

INSIGHTS

EDITION **1** 2023

OUR BULLI VAN.

A story with potential.

WORLD'S LEADING TRADE FAIR MAKING WAVES.

EMO 2023 in Hanover.

LIVE FROM THE FIELD.

Customer reports.



Preface.

Dear Business Partners and Customers,
Colleagues and Employees,

the year now drawing to a close has surprised us all with highs and lows. HERMLE started the year with the highest order backlog in the company's history and again increased its turnover significantly in the first two quarters. Then, from May onwards, a certain uncertainty emerged. This trend continued during the next few months such that we are currently experiencing a noticeable decline in order intake. The underlying political conditions are also deteriorating visibly and owner-managed, medium-sized companies are struggling with the imposed regulations and ongoing shortage of skilled workers.

Nevertheless, HERMLE AG considers itself to be well positioned and, as always, acts with caution and foresight. HERMLE has been countering the shortage of skilled workers for years by way of an excellent and intensive training and further education initiative. On 1 September, we again welcomed 44 new trainees and students to the HERMLE team. The number of employees grew to more than 1,400 worldwide mid-year. The service and assembly divisions, in particular, saw the greatest growth.

We show how our customers can counter the shortage of skilled workers by providing competent and intensive advice in the field of automation. This field has huge potential. Whether simple pallet changers and handling systems or complex robot systems coupled with intuitively operable software solutions, true to our motto – everything from a single source. By way of our machining centres and automation solutions, we offer innovative and market-driven products and solutions for your economic production. Challenge us.

We would like to take this opportunity to thank you for the trust you have placed in us and for a good, cooperative partnership. We wish you and your families a Merry Christmas and hope you get off to a good and healthy start in 2024.

Kind regards,



Franz-Xaver Bernhard
Director of Sales, Research and Development



THE BULLI CULT PROJECT.

From the idea to perfect processing.

The 42 hours of Gosheim: from the 337-kilo blank to probably the world's most accurately-built Bulli model.

First of all, a Bulli had to be found. A passionate collector restored an original Bulli – built in 1960 – and made it available for the scanning process. In conjunction with TEBIS, one of the leading manufacturers of CAD/CAM systems, the original-sized Bulli was scanned in several steps and the data were converted using reverse engineering.

HERMLE's application technology department created several individual NC programmes from the CAD model. Due to the size of the component, the machine selected was a HERMLE C 650 5-axis machining centre with traverse paths in X-Y-Z of 1,050 mm x 900 mm x 600 mm. The aluminium blank with dimensions of 900 mm x 385 mm x 360 mm weighed 337 kg and was machined from six sides in two set-ups. After 42 hours of machining, a true-to-the-original model on a scale of 1:5 weighing 45 kg could be removed from the machine. Rims were milled, the dashboard was built up in the 3D printer and a sheet metal floor panel was adapted and finally fitted with LED interior lighting. In addition, tyres and axle carriers were manufactured by the HERMLE trainees.

The component was an eye-catcher at the HERMLE in-house exhibition and could be admired live in the machining process. A somewhat simplified version of the Bulli on a scale of 1:100 was milled from the solid mass in just 15 minutes using a HERMLE C 12 machining centre with an adapted RS 05-2 robot system. This small Bulli as a key ring quickly found its loyal fans.



To the video of the scanning
process and reverse engineering



To the video of the
milled Bulli



To the video of
the small Bulli

HERMLE AT THE EMO.

World's leading trade fair makes waves again with strong international showing and innovative solutions.

After four years, it was time again for the EMO in Hanover from 18 to 23 September – for HERMLE too. As one of about 1,850 exhibitors, we were able to welcome a large number of the more than 92,000 trade visitors to our 540 sqm stand. Besides the Swabian specialties, our exhibited machine models were mainly responsible for this: the C 250 with robot system RS 1, C 12 with robot system RS 05-2, C 32 with handling system HS flex and the C 42 MT (Mill/Turn). In addition, we provided the interested public with insights into our technology development. Current core topics that have been driving us in Gosheim for years were presented in their best light: Sustainability, automation, digitalisation, networking, process reliability – and all this with consistently high production quality.

Away from the technology, it was a pleasure to meet many old and new faces. And once again, to engage in real conversation – often in English too. After all, over 50 % of the guests were international. Therefore, EMO was able to confirm its position as the world's leading trade fair for production technology. That's another reason why we're looking forward to September 2025, when it's time again: Off to Hannover for the EMO.

