

INSIGHTS

ISSUE **1** 2016

OPEN HOUSE

Large machine exhibition with over 30 models from the compact C 12 to the large C 62

THE NEW C 250 –

high precision, high speed, high reliability

USER REPORTS

Hermle machining centres in Germany, Austria, Switzerland and the Netherlands in operation



Foreword

Dear business partners and customers, colleagues and employees,

Hermle AG has stormed into 2016 with considerable momentum, with a number of successful national and international trade events behind us. We have had the opportunity to present ourselves at the NORTEC in Hamburg, the METAV in Düsseldorf and the Technishow in Utrecht, just to name a few key examples. Over the course of the year, we will be participating in over forty trade events, putting Hermle's products in view of almost all markets.

At present we are preparing for this year's Open House on 20 - 23 April 2016, at which over 2000 visitors from home and abroad are expected. An extensive framework with specialist speakers, interesting technologies and complex machining methods will demonstrate the performance of Hermle products.

At our Open House event, we look forward to once again receiving the numerous exhibitors, whose participation enhances the value of the occasion and which our visitors always find appealing.

We will be unveiling a new machine model for 3-axis and 5-axis/5-side machining in the form of the C 250. Alongside the highly successful C 400, the C 250 represents its own series. The new C 250 is a high-precision, high-speed, high-reliability device that offers excellent value for money - a genuine Hermle no less.

Of course, the Generative Manufacturing, Automation Engineering, Hermle Service, Hermle Training and the newly-founded User College will also be presenting themselves with their own stands at the fair.

You are cordially invited to visit us at the Open House - at which we look forward to interesting discussions.

Kind regards,



Franz-Xaver Bernhard
Director of Sales, Research and Development

HERMLE AG

OPEN HOUSE

GOSHEIM | 20.04. - 23.04.2016

Open House 2016 - at the home of the 10 Thousanders, where the Swabian Alps are at their highest!

At the home of the 10 Thousanders, where the Swabian Alps are at their highest point, we will be hosting our traditional Open House event from 20 to 23 April 2016 in Gosheim, at which over 2000 national and international visitors are once again expected.

To display the vast range of capabilities provided by Hermle machining centres and milling machines in many industrial sectors, **over thirty machine models** - from the compact C 12 to the large C 62 - will be on show in various configurations and with interesting equipment at our Technology and Training Centre. The event will also witness the unveiling of the newest machining centre: **the C 250**.

A **special show featuring over 50 exhibitors** from the fields of tool making, CAD/CAM, software and control engineering will be presented as part of the event programme.

Factory tours of the production and assembly facilities will give visitors the unique opportunity to experience the whole process of how Hermle machining centres are brought to life. The guided tours commence with an exclusive insight into the company's cutting technologies, in which Hermle invested several million euros last year in new, in-house machinery, before moving on to the assembly lines; here the guests will see the assembly process for automation components such as pallet changers and robot systems, which are developed and manufactured by Hermle-Leibinger Systemtechnik GmbH at the facility. In the area of **generative manufacturing**, an experienced team from our subsidiary Hermle Maschinenbau GmbH will be on hand with some brand new components to present to attendees the latest developments in Hermle's MPA technology.





EXHIBITORS

TOOL TECHNOLOGY

Baublies Surface Technology
 BIG KAISER
 Emuge Franken
 FRAISA GmbH
 GDE-Werkzeuge GmbH
 Gühring KG
 Haimer GmbH
 Hoffmann Group
 Ingersoll Werkzeuge GmbH
 Iscar Germany GmbH
 Kennametal Deutschland GmbH
 KOMET GROUP GmbH
 LMT Tool Systems GmbH
 MIKRON TOOL
 Mitsubishi Materials
 Pokolm Frästechnik GmbH & Co. KG
 Sandvik Tooling Deutschland GmbH
 GB Coromant
 Schrenk GmbH / Seco Tools
 Vischer & Bolli Werkzeug- und
 Spanntechnik GmbH
 Wohlhaupter GmbH

SOFTWARE - CAD/CAM

Camtek GmbH
 3D Concepts Group - Innovations in
 CAD/CAM
 CENIT AG
 CGTech
 CIMCO A/S
 Concepts NREC
 Delcam GmbH
 infoBoard Europe GmbH
 JANUS Engineering AG
 OPEN MIND Technologies AG
 SOFLEX Fertigungssteuerungs-GmbH
 SolidCAM GmbH
 Tebis AG
 unicom Software GmbH
 Vero Software GmbH / WorkNC

CONTROL TECHNOLOGY

Dr. Johannes Heidenhain GmbH
 Siemens AG

OTHERS

BLUM
 Carl Zeiss Industrielle Messtechnik GmbH
 E. Zoller GmbH & Co. KG
 Frako Power Systems GmbH & Co. KG
 Hexagon Manufacturing Intelligence
 KELCH
 Renishaw
 Rother Technologie

HIGHLIGHTS

- The new 3, 4 or 5-axis **C 250 machining centre**, which provides easy access to the world of machining centres
- The C 60 becomes the **C 62** - complementing the second generation series from C 12 to C 62
- **Over 30 machines**, some automated in our Technology and Training Centre
- **Special show of tool technology** - CAD/CAM software and control engineering featuring over 50 well-known exhibitors
- **Hermle expert forum** - with specialist machining lectures
- Hermle **Anwenderschule (User College)** with tips and tricks for best practise milling and turning
- Hermle Maschinenbau GmbH with **generatively manufactured components**
- **A live demonstrate of service expertise** - a presentation and demonstration of our services
- The **Hermle Apprentice Department** with its own stand and presentation of Hermle's training strategy
- **Guided tours** of the company

OPENING HOURS

WEDNESDAY TO FRIDAY 9 am - 5 pm
SATURDAY 9 am - 1 pm

REGISTRATION



Please register at:
hermle.de/OpenHouse2016
 or simply scan the QR code



COMPANY.

