

# INSIGHTS

EDITION **2** 2013

## C 400 DYNAMIC – EXACT – RELIABLE

iTNC 530 in HSCI version and new table variants

## MPA TECHNOLOGY

Generative manufacturing of highly complex components  
specially for Hermle customers

## CUSTOMER STORIES

From the following sectors: Crystal glass manufacture,  
tooling and machining

## NEW TRAINING PROGRAM

Comprehensive coverage of a wide variety of  
course content in a new training system







## Preface

Dear business friends, customers and colleagues,

We have had an exciting year, marking our company's 75th anniversary, and now we are looking forward to meeting the challenges which 2014 will bring. Uncertainty persists, and caution remains our watchword, but our high levels of orders in hand will enable us to produce at increased capacity from first quarter 2014 on. In view of that pleasing prospect, we would like to thank our customers most sincerely for their continued trust and confidence in our products!

We will again be delivering a range of innovations in the year ahead. We will be launching a new machine model, available for immediate delivery, at our Open House from April 9 to 12, 2014.

We are running two construction projects at our Gosheim location in order to meet the rising demands of the market. We have started building a guest restaurant which will enhance the experience of our visitors. Built as an extension to our main administration block, the restaurant will begin serving in April 2014, with its first major test being our Open House. Next April will also see the start of work to construct a new assembly hall in Gosheim. On its completion, it will house Hermle Leibinger Systemtechnik, relocated from Tuttlingen. The new facility will provide us with the ideal production conditions for automation solutions, custom fabrications and assembly of our largest machining center, the C60.

On a personal note, I have decided to retire from my long-standing post as management board spokesman with effect from March 31, 2014. My time at Hermle has been challenging, exciting and fulfilling, and I have always enjoyed my work. So I am pleased to say that I will not be disappearing from the scene completely, but will be maintaining close links with the company. I will still be regularly seen around the place, although my role will be somewhat less active. Responsibility for running the business will remain in the capable hands of my long-standing management board colleagues Günther Beck, Franz-Xaver Bernhard and Alfons Betting. I wish them, and all the workforce, continued success and all the very best for the future.

I would like to thank you all for the many years of fruitful working relations, personal affinities, interesting dialog and amicable encounters which I have enjoyed.

With heartfelt thanks once again, Best regards,

Dietmar Hermle

# Precision in every dimension



Various NC swivelling rotary tables provide the ideal entry into 5-axis technology.

[www.hermle.de/c400](http://www.hermle.de/c400)

The C 400 is Hermle's modified version of the C 400 basic – a dynamic machining center designed as an entry-level model for 5-axis/5-side machining. New control units, enhanced program functions and an extensive range of add-on features make operation of the machining center now even easier.

### TRIED AND PROVEN EXPERTISE

The C 400 embodies our tried and proven core expertise in 5-axis technology, the benefits of which are fully utilized by the table with worm gear drive. All tables are manufactured exclusively and in full at our Gosheim location.

The new and improved machining center with its modified gantry design is capable of dynamically and simultaneously machining workpieces up to 600 kg in weight on 5 axes and 5 sides. A wide range of features ensure high-precision, economical parts production. In particular, difficult-to-machine materials can be milled in record time, with perfect accuracy – delivering ultra-high precision and very high levels of machine availability at all times.



### OUR 2013 ANNIVERSARY CELEBRANTS

#### 40 years

Manfred Mielke

#### 25 years

Stefan Mauch  
Hermann Ritter  
Holger Steger  
Gerd Zisterer  
Edgar Staiger

#### 10 years

Oliver Stengelin  
Tanja Niebel  
Linda Bernhard  
Markus Braun  
Michele De Luca  
Bernd Dreher  
Sven Engler  
Daniel Feldi  
Matthias Haller  
Stefan Hermle  
Ralf Müller  
Richard Ritter  
Kevin Simon  
Johannes Weber  
Harald Friz  
Kai Bacher  
Lars Hofmann  
Rita Lach  
Wolfgang Zimmerer  
Veronika Seifriz  
Peter Tilitz

### TECHNICAL DATA

Traverse path X-Y-Z:	850 – 700 – 500 mm
Speed:	15000 / 18000 rpm
Rapid traverses linear X-Y-Z:	35 m/min
Linear acceleration X-Y-Z:	6 m/s <sup>2</sup>
Control:	ITNC 530

### THE WORKPIECE DIMENSION

The C 400 features:

- a large swivel range of workpieces in the working area.
- utilization of the entire traverse range.
- a large collision circle between the table flanges.