By the way: To tide all technology enthusiasts and gourmets over, HERMLE has something in store for 2024: our traditional open house in April.



**OPEN HOUSE 2024
SAVE THE DATE
16 – 19 APRIL 2024**





DYNAMIC FOR SERIES PRODUCTION.

The view of the bright production proves: Marco Hin is convinced of HERMLE qualities as a supplier of precise milling centres. Product illustration Difficult to machine: HIN Feinmechanik mills components from titanium-stabilised 1.4571 stainless steel for pharmaceutical development applications.

hin-feinmechanik.de

From design to production: HIN Feinmechanik has successfully established itself as a specialist in complicated components and complex devices. The Made in Germany quality seal is important to the owner – including in the stock of machinery: All six milling centres are supplied by HERMLE in Gosheim.



Marco Hin describes himself as a practitioner and loves to stand beside the machine. The qualified tool mechanic and certified mechanical technician only realised how much he enjoyed this when he swapped a life of hands-on work for a career in project management. His way out: In 2014, he founded HIN Feinmechanik GmbH and invested in a machining centre from Maschinenfabrik Berthold HERMLE AG – no stranger to him: "I'm at home in mould making. HERMLE is often represented there because the machines from Gosheim machine reliably and precisely." One of the main reasons, however, is the very good customer service – for both new and second-hand machines.



Design engineer Andreas Kitz at the HERMLE C 250 U.

CONSISTENTLY 'MADE IN GERMANY'

The second-hand C 800 V confirmed the young entrepreneur's opinion: In 2015, he got started with 5-axis machining using another second-hand C 600 U and then purchased his first 5-axis machining centre directly from Gosheim in 2016. A C 800 U followed a year later, again second-hand. "I attach importance to producing 'Made in Germany.' It is apparent that our machines and tools also come from Germany and that everything is put into practice with the help of HERMLE machines," explains Hin. The "whole thing" comprises prototypes, small-scale and large-scale production runs of up to 5,000

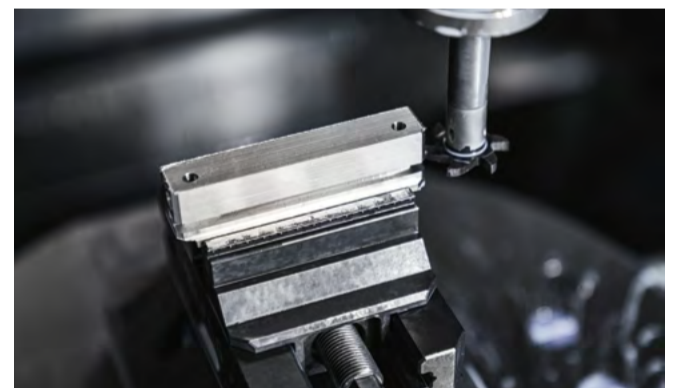
pieces for the mould-making, pharmaceutical and medical industries, for electronics companies and traditional engineering firms. HIN Feinmechanik is also strong in fixture construction. "Depending on the particular industry, the tolerances can sometimes range from tenths to hundredths of a millimetre," Marco Hin explains.

GETTING READY AT THE STARTING BLOCKS

In 2020, HIN Feinmechanik moved into its current production building in Waldkirch near Freiburg im Breisgau. "Here, we have tripled our production area, taken on our first apprentice and employed another worker", says Hin, listing the most recent changes. "At the same time, we purchased our fifth machining centre from HERMLE." At the end of January, the C 250 U arrived at the plant on the back of the lorry. In retrospect, this could have been a case of bad timing: The entrepreneur had just set the course for growth when the Corona pandemic forced his clients to withdraw – sales slumped and short-time work followed. What Marco Hin then did earned him the Jobmotor 2020 Award and the attention of new customers: He invested – in his employees, the website and advertising. "After a dry spell lasting a couple of months, things started to pick up again," says Hin.



f.l.t.r. Managing Director Marco Hin, Helmut Müller, representative of HPV HERMLE Vertriebs GmbH, and designer Andreas Kitz.



HIN Feinmechanik uses the HERMLE C 22 U for the series production of VA steel parts.