THE NEW C 250 – A START IN 5-AXIS/5-SIDE MACHINING

The C 250, a dynamic machining centre designed as an entry-level device for 5-axis/5-side machining. Features galore to ensure high-precision, economical production of parts.

TECHNICAL DATA C 250

Traverse path X-Y-Z: 600 - 550 - 450 mm

Rotational speed: 15000 / 18000 rpm

Rapid traverse linear X-Y-Z: 35 m/min

Acceleration linear X-Y-Z: 6 m/s²

Control: TNC 640

Rigid clamping table:
Max. table load: 800 x 616 mm
1100 kg

NC swivelling rotary tables:

Tables with worm:	Ø 320 mm	Ø 450 x 360 mm
Swivelling range:	+/- 115°	+/- 115°
Speed A axis		
One-sided drive:	25 rpm	25 rpm
Speed C axis:	40 rpm	40 rpm
Max. table load:	300 kg	300 kg





TABLE VARIANTS

These tables are the foundation for the precision, accuracy and quality of the machined surfaces. High-torque motors and the adapted gear enable loads of up to 300 kg to be positioned rapidly in 5-axis mode and, most importantly, with exceptional precision. Equipped with the rigid clamping table, the machine can deal with clamping weights of up to 1100 kg – ideal for 3-axis machining of large, bulky and heavy workpieces.

SPINDLES

The C 250 is equipped with two-part spindles. Both spindles can be replaced quickly and easily during service work. The spindles feature various speed ranges and different tool holding fixtures, making them suitable for a wide variety of machining tasks.

THE MAGAZINE

The tool magazine of the C 250's standard version holds up to 30 tools and is integrated into the machine bed to save space. It can be side-loaded by swivelling the control panel to the loading point. The additional magazines for the C 250, the ZM 50 and ZM 88 k, are also available with 50 or 88 magazine pockets respectively.

CONTROL UNIT

The C 250 is equipped with a Heidenhain TNC 640 controller. The TNC 640 offers diverse programming functions, while Hermle simplifies programming and operation even further with a comprehensive range of extra features. Machining setups for a wide range of milling strategies are already included as standard. Additional controller functions can be acquired as options. Specifically, these include cross-talk compensation (CTC) to compensate for displacement depending on acceleration, active vibration damping (AVD) to suppress vibrations in the powertrain, load adaptive feed control (LAC) to adjust dynamic values for the rotary axes depending on load, adaptive feed control (AFC) to adaptively control the feed rate, and active chatter control (ACC) to suppress chatter.

OPTIONS

An extensive range of optional extras complement the C 250 in its day-to-day operations, with chip conveyors, ICS systems, emulsion mist extraction systems as just a few examples of the wide range available.

The C 250 can be used to process workpieces of up to 1100 kg in weight in 3-axis mode, and up to 300 kg in 5-axis mode, demonstrating how fully-fledged and suitable for day-to-day operations the machine truly is. And of course, it provides the absolute precision that you would expect from a Hermle product!

And the C 250 proves to be no less a real Hermle in terms of ergonomics, with the wide door opening, the optimum loading height and the large vertical table clearance ensuring ideal operating convenience, ease of working and unproblematic maintenance. Added to this is the ergonomic control panel with a 19" screen and the control panel that can be swivelled from the tool loading point to the working area.

C 62 U – THE SECOND GENERATION OF THE C 60 U (also available as MT variant)

TECHNICAL DATA C 62 U dynamic

Traverse path X-Y-Z: 1200 - 1300 - 900 mm

Rapid traverse linear X-Y-Z: 50 m/min

Acceleration linear X-Y-Z: 6 m/s²

Control: TNC 640 / S 840 D sl

NC swivelling rotary tables:

Tables with torque: Ø 900 mm
Swivelling range: +/- 130°
Speed A/C axis: 15/30 rpm
Max. table load: 2500 kg

Tables with torque: Ø 1350 x 1100 mm
Swivelling range: +/- 130°
Speed A / C axis: 15/30 rpm
Max. table load: 2500 kg



COMPANY.



ANWENDER SCHULE

EVERYTHING REVOLVES AROUND CNC

USERS, PROS AND EXPERTS

The Hermle Anwenderschule (User College) is where metal and machining engineering professionals meet – along with anyone who wants to be one. Numerous exciting seminars enable you to develop and enhance in-depth knowledge and then exploit it to the full in your working environment! It will enable you to become an expert in professionally programming Hermle machining centres, including the various control systems. Where problems with applications arise, you receive targeted support and obtain in-depth perspectives into the latest tool and clamping technologies. And not just anywhere, but precisely where the perhaps best machinery in the world is developed and built – at Hermle!