3-axis

850 x 700 x 500 mm

max. 2000 kg



5-axis

Ø 650 x 500 mm

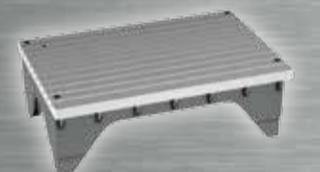
max. 600 kg

Collision circle: Ø 1020 mm

### CLAMPING TABLES

#### Rigid clamping table

Clamping surface: 1070 x 700 mm  
Max. table load: 2000 kg



#### NC swivelling rotary table

Clamping surface: Ø 440 mm  
Max. table load: 400 kg



#### Secondary clamping plates

Clamping surface: 920 x 490 mm



#### NC swivelling rotary table

Clamping surface: Ø 650 x 540 mm  
Max. table load: 600 kg



### Further information

[www.hermle.de/c400/tischvarianten](http://www.hermle.de/c400/tischvarianten)





## MATERIALS – METAL POWDER

The starting materials for the application process are metal powders in grain sizes from 25 to 75 µm. Inner geometries and back-cuts can be implemented using a water-soluble filler material. On completion of the production process, it is washed out of the component and the desired cavities are created.

The following materials can be processed:

- 1.2344 Temperable hot-working steel (H13)
- 1.4404 Stainless steel (316L)
- Filling material for the inner geometries (water-soluble)
- Copper, bronze, titanium...

## WORKPIECES

The MPA process can be used to manufacture temperable tools and mould inserts with internal cooling channels or an integrated heating element. Circular components meeting these requirements are also possible.

# GENERATIVE MANUFACTURING WITH MPA TECHNOLOGY

Maschinenfabrik Berthold Hermle AG is launching a wholly owned subsidiary with headquarters in Ottobrunn near Munich, Hermle Maschinenbau GmbH (HMG), to work with MPA (Metal Powder Application) technology. As a generative manufacturing contractor, HMG can call upon extensive know-how and wide-ranging components from many different industrial sectors, all tested under production conditions.

## APPLICATION AND MACHINING IN ONE MACHINE

MPA technology is used to produce components made of metal powder that can be used under production conditions. MPA is a thermal injection technique for metal powders, permitting generative manufacture of large-volume components with virtually any desired inner geometry.



Pipe made of 1.2344 (temperable hot-working steel, H13).

## MATERIAL BUILD-UP AND MACHINING COMBINED

Integration of the applicator unit into a Hermle 5-axis machining center enables hybrid manufacturing processes to be realized, combining material application and machining in one machine. The "MPA Studio" CAD/CAM software developed specially for the MPA process is used to write programs with alternating application and machining paths. Simulation of the complete process allied to quality assurance functionality makes the software a highly flexible and versatile tool for MPA technology users.

## MATERIAL ANALYSIS AND QUALITY CONTROL

Producing high-quality components requires optimum coordination of process parameters for each metal powder that is used. The properties of the resultant structure are determined on the basis of extensive testing with reference components.

[WWW.HERMLE-GENERATIV-FERTIGEN.DE](http://WWW.HERMLE-GENERATIV-FERTIGEN.DE)  
[SALES.HMG@HERMLE.DE](mailto:SALES.HMG@HERMLE.DE)

To read the detailed article visit [www.hermle.de](http://www.hermle.de) and go to the News & Press/Users section.



# MILLED VARIETY FOR GLASS ART

French crystal glass art manufacturer Lalique backs 5-axis machining technology from Germany for the manufacture of complex models, molds and tools as well as the texturing of high-quality crystal glass luxury products.

# LALIQUE

## RENÉ LALIQUE

... was born in 1860 in Ay in Champagne and was one of the most famous jewelry and glass artists of the art deco period, and especially of its French expression, art nouveau.

By his death in 1945 René Lalique had grown from being an illustrator and creator of jewelry designs via the production of jewelry items into an entrepreneur in whose workshops and factories glass was primarily processed artistically to his own designs.

After the First World War he started up art glass production again and, in 1921, opened a larger factory in Wingen-sur-Moder in Alsace. Today, this forms the glass art manufacturing hub of the Lalique organization that currently employs around 500 people throughout the world.

## LEAD CRYSTAL GLASS ART COMBINES TRADITION AND MODERNITY

To comply with the extremely high demands of customers and their own demands in terms of artistic presentation, extravagant design and supreme quality, the development, design and production of the models, molds and tools naturally takes place on their own premises. Each year we manufacture around 60 new molding ever larger crystal glass products in the form of exclusive individual parts, some time ago we felt compelled to procure a machining center permitting the efficient and complete machining of relatively large tool segments. Because conventional tool manufacture in several machining stages and in 3-axis technology also appeared to be no longer appropriate and, ultimately, insufficiently cost effective, we opted to get into 5-axis technology.