NOW EVERY MINUTE COUNTS

Since July 2022, a sixth HERMLE machining centre has been carrying out milling tasks in the production hall. The C 22 U differs from the previous 5-axis machines as it is more extensively equipped: with more space for tools, the automation package as well as inter-

"NOW WE CAN OFFER THE COMPLETE PORTFOLIO, FROM PROTOTYPE TO SERIES." Marco Hin

nal tool cooling. All in all, they increase the pace of operation and reduce the cycle times. "Five minutes more or less was hardly relevant for the production of individual parts. That is why we've done without internal tool cooling to date. With the robot in front, however, every minute counts with the C 22 U," Hin explains. "Now, we can offer the entire portfolio, from prototype to series production".



NETWORKED AND EXTRA SAFE.

From left: Andreas Glumpler, HPV HERMLE Vertriebs GmbH, Matthias Jung, Managing Director of Jung Werkzeugbau GmbH, and Thomas Faisz, responsible for mechanical production. Product illustration JUNG Werkzeugbau GmbH produces blade carriers from 42CrMo4 for large ring-type cutter-block chippers.

jung-werkzeugbau.de

JUNG Werkzeugbau GmbH is expanding its mechanical production capacity: An automated C 42 U from HERMLE is set to expand the three-shift operation to include manless shifts. Additional safety features will then ensure that the machine monitors itself.



It is late October 2022, and we are visiting JUNG Werkzeugbau GmbH in Öttingheim near Rastatt. A visibly proud Thomas Faisz answers our questions about the new HERMLE system, the procurement process of which he oversaw from the technical side. In his free time he plays clarinet while professionally, he makes sure the milling department at JUNG Werkzeugbau GmbH hits all the right notes. Under his supervision, components for both toolmaking and mechanical engineering are produced – such as knife carriers for shredders of the co-partner, Dieffenbacher GmbH. “The carriers are between 464 and 648 millimetres long and are used in a knife ring flaker. Up to 72 pieces sit on a ring with a diameter of almost two metres. If we don’t work precisely, the plant won’t run smoothly later on,” Faisz explains.

The new, automated C 42 U has been in the production hall since January 2022. Along with a C 50 U and a C 52 U, this is the third



Main-time parallel set-up is just one of many advantages of the HS flex heavy automation solution from HERMLE.

MOVING SAFELY INTO THE GRAVEYARD SHIFT

The 5-axis milling centre from the High-Performance Line is automated with the flexible handling system HS flex heavy. Faisz pays close attention to ensuring that all participants document every step along the way to the “ghost shift” – from the programming all the way down to the tool service lives. However, there are a few outstanding issues to resolve before he can put the system to work unattended. “Process reliability is the prime concern,” he comments – and discusses the question of what makes the milling process better or safer with HERMLE as well. “There are numerous possible ways for the machine to monitor itself. Ultimately, the owner has to know what they are and how best to use them”, explains Andreas Glumpler from HPV HERMLE Vertriebs GmbH. In addition to wear-and-tear control via a laser, torque monitoring also increases safety: If a cutting insert breaks during operation, it detects the breakage by way of the torque peak, stops the spindle and initiates the tool and pallet exchange “In direct discussions, we also discuss preventive measures such

as Adaptive Feed Control, or AFC for short,” the salesman adds. AFC automatically regulates the feed rate based on maximum parameters and limits and is oriented towards the spindle load. Faisz appreciates the working relationship with HERMLE as well as the service it provides. “The precision is there, and HERMLE

“THE PRECISION IS RIGHT, AND HERMLE CLARIFIES QUESTIONS IMMEDIATELY.” Thomas Faisz

clarifies any issues immediately – either by phone, via remote maintenance or in person on site. If we need spare parts, they usually arrive before the mechanic. HERMLE really is exemplary in this respect.”