FLEXIBILITY EVERYWHERE

Our experienced and highly-qualified seminar lecturers will adapt to your specific knowledge beforehand, and your personal wishes and questions will of course be taken into account. The location of our User College is equally flexible, be it at our head office in Gosheim, in Kassel – or, if so desired, directly on your company's premises.

EFFICIENCY IN TRAINING TOO

First and foremost, we're not educators, but machine engineers. That being said, we of course apply our motto of "milling at its best" to everything that we do for you. Our new User College represents the finishing touch to the unique services that we provide first-hand. For efficient machine handling, for avoiding operating errors – for a perfectly trained and motivated workforce!

THE HIGH-TECH "CLASSROOM"

TRAINING ROOMS AND EQUIPMENT

In Gosheim, we have three generously equipped training rooms, as well as another in Kassel. Participant numbers are limited, because experience has shown that knowledge can be better conveyed to smaller groups. In each case, the participants can make use of a dedicated, state-of-the-art programming station during the training. A powerful machining centre is available for each seminar, from the compact C 12 to the universal C 62. Installed within is a broad range of smart, electronic control systems from the leading providers Heidenhain and Siemens.

LEARNING ABOUT MODULARITY

CONCEPT AND EXPERTISE

The Hermle User College is based on a modular principle. Our practical selection of seminars have been designed to build upon one another. Previously learned knowledge is deepened and expanded in accordance with requirements. We will ask about your prior knowledge upon registration so that we can address your specific needs.

Alongside basic seminars with add-ons and upgrades, you also have a choice of various advanced trainings on a diverse range of practical topics. All of the usual control systems from the manufacturers Heidenhain and Siemens for Hermle machining centres are covered in our User College.

AN OVERVIEW OF THE USER COLLEGE

- Perfect support in the programming and operation of advanced programming stations
- Certified by Heidenhain and Siemens
- Educational approach with small training groups
- Flexible in terms of time and location: performed on a weekly basis, two training locations in Germany, on request international customised training directly on your premises
- Relaxed, familiar atmosphere
- Work-life balance: tips on making the best use of leisure time for the two training locations, "Hermle Evening" with guided tour of company for week-long courses
- Recurring specialist lectures on special-purpose machining techniques
- Workshops

YOUR ADVANTAGES

- Work more productively, cut costs: practical benefits for day-to-day working
- Absolute production security and reproducibility thanks to an optimally trained workforce
- Gainful improvements in knowledge thanks to in-depth learning content and highly-qualified trainers