## BIG STEP FORWARD WITH 5-AXIS TECHNOLOGY

At the end of the relatively long evaluation and testing phase, Christian Vollmer and his colleagues were only really convinced by one product, namely Hermle's 5-axis CNC high-performance machining center C 30 U.

The machine has a comparatively large traversing and operating range that accommodates Lalique's tool and mold making requirements in terms of the complete machining of relatively large tool parts. As it comes equipped with the large 630 mm-diameter NC swivelling rotary table, this produces unheard of scope for 5-axis complete machining, which is used creatively here. Consequently, not only does the manufacture of prototypes and models made of modeling materials and of tools and tool segments made of special cast iron and tool steel now take place on the MC C 30 U, but filigree decorative and texture treatments, for example, are also performed on cast crystal glass products.

In order that all these treatments can be performed completely in one pass and in one to just a few clampings, the machine has a tool magazine with a perfectly adequate number of 32 positions. The tools are clamped in an HSK-A63 holding fixture and rotate optionally and in accordance with the combination of material for machining/custom-fit tool/optimum parameters at up to 18000 rpm.

## PERFORMANCE-LINKED STANDARD DESIGN OF THE MC C 30 U

In conclusion, Christian Vollmer commented on the Hermle MC C 30 U and the associated improvement in performance in terms of prototype/model/tool/molds manufacture and crystal glass treatment. "We have a few thousand product mold tools in stock that are mostly only used a few times because they are one-offs or highly exclusive mini series. In order to be able to satisfy the very demanding wishes of customers throughout the world both artistically and in terms of quality and timely delivery, for us it is a crucial advantage to be able to carry out direct mold milling by rough-machining and smoothing in consecutive processes.

This saves handling effort plus a lot of time and, with it, cost. We use the Hermle C 30 U machining center for all relevant work that comes up, because the design and quality of the machine are literally a match for each of our applications."

[www.lalique.com](http://www.lalique.com)

Left to right: Christian Vollmer (Head of Mold and Tool Making) and Coskun Yesiltas (programmer and machine operator) in front of the C 30 U 5-axis CNC high-performance machining center equipped with the Heidenhain iTNC 530 control which is ideally suited for mold and tool making.



Working area of the Hermle-MC C 30 U with NC swivelling rotary table (Ø 630 mm) for 5-axis complete machining of demanding prototypes, models and tool segments in 3D form.



Filigree milled molding die of a shell with fine detailing.



Other molding die made of special cast iron for casting of an exclusive crystal glass sculpture.



Injection-molding die made of 1.2344 (temperable hot-working steel, H13).



Manufacturing of a shaft with cooling channel made of 1.2344 (temperable hot-working steel, H13).



Working area of 5-axis machining center with integrated MPA technology, manufacturing a tool insert.



To read the detailed article visit [www.hermle.de](http://www.hermle.de) and go to the News & Press/Users section.



## RATIONALIZED MANUFACTURE OF SPECIAL TOOLS

How Czech special tooling manufacturer Hofmeister s.r.o. uses Hermle machining centers to meet the needs of its customers for special metal cutting tools.

Small selection of custom milling tools developed, manufactured and then complemented with standard indexable inserts on customer order by Hofmeister s.r.o.



### HOFMEISTER S.R.O.

... was founded in 1990 by Vaclav Hofmeister, and is renowned far beyond Czech borders for its expertise in the production of precision parts.

After Jindrich Hofmeister joined the business, it focused on supplying the Czech metalworking industries with metal cutting tools, as well as on selling precision parts.

Today the Hofmeister business in Plzen employs some 110 skilled staff, of whom around 60 work in mechanical production. Their efforts are backed by trading in a broad range of standard tools from various manufacturers and by the company's special tooling expertise.

The company also applies its tooling expertise and metal cutting know-how in the CNC manufacture of precision parts for various industrial sectors.

### SYNERGIES IDENTIFIED AND CONSISTENTLY UTILIZED

The renown which the company enjoys today is founded on the skills of its workforce and the performance capability of its machinery portfolio. Jindrich Hofmeister comments with unmistakable clarity: "When we launched our tooling supply range, we wanted to build up a well-rounded portfolio in order to meet all customers' wishes.

To be able to carry out machining in accordance with the ever increasing quality standards required, and to do so in the most cost-effective way possible, we decided to start making special tools on demand based on standard tools and indexable inserts. We rely, among other sourcing, on precision machine tools from Germany to manufacture our special tools rationally and in line with the specified quality. With two 5-axis CNC machining centers from Hermle we were able to expand our machining capabilities significantly, and at the same time create capacities which we are now fully utilizing with tool manufacturing and machining services in two- to three-shift operations."