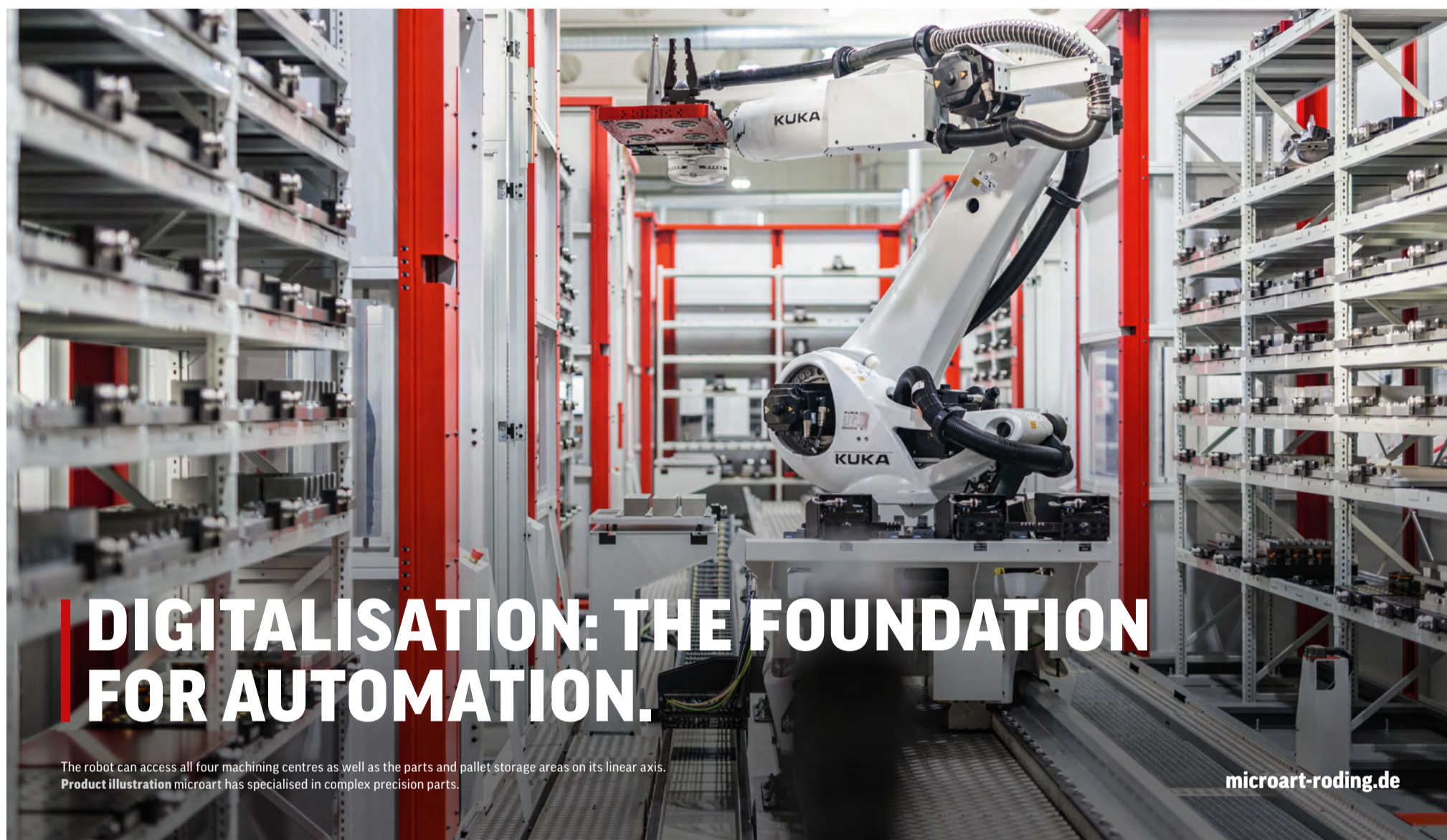
“WE WANT TO REMAIN FIT FOR THE FUTURE – WITH DIGITISED AND EXPANDED MANUFACTURING.” Billy Ege

machining centre from Gosheim. “We want to remain fit for the future – with a digitalised and expanded production department”, explains Billy Ege, Commercial Manager at JUNG Werkzeugbau GmbH. The HACs order management incorporates Industry 4.0 technology and the option of networking the system with the production environment. For the Federal Ministry of Economics and Climate Protection, this is a project worthy of support. It is, therefore, supporting JUNG Werkzeugbau GmbH as part of the investment programme for modernising production in the vehicle manufacturing and supplier industry.



The C 42 U HS flex heavy is the first move by JUNG Werkzeugbau GmbH towards automation for its mechanical production.





DIGITALISATION: THE FOUNDATION FOR AUTOMATION.