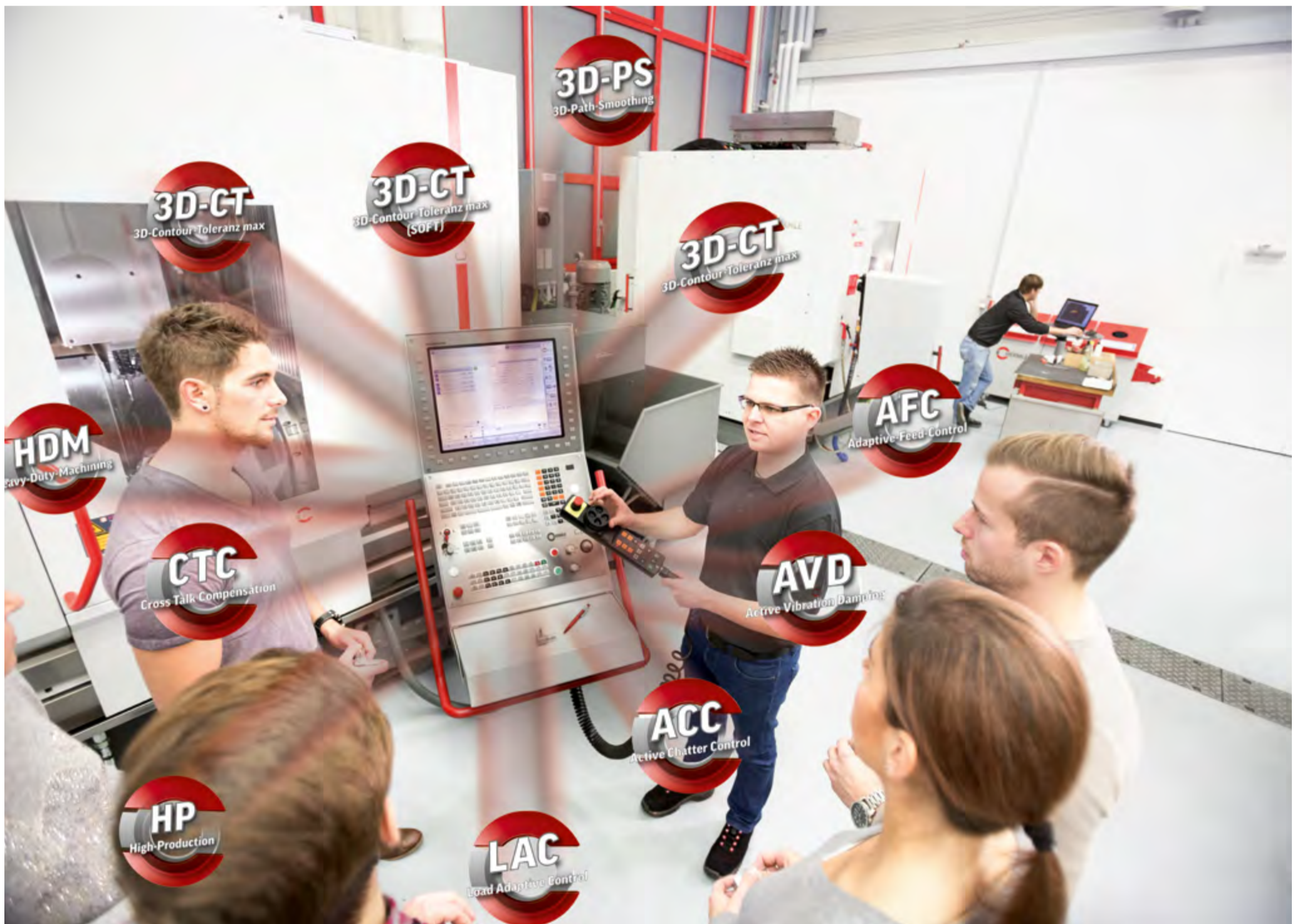
OUR SEMINARS

- BASIC SEMINARS
- UPGRADE SEMINARS
- ADVANCED SEMINARS
- SWIVEL SEMINARS
- PLANE ADVANCED SEMINARS
- MT SEMINARS



IF HERMLE'S ON IT, THERE'S MORE IN IT

Some machines might seem to be cheaper than a Hermle at first glance. But you shouldn't forget that Hermle also has additional features that aren't necessarily a given elsewhere.



Machine features, controller functions and machining setups. Machining centres strive to machine with a high level of productivity and efficiency in a balancing act between speed, precision and surface quality. If we focus on achieving optimum speed, then precision and surface quality suffer accordingly, whereas if we aim for optimum surface quality, then the speed suffers.

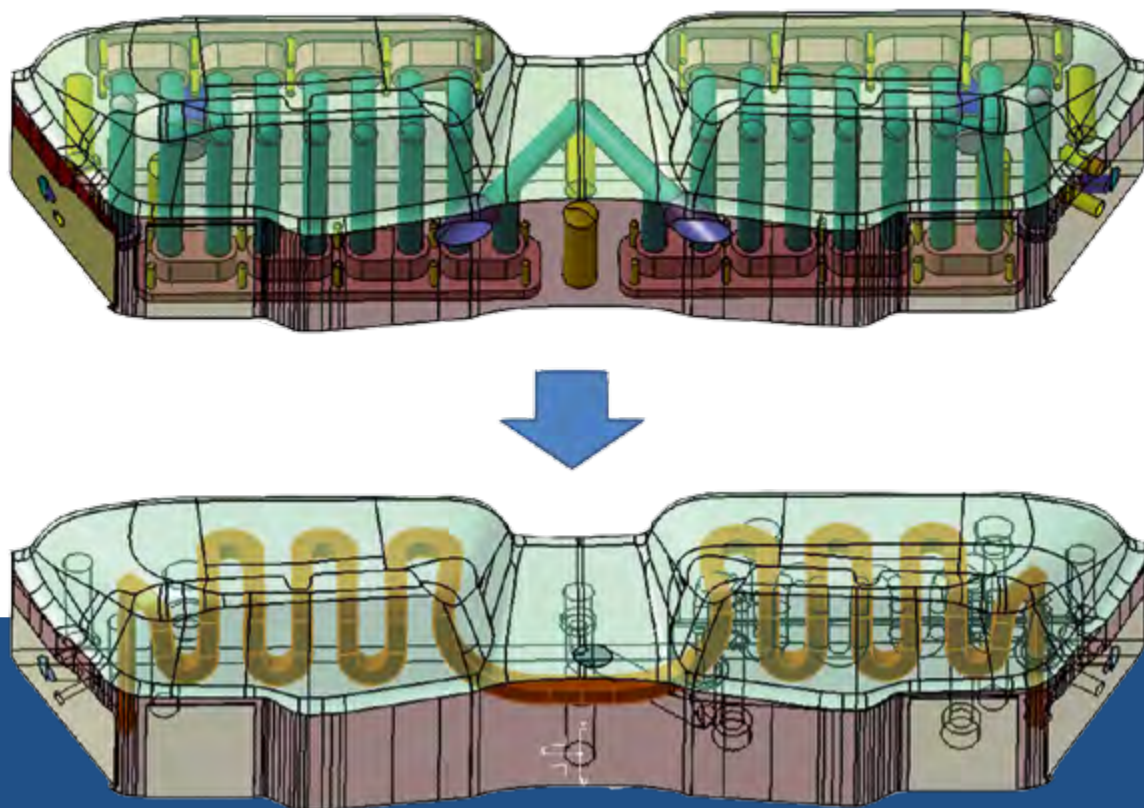
The aim here is to (a) find and (b) cost-effectively implement in a sensible and user-friendly manner the optimum machine features and design.