The Hermle machining centers are used primarily to produce the base holders of complex special tools applying 5-axis technology. They are now much faster, more precise in every respect, and above all very much more flexible, to manufacture than before.

Left to right: Pavel Kozmin (Development, Design and QA), Jindrich Hofmeister (CEO and one of the company proprietors), Jiri Nemecek (machine operator) – all from Hofmeister s.r.o. in Plzen, Czech Republic. Right: Hofmeister account manager Pavel Nemecek (Sales Manager of Hermle Czech Republic in Prague).



Machining a long cantilevered special tools holder on the Hermle C 40 U machining center with arbor holder; the arbor holder is seated on a slide and permits machining of up to 250 mm long parts as well as corrugated parts.

### 5-AXIS COMPLETE MACHINING OF COMPLEX TOOLS

The colleagues in the Production department are thrilled about the performance, flexibility, durability and long-term precision of the two Hermle C 20 U and C 40 U machining centers. The C 20 U high-performance 5-axis CNC machining center is used to produce most of the tool base bodies as well as demanding custom workpieces, while the larger C 40 U high-performance 5-axis CNC machining center is used among other applications to machine long cantilevered tool holders as well as special long parts.

### HANDLING A VERY WIDE RANGE OF PARTS WITH TWO MACHINING CENTERS

Jindrich Hofmeister concludes: "Thanks to the extensive range of tool magazines which come as standard with the Hermle machining centers we have been able to add a lightly staffed single-shift weekend routine to our fully staffed three-shift operations during the week. We are also able to handle complex tool and part machining jobs with longer running time and across multiple machines, thereby increasing our throughput and improving the profitability of our production, and providing our customers with the special tools they need even more quickly."

[www.hofmeister.cz](http://www.hofmeister.cz)

To read the detailed article visit [www.hermle.de](http://www.hermle.de) and go to the News & Press/Users section.



## CLOSE PARTNERSHIP DELIVERING LASTING SUCCESS

How machining specialist Höcherl & Reisinger used Hermle machining centers to become a much-in-demand technology service provider for precision parts.

Left to right: Herbert Höcherl (CEO of Höcherl & Reisinger Zerspanungstechnik GmbH) with Josef Paulus (Production Manager Milling, likewise from Höcherl & Reisinger) and on the right Manfred Moser (Hermle + Partner Vertriebs GmbH field sales executive responsible for the Höcherl & Reisinger account) in front of the RS3 robot cell of the flexible manufacturing system FFS.



### Höcherl & Reisinger Zerspanungstechnik GmbH

#### FOUNDED IN 1991

... by Josef Reisinger († 2007) and Herbert Höcherl, technology service provider Höcherl & Reisinger Zerspanungstechnik GmbH based in Walderbach, Bavaria has grown from a traditional two-man small business into a showcase modern-day corporation currently employing 80 people. In order to meet the needs of its customers at all times and in every way, the company covers all relevant technologies including turning, milling, grinding and eroding. From its very beginnings it has manufactured precision workpieces using a high-performance portfolio of CNC machinery. Herbert Höcherl comments on the long-standing "genuine" partnership with Hermle: "In earlier

times the region around Cham was poor; today its industrial base is very highly developed. In view of that accomplishment, we were not prepared to accept any compromise in terms of performance, precision and technical availability, especially in milling, which is why one of the first machines we acquired was a UWF 1001/HTC universal milling machine from Hermle."

### FROM UNIVERSAL MILLING MACHINES WITH TOOL CHANGERS ...

Later, the healthy growth of the business was for some years founded on two universal milling machines together with lathes and a number of conventional machines. Today the 6,500 m2 production facility in Walderbach is home to 21 Hermle machining centers, of which no less than 18 are fully fitted out with the technology for highly demanding 5-axis/5-side simultaneous/complete machining. Herbert Höcherl adds, with justifiable pride: "The first Hermle machines we

acquired are still in use today – demonstrating their high quality and long-term accuracy.

We are currently operating a number of Hermle C 600 U and C 800 U 5-axis centers, and especially C 40 U and C 42 U centers, as well as a C 50 U MT. By regularly updating to the latest machine generation we have been able to continually enhance our capability to handle the most demanding of complete machining tasks."

### ... TO HIGH-END 5-AXIS CNC MACHINING CENTERS WITH ROBOT AUTOMATION OR INTEGRATED TURNING TECHNOLOGY

In conclusion, Herbert Höcherl has this to say about his company's long-standing partnership with Hermle, and the success it has brought: "The enhanced performance features of Hermle machines have enabled us to expand our machining expertise to ever larger parts. We have always been delighted by the reliability of

the machines and by the service backup which Hermle provides.