The robot can access all four machining centres as well as the parts and pallet storage areas on its linear axis.
Product illustration microart has specialised in complex precision parts.

microart-rodig.de

High variance and different batch sizes can cause many a contract manufacturer to panic – but not microart. The precision parts manufacturer creates economical machining with flexible capacity using digital structures and automated 5-axis machining centres from HERMLE.



on left Manfred Pantel from HPV HERMLE Vertriebs GmbH with Dr Alexander Artmann, Managing Partner of microart GmbH & Co. KG. Beside them: Milling Manager Hans Multerer, microart Managing Director Michael Kerscher as well as milling technicians Mario Schweiger, Simon Schafberger, Julian Piendl.

microart is a 180-person company that manufactures precision parts made of aluminium, stainless steel and special alloys as well as high-strength materials such as titanium in Roding in Eastern Bavaria, mostly in small series of 50 to 2,000 pieces. All components are destined for the capital goods sector – primarily the engineering and plant construction as well as the electrical and process engineering areas. Dr Alexander Artmann founded microart GmbH & Co. KG with



Dr Alexander Artmann, founder and Managing Partner of microart GmbH & Co. KG.

the help of his father in 2007. Michael Kerscher has also been with the company since the very beginning. The engineer is still responsible for the business and drives the company forward. The original business strategy was to support tool-makers in the high-precision field. "We then moved relatively quickly into the area of machining for precision components and abandoned the original idea", says the company founder and managing partner.

HERMLE was also involved from the very beginning: "Michael Kerscher and my father come from a toolmaking background and knew all about the reliability and performance of HERMLE machining centres in terms of precision and excellent service. So we started directly with a C 40 U," Artmann reports. These also include 25 milling centres supplied by Maschinenfabrik Berthold HERMLE AG – the seven most recent of which are automated with two RS 2L robot systems.

SCALING UP A PROVEN APPROACH

The supplier of precision parts moved away from stand-alone machines in 2016 and 2017 when it invested in three HERMLE C 32 U machines that are connected by the RS 2L robot system. A linear axis makes it mobile so that it can independently reach both the machining centres and the parts and pallet racks. "This automation layout proved its efficiency and convinced us," Artmann and Kerscher explain the reason for investing again in a second RS 2L robot system in mid-2019 - this time with four C 32 U. "We standardise by scaling existing solutions, using the learning curve and transferring this know-how to several machines," Artmann explains. For the new system, this meant more magazine pockets to machine recurring series without much effort.

DIGITALISATION PAVES THE WAY

For Artmann, automation means more than just deploying a robot: "The robot certainly makes automation visible. However, it is reliant on digitalisation". Back in 2015, microart implemented an ERP and document management system and simultaneously digitalised the

entire tool cycle. For new orders, the focus is on mapping the processes in and around the machining centres in a reproducible manner. For the follow-up order, microart then benefits from this additional effort.

"WE STANDARDISE BY SCALING EXISTING SOLUTIONS, USING THE LEARNING CURVE AND TRANSFERRING THIS KNOW-HOW TO SEVERAL MACHINES." Dr Alexander Artmann

Thanks to a coherent digitalisation strategy and the robot-automated 5-axis milling machines by HERMLE, microart is able to mill precision components to the highest standards in small quantities and with high variance without human supervision around the clock. "This allows us to work efficiently, transparently, on schedule and with complete process reliability," says Artmann in summary.



The RS 2L system with the C 32 U machine operates around the clock – it is set up and loaded during the day.



DUPLICATE MACHINES AT NMH: BOTH THE SAME YET BOTH DIFFERENT.

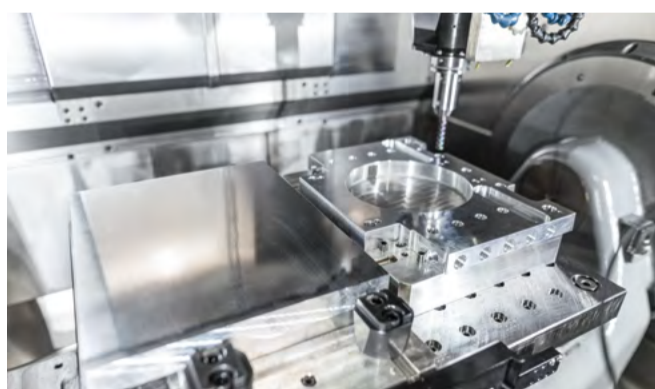
From left: Hermann Nohr, HPV HERMLE Vertriebs GmbH, machining technician Matthias Eisele, Christian Bulander, Managing Director of NMH GmbH, and machining technician Elmar Käppeler. Product illustration The aluminium base plate for a milling machine is automatically machined as a blank plate without human supervision. The challenge here is to ensure consistent dimensional accuracy.

nmh.de

Price, quality and delivery date are what his customers are interested in, explains NMH Managing Director Christian Bulander. A robot and two 5-axis machining centres from HERMLE support the special machine builder and contract manufacturer in efficiently achieving these demanding targets.