Hermle takes two approaches to achieving this: the first is the unique mechanical machine construction that employs a modified gantry system, the other using a powerful and in particular adaptable control system! "Adaptive" adjustments to the drive regulator enables optimum performance in power milling, surface quality, precision and acceleration/instability.

Each of the Hermle "2" series machines has the controller functions from Heidenhain's Dynamic Precision and Dynamic Efficiency packages as standard(). Specifically, these include cross-talk compensation (CTC) to compensate for displacement depending on acceleration, active vibration damping (AVD) to suppress vibrations in the powertrain, load adaptive feed control (LAC) to adjust dynamic values for the rotary axes depending on load, adaptive feed control (AFC) to adaptively control the feed rate, and active chatter control (ACC) to suppress chatter.

While Heidenhain's controller functions enable the precision and efficiency of our machines to be increased beyond the usual standards, we also offer our users the option of drive adjustments by means of Hermle's machining setups, with a focus on the machining tasks at hand to increase the productivity of our machines in accordance with the given processes. Machining steps – a commitment to precision and productivity – are an integral part of any Hermle machine.

USERS.



Optimisation of cooling duct geometry using MPA technology

TOOL MAKING VOLKSWAGEN TRUSTS IN MPA TECHNOLOGY

LIGHT-GAUGE STEEL CONSTRUCTION BY DIRECT HEAT FORMING AT VOLKSWAGEN

The heat forming of manganese-boron steels enables higher strengths to be achieved for components while reducing the thickness of the steel. This allows higher strength requirements to be met, thereby also improving safety in crash scenarios with less weight. In the most recent Golf, the weight of the raw body was reduced by 23 kilograms compared to the predecessor model.

INNOVATION IN COOLING

Heat forming is a process in which the steel plates are heated up to around 950° C, formed, and then cooled within a few seconds to <200° C. This controlled process of cooling to also harden the component takes place in the water-cooled tool. The optimum cooling and resultant improvements in heat dissipation are major challenges in tool making. With complex geometric forms, MPA technology offers benefits over drilled cooling ducts in that it enables cooling to be implemented that is consistent with the contour. These benefits bring with them the promise of great potential for improvement in cooling thanks to their excellent suitability for large-volume tool segments.

FIRST PRACTICAL TEST IN SERIAL OPERATION

Since 2012, Volkswagen has been interested in MPA technology and its benefits, which gave rise to a close partnership and the goal of deploying this technology in large-scale serial production. After a number of preliminary studies and trial orders with the material 1.2367, which was jointly approved and certified for this process with Hermle, a suitable mould jaw was found for Volkswagen for this initial trial. Following a successful trial run, a complete hot moulding tool with generatively manufactured moulding jaws is currently being cooperatively developed and trialled.





MILLING PRECISION SAVES EFFORT AND ENERGY

From left to right: Machine operator Christophe Delorme, workshop supervisor Jean-Marie Geisser, the Head of Mechanical Manufacturing in MME, Said Atieh, all three from CERN in Meyrin, and Martin Tschupp, Sales Engineer at Hermle (Switzerland) AG



When it comes to precision in milling of mechanical components for manufacturing prototypes and development processes,

CERN, the European Organization for Nuclear Research, uses a 5-axis CNC high-power machining centre from Hermle, among other tools.

Whenever it comes to international physics research, the name CERN comes to mind immediately. This European Organisation for Nuclear Research is based in Meyrin in the Swiss Canton of Geneva and is a massive research facility with more than 3200 employees. With the help of "particle accelerators", the structure of matter is researched. The presently largest and best-known particle accelerator is the Large Hadron Collider (LHC), which entered service in 2008. After the first intensive LHC operational phase (2010-2013), there was a two-year period of extensive service. In April 2015, the overhauled accelerator was ready to "restart".

ONE OF THE REQUIREMENTS: PRECISION MILLING THAT CAN BE ENCAPSULATED IN PROCESSES

"In order to have tight reins on all of the processes and, in doing so, ensure reproducible quality, we use prototype manufacturing methods to develop technology and know-how based solutions," explained Said Atieh, Head of "Mechanical and Materials Engineering" in "Mechanical Manufacturing", on the tasks performed by his specialist team of just under 40. "This is why we have relied on maximum machining precision from the outset and use the best machinery available on the market for this purpose, such as Hermle's CNC machining centres for precision milling."

The type C 42 U 5-axis CNC high-power machining centre from Hermle AG proved itself at the end of the day to be by far the most precise machine, convincingly trumping one after the other of the few potential competitors left, who had already been shortlisted to a small group using performance criteria. "The tender for the replacement acquisition planned at that time was for older precision milling machines capable of reproducible machining at milling tolerances within 2 to 5 μm , and Hermle's performance was consistently well below the lower tolerance value! It was that, the support and the well-known good service that impressed us," reported Said Atieh.

