissner AG is a leading international complete service provider when it comes to mold and tool-making. To achieve “return on investment” for its customers, it places its trust in three Hermle C 60 U 5-axis CNC high-performance machining centers, among others.

C 60 U machining center has a very large working area with X = 1,200, Y = 1,300 and Z = 900 mm with the NC swiveling rotary table 1,350 x 1,100 mm, which accommodates workpiece weights up to 2,500 kg and guarantees dynamic 5-axis/5-side complete/simultaneous machining



“PRECISION AND PERFORMANCE FOR THE WORLD MARKET”

– At Meissner AG in Wallau, in the Hessian town of Biedenkopf, this is not just a throwaway slogan, rather something they live and breathe. A large part of this can be attributed to the company set-up as an “employees plc”, a corporate structure that is unfortunately still somewhat rare. This involves the majority shareholding in the stock corporation being held by the employees. The fact that the firm was founded in this way heralded the start of a success story, which continues up to the present day. Meissner AG employs today more than 300 people at its location in the Wallau area of Biedenkopf, a town in western Germany. Around 100 further employees work at the company’s Chinese site in Kunshan. The company focuses on technical high-end complete solutions in the three areas of foundry tools, blow molds and tools for vehicle trim parts. The process chain range of services can be broken down into product development & engineering,

rapid prototyping, mold and tool-making, quality control, tool breaking-in and service. The bulk of the tool systems are used by the automotive industry. The customer base includes many such manufacturers and their technology partners or suppliers.

THE CHALLENGE: MANUFACTURING LARGER TOOLS RATIONALLY

Reinhard Hackler, department manager for mechanical manufacturing, says: We are witnessing a pronounced trend towards larger molds and tools. This is resulting from the advancing efforts towards more material and energy efficiency, and increasing functional integration and performance density among automotive assemblies.” In practice, this has the effect that molds and tools comprise larger basic units and larger components, which in turn necessitates larger machines. Furthermore, it is essential to remain true to the Meissner ROI philosophy and provide molds and tools for the customer on an economic basis. For this reason, investing in larger CNC machines goes hand-in-hand with promoting 5-axis technology for efficient complete manufacturing.

SOLUTION: HIGHLY AUTOMATED CONTOUR, SIMULTANEOUS AND COMPLETE MILLING

Reinhard Hackler explains: “After a short evaluation, it was clear to us that we would use the new Hermle C 60 U large part machining centers, as they struck us as being ideal for our envisaged

complete and simultaneous machining tasks. We now have three C 60 U’s and like to use them primarily for contouring and simultaneous milling with a high level of automation. Due to the proven performance, we successively machine complex tools or components one after another on these 5-axis machining centers.

IN SUMMING UP: MORE THAN JUST FULFILLED EXPECTATIONS

Each year, we manufacture approx. 600 complete tools and have around 15 parallel projects ongoing at any one time in the mechanical manufacturing department. We have scored an absolute hit with the Hermle C 60 U 5-axis CNC high-performance machining centers. From our point of view, all of our expectations have been more than exceeded. With 5-axis simultaneous machining, we are able, above all, to compensate for certain turning or die sinking work and omit these tasks. This means that we do not have to go to the trouble of handling and re-clamping, of course, ultimately leading to us saving throughput time. At the end of the day, the precision, surface quality and thus overall quality of the tools’ completely milled basic elements and components is so high that reworking is indeed restricted to a minimum.

www.meissner.eu

DATES

INTEC LEIPZIG/GERMANY
2/24/2015 – 2/27/2015

MECSPE PARMA/ITALY
3/26/2015 – 3/28/2015

CIMT BEIJING/CHINA
4/20/2015 – 4/25/2015

OPEN HOUSE

GOSHEIM/GERMANY
4/22/2015 – 4/25/2015

MOULDINGEXPO
STUTTGART/GERMANY
5/5/2015 – 5/8/2015

MACH-TECH BUDAPEST/HUNGARY
05/12/2015 – 05/15/2015

METALLOBRABOTKA
MOSCOW/RUSSIA
5/25/2015 – 5/29/2015

MACHTOOL POZNAN/POLAND
6/9/2015 – 6/12/2015

SHAREHOLDERS' MEETING
GOSHEIM/GERMANY
7/8/2015

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awt.kassel@hermle.de
www.hermle.de

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Prague office, Czech
Republic
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HERMLE Hermle Machine Co. LLC
Franklin/WI, USA
www.hermlemachine.com

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