Since 2019, two C 42 U machines have been sitting in the production hall at NMH GmbH in Hohentengen municipality in the district of Sigmaringen in Germany. Between them: an RS 2 robot system. With that and the two 5-axis milling centres from HERMLE, the contract manufacturer, mechanical engineer and software developer entered automated machining. The robot enables economic pricing even for series production, increases employee availability and is flexible. It removes workpieces from a die pallet and places them in the clamping system, loads both machining centres with pallets or changes tools as required. With running times of three to 20 minutes, there



Many of the parts that NMH mills on the C 42 U machine are then installed by the company in its measuring, testing and assembly systems.

are many hours when staff are not required, particularly when it comes to handling individual parts. "The robot just does everything, and its flexibility is simply unbeatable," comments Christian Bulander, Managing Director of NMH GmbH.

JUST THE SAME ONLY DIFFERENT

The reason why NMH invested in two C 42 U machines at once was because of the variety of products. The contract manufacturer and special machine builder designs and builds welding fixtures, load



The ideal addition: The COCO production software, developed in-house, gives NMH transparency across all production activities.

handling devices, robot cells and systems for the production of agricultural machinery, automobiles, commercial vehicles and the construction industry. It has created another mainstay with plastic injection moulding technology. NMH also supports companies in digitalisation – with its software and hardware solutions for digital paperless production, CO2 determination and energy control.

"The machines are not identical," says Bulander in response to the question about the choice of the two milling centres. Whereas one is designed for heavy-duty machining, the focus of the other is on

**"THE ROBOT DOES EVERYTHING,
AND ITS FLEXIBILITY IS SIMPLY
UNBEATABLE."** Christian Bulander

precision down to five microns. Another reason for doubling up on machinery is to make optimum use of the robot: the running time of a machine is always longer than the parts handling process. If two machines are available, the robot is better utilised, and the system is therefore more productive.

DIGITAL TRANSPARENCY

Another special feature becomes apparent when looking at the swivelling control panel of the RS 2 robot system: A second screen with a web cam is mounted above the HERMLE monitor. That's because NMH embraces paperless production and has developed its own software called COCO (ControlCockpit) for the purpose. This allows NMH to track and manage all processes in real time – also with the help of cameras installed in the machining areas of the C 42 U. The workers, therefore, have an overview of the process at all times. Digital tags are attached to each component and each series, which NMH manages and labels centrally.

This digital transparency also plays a key role in enabling Bulander to meet the expectations of his customers by combining on-time delivery with quality at an attractive price. The HERMLE machining cells are another secret to his success. "I believe we chose the right time to invest in a system that ensures our competitiveness and provides us with reliable and precise results", says the Managing Director in summary.



In 2015, NMH GmbH moved into its new company building at the airport in Hohentengen.



TWINS FOR GREATER PLANNING FREEDOM.

From left: Georg, machining foreman, machining technicians Andreas and Johannes with Managing Director Matthias Beyer, Dominik Wiedemann, assistant to the company management, and CNC milling technician Patrick. **Product illustration** The first production piece is ready for the initial sample test report.

prokotec.de

Prokotec is a successful service provider for metalworking. "Our flexibility is our advantage", emphasises Managing Director Michael Beyer. A reliable stock of machinery with automation gives him the necessary capacity. This includes two C 22 U and one C 12 U from HERMLE.



The HERMLE PW 150 has space for 18 pallets.

Matthias Beyer loves mountains, skiing and the USA. He lived there for many years and was most recently employed as Managing Director for a German company. Then, he was tempted to become self-employed. In 2005, he went back to his home in Raubling in the Upper Bavarian district of Rosenheim, took over the contract manufacturer Prokotec and turned it into a successful service provider with about

"IT WAS NO LONGER A QUESTION OF WHETHER WE NEEDED A PALLET CHANGER. THE PLANT WAS WORKING TO CAPACITY AND WE NEEDED MORE CAPACITY."