REQUIRED: 2 TO 5 μm ; ACHIEVED: 0.5 μm

The type C 42 U 5-axis CNC high-power machining centre installed in the CERN workshops is a standard machining centre with a main spindle for speeds of up to 18000 rpm, equipped with the HSK A 63 tool holding fixture, a tool magazine with 42 receptacles, an NC swivelling rotary table with a diameter of 800 x 630 mm, an electrical heat compensation mechanism, a tool measurement and tool breakage system, a touch probe, ICS system with 40 bar and the Heidenhain iTNC 530 HSCI control system. The machine also featured the options provided as standard: Precision package I for the axes X, Y and Z, precision package II for die axes A and C, and the 5-axis acceptance protocol for the test workpiece "Cube". This was manufactured in part with a precision of



The C 42 U dynamic 5-axis CNC high-power machining centre installed at CERN's MME department, equipped with precision packages I and II for highly precise, reproducibly exact quality machining within tolerances of $\pm 0.5 \mu\text{m}$

0.2 μm , although a machining precision of 0.5 μm revealed itself to be reproducible over longer periods of time.

Said Atieh's final opinion reflected this: "Hermle's C 42 U machining centre represents an ideal combination of concept, exactitude, power and reproducible machining precision in an ideal symbiosis, and very good service to boot. This is particularly important because prototypes often have to be manufactured very quickly, which is why – like in a production facility, high machine availability is also necessary here. It's also important to note that our industrial partners also prefer to make the same choices we do – they not only want to have the same process know-how as the CERN MME, but also often use exactly the same machine to be on the safe side, which is of great benefit for everyone involved."

www.cern.ch



Image shows the generous working area of the C 42 U machining centre with the NC swivelling rotary table of diameter 800 x 630 mm (axes A and C) used for 5-axis/5-side complete and simultaneous machining of diverse components for particle accelerators

USERS.



5-AXIS MILLING EXPERTISE FOR HIGH-TECH TOOL MAKING

From left to right: Gerhard Zech, Head of Machinery Construction division, Markus Gapp, Head of Milling Group, both from Hirschmann Automotive GmbH, Florian König, Sales Manager for Austria/South Tyrol at Maschinenfabrik Berthold Hermle AG, and Andreas Bolter, Head of Tool Making and Plant Engineering at Hirschmann Automotive GmbH, standing in front of the flagship C 52 U in the milling shop at the plant in Rankweil, Austria



INTO THE FUTURE WITH HIGH-PERFORMANCE, 5-AXIS CNC MACHINING CENTRES

The installation of five 5-axis CNC machining centres from Hermle allows Hirschmann Automotive to turn technical innovations into high-quality mechatronic products more efficiently than ever before.

At the seven facilities of Rankweil-based Hirschmann Automotive GmbH in Austria, the Czech Republic, Romania (2 facilities), Morocco, China and soon Mexico, a workforce of around 4500 are engaged in development and production. The Rankweil facility hosts the management, administration, development and production of plug connectors, sensor systems, injection moulds and mechatronic subassemblies.

The Tool, Machinery and Plant Engineering departments, which employs 170 specialists in Rankweil alone, also plays a key role. From idea to product development, to prototyping/sample production, to the manufacture of injection moulding tools to the construction of assembly plants and automation facilities, all of the company's threads run in a coordinated fashion here.

"Our job is to centre on the performance of external tool manufacturers, and we always have to be one step ahead," said Andreas Bolter, Head of Tool Making and Plant Engineering in Rankweil. By focusing on the premium automotive sector and small to medium volumes of injection mould parts, we are able to offer a wide range of variants and therefore great diversity in our tools. "Because we have had very good experience with two Hermle type C 20 U machining centres, one of which was fitted with the IH 60 workpiece magazine and handling system, in terms of performance and especially service over a period of several years, we opted for Hermle as a partner and launched an extensive investment programme based on 5-axis CNC machining centres."

FIVE IN ONE GO - FOR WORKPIECES OF 5 x 5 x 10 mm UP TO 1.5 TONS

This has never happened at Hermle before - Hirschmann Automotive ordered five ultra-modern 5-axis CNC high-powered C series machining centres in one go, namely the C 12 U, C 22 U, C 32 U, C 42 U and C 52 U, covering a broad range of highly adaptable methods of performing machining tasks for workpieces from just a few millimetres to large-scale, 1.5 ton tool components with sizes of 500 x 1000 mm. Since the working ranges of the individual machine sizes overlap to a certain degree in the peripheral zones, milling capacities can be utilised in a highly flexible way for all machining tasks delivered on a direct application or prioritised basis.



Picture shows the working range of the high-performance, 5-axis CNC machining centre C 32 U with an NC rotary table for 5-axis/5-sided complete/simultaneous machining in one setup

EFFECTIVE SYNERGIES FOR GREATER ACCEPTANCE AND HIGHER PRODUCTIVITY

All of the machines are equipped with the new TNC 640 Heidenhain control system, NC rotary tables, HSK A 63 tool holding fixtures, main spindles with top speeds of 18000 rpm and offer the functions ACC (active chatter control) and AFC (adaptive feed control, depending on the respective spindle output and other process parameters/data). The similarity of the concepts and equipment of the Hermle machining centres and the daily experiences of employees have had a highly positive impact on the working environment. Above all, the training on the high-powered, 5-axis CNC machining centres has been well-received by the staff from the start thanks to its practical approaches and efficiency. We've discovered increased positive effects on identification and confidence among our highly-qualified operators in terms of the process components "machine tools operator", which ultimately helps to maximise cutting volumes and therefore increase productivity."