Increasing performance capability and rising levels of machine automation have also enabled us to produce medium-size lots cost-effectively, meaning we nowadays see our focus as being on the manufacture of prototypes, single parts and small-lot production runs. Working in a three-shift operation, we mainly make stainless steel and aluminum workpieces.

The machining of stainless steel parts in particular is highly challenging for machines and tools, yet Hermle's machines have easily handled everything we could throw at them over the years."

[www.hoecherl-reisinger.de](http://www.hoecherl-reisinger.de)



Left: Robot handling a pallet. The robot retrieves the pallet with the finished part and places it in the magazine, then picks a pallet from the rack and places it on the predetermined machine table. The robot is also responsible for pallet handling from and to the setup station.



Right: The "Hermle section" at the 6,500 m2 Höcherl & Reisinger manufacturing facility at Walderbach in Bavaria, including the flexible manufacturing system FFS, comprising two C 42 U high-performance 5-axis CNC machining centers and the robot system RS3 with tool storage.



# SEMINARS.

To view the detailed training program visit [www.hermle.de](http://www.hermle.de) and go to the Services/Practical training section.



## PRACTICAL TRAINING

We will efficiently show you how to obtain the best results using our products. Our training team looks forward to see you!

*All seminars can be booked to take place in Gosheim or at our demonstration center in Lohfelden near Kassel.*

### STANDARD SEMINARS

- **HEIDENHAIN BASIC FUNDAMENTALS**  
Independent operation and programming of CNC machines in 3 axes
- **HEIDENHAIN UPGRADE**  
Operation and programming of the latest functions
- **HEIDENHAIN ADD ON LASER TOOL MEASUREMENT**  
Independent measuring and monitoring of tools
- **HEIDENHAIN ADD ON TOOL MANAGEMENT HSCI/TNC640/TCS**  
Independent operation and programming of the tool and additional magazine
- **HEIDENHAIN BASIC FREE CONTOUR PROGRAMMING**  
Operation of complex contours on the control unit
- **HEIDENHAIN SWIVELLING PLANE (FUNDAMENTALS)**
- **HEIDENHAIN ADVANCED SWIVELLING PLANE (ADD ON)**
- **HEIDENHAIN BASIC SWIVELLING CYCLE 19**  
Independent operation and programming of CNC machines in 5 axes
- **HEIDENHAIN BASIC MILLTURN**  
Independent operation and programming of MT machines
- **HEIDENHAIN BASIC CAM USERS**  
Learn about the CAM programming possibilities of the iTNC 530 controller. Also get suggestions for post-process output within the CAM system.
  
- **SIEMENS BASIC SHOPMILL PL (POWERLINE)**
- **SIEMENS BASIC DIN ISO PL**
- **SIEMENS BASIC SHOPMILL SL OPERATE (SOLUTIONLINE)**
- **SIEMENS BASIC DIN ISO SL OPERATE**  
Independent operation and programming of CNC machines in 3 axes
- **SIEMENS ADD ON LASER TOOL MEASUREMENT**  
Independent measuring and monitoring of tools
- **SIEMENS ADD ON TOOL MANAGEMENT TDI/TCS**  
Independent operation and programming of the tool magazine
- **SIEMENS BASIC SWIVELLING**  
Independent operation and programming of CNC machines in 5 axes
- **SIEMENS BASIC MILLTURN**  
Independent operation and programming of MT machines

### SPECIAL SEMINARS

- **HEIDENHAIN BASIC PALLET CHANGER 150/160/850**  
Independent operation and programming of machining centers with pallet changer
- **HEIDENHAIN BASIC PCS4/RS05**  
Independent operation of robot cells

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### DATES

- EUROMOLD FRANKFURT/GERMANY**  
Dec. 3-6, 2013
- NORTEC HAMBURG/GERMANY**  
Jan. 21-24, 2014
- METAV DÜSSELDORF/GERMANY**  
March 11-15, 2014
- TECHNISHOW UTRECHT/NETHERLANDS**  
March 11-14, 2014
- MECSPE-EUROSTAMPI PARMA/ITALY**  
March 27-29, 2014
- VERKTOGMNYASTIKER ODENSE/DENMARK**  
April 1-4, 2014
- OPEN HOUSE, GOSHEIM/GERMANY**  
April 9-12, 2014
- INTERTOOL WIEN/AUSTRIA**  
May 6-9, 2014
- SHAREHOLDER'S MEETING, GOSHEIM/GERMANY**  
July 2, 2014

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