www.hirschmann-automotive.com



Working range of the C 52 U high-power, 5-axis CNC machining centre with a 1150 x 900 mm NC rotary table for large components weighing up to 2000 kg



TECHNOLOGY-BASED MANUFACTURING SERVICES

From left to right: Sietze de Jong, Group Leader Operations at Prodrive Technologies, in the middle Geert Cox, Managing Director Hermle-Nederland B.V., and Chris van Helmond, machine operator at Prodrive Technologies, in the Son facility



Using CAD/CAM manufacturing processes and high-end production technology, for example, highly automated 5-axis milling machines, Prodrive Technologies sets benchmarks for flexibility and cost efficiency in contract manufacturing

"Ready to use products" or contract manufacturing for partial and complete solutions from a single source - the medium-sized Dutch company Prodrive Technologies has made a name for itself within a short space of time and works on a contract basis for high-tech companies from diverse industrial segments as a partner in development and the manufacture of subassemblies and devices. This young company, barely 20 years old, obviously ticks differently to most of the traditional on-demand manufacturers and sees itself as a "vertical integrator". Just about all of the relevant technological disciplines necessary for autonomous manufacturing are represented among the 750 employees of the Prodrive Group. In this way, Prodrive Technologies distinguishes itself strongly from specialised service providers who concentrate on only one or few technology types.

GOING FOR GOLD WITH FIVE AXES OR MOVING STRAIGHT IN AT THE HIGHEST LEVEL

The automation of mechanical component production on 5-axis machining centres is a clear sign of their open willingness to go for gold in investing in high technology. Although the initial manufacturing focus of Prodrive Technologies in electronics and electromechanics was based in the quickly-growing facilities in Eindhoven and Son, it became clear in time that the delivery of mechanical components from external suppliers represented a bottleneck for the in-house production processes and had a more extensively detrimental effect on deliveries to the final customer. On the lookout for powerful equipment, Prodrive Technologies came into contact with Geert Cox of Hermle Nederland B.V. and presented a list of requirements



on the basis of the possible component sizes needed. The products favoured included a 5-axis complete/simultaneous machining centre, facilities for the manned single-shift and nightshift manufacturing of individual components and small batches with workpieces of diverse lead/machining times, and finally step-by-step implementation with the option of retrofitted automation. After a detailed analysis and consulting, the decision was made at Prodrive Technologies to "go for gold". Subsequently, a 5-axis type C 42 U high-power machining centre with an additional magazine ZM 160 tool magazine was procured.

HERMLE C 42 U MACHINING CENTRE COVERS FULL RANGE OF WORKPIECES

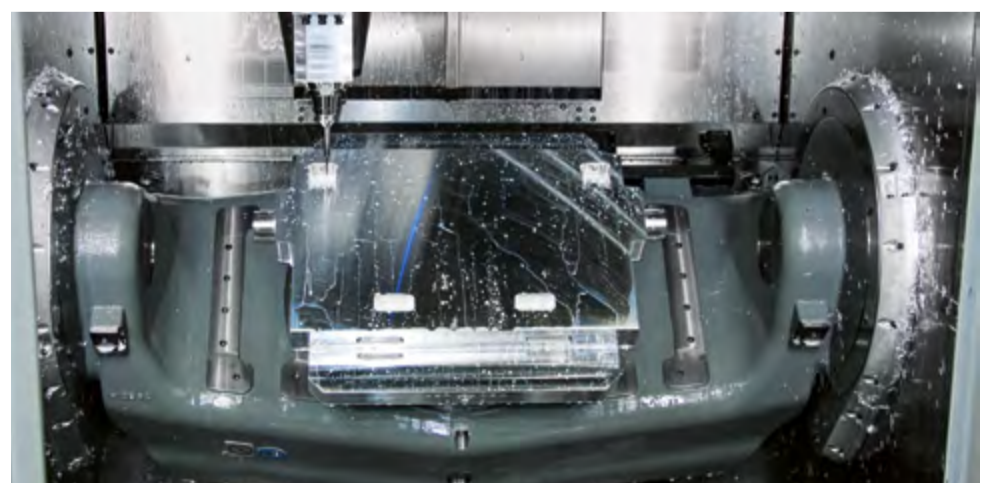
In order to be able to ensure the desired flexibility alongside the requisite capacity, Prodrive Technologies invested in quick succession in four further type C 42 U 5-axis high-power machining centres, so that today, there are five of these "productivity, quality and flexibility pushers" in operation. The new milling department at Prodrive Technologies currently consists of three C 42 U machining centres connected using RS 2 robot systems alongside two C 42 U machining centres installed as standalone systems. The C 42 U machining centres connected via robot systems and workpiece magazine are preferentially used for the just-in-time-based

"around-the-clock" small and medium series production and for the joint production of entire parts ranges that are subject to stringent requirements relating to fit precision and component compatibility. All of the C 42 U machining centres are equipped with main spindles with a maximum speed of 18000 rpm, an NC swivelling rotary table with torque drive and a diameter of 440 mm, a HSK A 63 tool holding fixture, an ICS high-pressure coolant supply running at 80 bar, as well as a zero-point workpiece clamping system. In addition, each of the two standalone C 42 U machining centres have an additional magazine ZM 160 magazine with a further 160 tools.

AN EQUAL PARTNERSHIP FROM THE BEGINNING

All in all, the decision-makers at Prodrive Technologies have revealed themselves to be highly satisfied with the partnership with Hermle. "After examining the possible component sizes, we chose the C 42 U, which proved to be the right choice, because we can now manufacture base plates for cooling subassemblies just as precisely as we can produce small parts with edge dimensions of just a few millimetres. Usually, the number of pieces required is between 10 and 500, but we often also need to manufacture prototypes and individual parts which, naturally, are required very quickly.

www.prodrive-technologies.com



The working area of the C 42 U machining centre for complete machining of complex, high-precision cooling base plates as well as delicate precision components for mechatronic subassemblies

USERS.



40 YEARS OF VALUED PARTNERSHIP

From right to left: Dipl.-Ing. (FH) Maschinenbau Herbert Kaut, Managing Director, Jürgen Sauter, proprietor, master toolmaker, Head of Mould Making and, since 2015, Co-Managing Director, machine operator and programmer; Dieter Lies, Head of Production; Arthur Stroppel and Kurt Löffler, also machine operators and programmers



Since its founding in 1974, leading injection mould tool and plastics engineering specialist Kaut has relied on milling machines and CNC machining centres from Hermle AG

Since the company commenced trading, Herbert Kaut has set high standards for himself, his teams, and in the company's equipment. He saw an opportunity therein, in particular in the concentration of sophisticated technologies and parts, to get ahead of the competition. "The primary goal in both production areas is technology leadership and we therefore place particular emphasis on highly qualified staff, a modern machine fleet and well-equipped workstations," said Jürgen Sauter, master toolmaker and long-time Head of Mould Making, speaking of the company's philosophy. "From brainstorming to design, from tool making to serial production and service, we keep the relevant process chain closed and employ high-quality equipment for it."

FROM DRILLING AND MILLING IN THE 1970S...

Herbert Kaut and Hermle have had a close business relationship for 40 years. Just after the company was founded, Herbert Kaut bought a Hermle UWF 800 universal milling machine in 1975. The latest development is the C 42 U 5-axis CNC high-power machining centre that was purchased in 2012. "Over the years we have always received



valuable help, something that was very important at the start of the CNC era, particularly in the case of 5-axis technology," said Herbert Kaut. Trust in the delivered machines plays a major role for the implementation of all ultra-modern and highly complex machining technologies and is therefore crucial for the success of our company. Viewed from this perspective, Hermle has contributed significantly to our success and development over the past 40 years, which is reason enough to continue building on the innovative spirit and capabilities of this partner."

...TO TODAY'S 5-AXIS/5-SIDED COMPLETE/SIMULTANEOUS MACHINING

With the exception of two machining centres that have since been sold, Kaut still uses all of the machines for a wide variety of machining tasks in tool and mould making. The machines have only needed some maintenance in that time and are still in regular daily use. "According to demand, we currently operate over single or multiple shifts and are dependent on the reliability of the milling machines and machining centres. The service provided by Hermle is hard to fault and has never let us down in all the years of working together, always providing complete support whenever and wherever it was needed. Furthermore, we have

always profited from Hermle's innovative approach, a fine example of which is the high-power, 5-axis C 42 U CNC machining centre," said Jürgen Sauter.

C 42 U WITH ZM 160 = 5-AXIS MACHINING PLUS PROPORTIONAL BENEFITS

This machine is equipped with a ZM 160 additional magazine with 160 tools, which, when combined with the machine magazine, provides the operator with a total of 202 tools. Besides machine operators, the designers and programmers of the moulds and injection mould tools also reap the benefits of this. Not only does the extensive range of tools enable a certain level of standardisation when designing mould plates and parts, helping to reduce tool costs, but the extensive range also allows all the work, from roughing to finishing, to be carried out in one setup, thus reducing changeover and setup times and enabling overnight machining.

www.kaut.info



Picture shows a mould insert made of 1.2767/56HRC for which, after 5-axis simultaneous milling with very small cutters (D0.6), only a few electrodes were necessary for spark eroding

DATES

INTERTOOL, VIENNA
10.05.2016 – 13.05.2016
METALLOBRABOTKA, Russia
23.05.2016 – 27.05.2016
ILA BERLIN AIR SHOW, BERLIN, GERMANY
01.06.2016 – 04.06.2016
MACHTOOL, POLAND
07.06.2016 – 10.06.2016
RAPIDTECH, ERFURT, GERMANY
14.06.2016 – 16.06.2016
HAUPTVERSAMMLUNG, GOSHEIM, GERMANY
06.07.2016
IMTS, CHICAGO, UNITED STATES
12.09.2016 – 17.09.2016
AMB, STUTTGART
13.09.2016 – 17.09.2016

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Legal notice

Published by: Maschinenfabrik Berthold Hermle AG
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Editing and design: Udo Hipp
Layout: Südpol, the other agency · www.suedpol.com
User articles: Edgar Grundler, VW
Photos: Inspirations · www.inspirations.de
Hermle AG · Hermle customers
Straub Druck + Medien - Schramberg

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