Michael Beyer

90 employees. For customers who are active in aerospace technology, the food and commercial vehicle industry, medical technology and the semiconductor industry, among others, the company cuts via laser and waterjet, cants, chips, saws and welds various metals. For some, Prokotec GmbH also produces entire subassemblies.

ONE MACHINE FOR PRECISION

In terms of personnel, the machining department is the largest single department with the most added value. Among other things, it houses several machining centres from Maschinenfabrik Berthold HERMLE AG. The first that Beyer purchased was a C 12 U in 2015. "Aerospace engineering requires parts with very fine tolerances. We looked around the market while searching for a suitable milling machine for this purpose. Ultimately, HERMLE convinced us with its price-performance ratio and service offering", explains Beyer. In 2016, the contract manufacturer invested in a C 22 U with PW 150 pallet changer. "At the time, I was told to buy it with it and I wouldn't regret it," Beyer recalls the conversation with his contact at HERMLE. He had trusted in the experience of the salesperson, who was thoroughly familiar with the Prokotec product portfolio. In retrospect, the recommendation certainly paid off, and Beyer ordered a second C 22 U with an identical layout some two and a half years later. "It was no longer a question of whether we needed a pallet changer. The system was operating at full capacity, and we needed more," explains Beyer.



Producing a complex component for the aerospace industry on the C 22 U.

THE LAST IS AS GOOD AS THE FIRST

"We're not always asked to work within thousandths of a millimetre. Sometimes, we're challenged by the geometry - but also by the speed and reliability. I must be able to rely on the fact that in a series of 1,000 parts, the hundredth part is every bit as good and



Prokotec programs the C 22 U based on STEP files it receives from its customers.

exact as the first," says Beyer, referring to what he expects from the HERMLE machines.

However, investing in milling centres from Gosheim is also worthwhile for him in another respect: HERMLE's reputation. "After all, we impress not with our own products but with quality, performance and on-time delivery. A customer only needs to look at our stock of machinery to know that we can keep our quality promise," explains Beyer. The other thing that his clients appreciate about Prokotec is its flexibility, for example, when it comes to delivery dates ahead of schedule. "To create room to manoeuvre in our planning, we need a certain capacity," says Beyer. This is made possible by the option of unmanned production, reliable machines and, when the chips are down, prompt service.



ABSOLUTELY ACCURATE IS STILL NOT PRECISE ENOUGH.

Thanks to automation, SK TECHNOLOGY needs a maximum of two skilled workers per shift to operate HERMLE's five milling centres at the Roding site. Product illustration An example of a complex, high-precision prototype part.

sktechnology.de

With HERMLE, SK TECHNOLOGY can really be petty – in the truest sense of the word. Because the machining expert excels when it comes to precision. This is due not only to the machinery but also to the understanding that inconspicuous subtleties decide between good and rejects.



Delivering precision at a high level was the credo of the company's founders Johann Stangl and Stefan Kulzer as early as 1988. SK TECHNOLOGY GmbH now employs about 300 people at its two sites in Roding and Waldmünchen. They produce prototypes, individual parts, small and medium series on 15,000 square metres, for example for aerospace, medical technology and mobility, but also for the energy sector and semiconductor industry. "We deliver a degree of precision that only a few companies in Germany can offer," emphasises Kulzer who is the second generation to run the family business. The secret: the interaction between humans, the machine and the air-conditioned environment. "The milling centres of Maschinenfabrik Berthold HERMLE AG are the ideal basis for this. That's because the more precise they are, the higher the level that can be achieved," adds the Managing Director.

"THE EMPLOYEES HERE KNOW THE INTERFACE, THE MACHINES, THE LITTLE DETAILS THAT GO INTO THEM. ADDED TO THAT IS A RELIABLE AND COMPETENT SERVICE."

Benedikt Kulzer

In 2016, the family-owned company introduced its first automation in the milling process with a new HERMLE system: two C 32 U machines with an RS 2 robot system. It handles both pallets and individual workpieces. This gives SK TECHNOLOGY maximum flexibility – even though pallet handling is becoming the predominant method. For this reason, Kulzer ordered the robot system for the second processing cell with pure pallet handling in mid-2021. Here, too, the automation serves two C 32 U. When the order situation picked up again at the end of 2021, the entrepreneur was already planning the next investment.



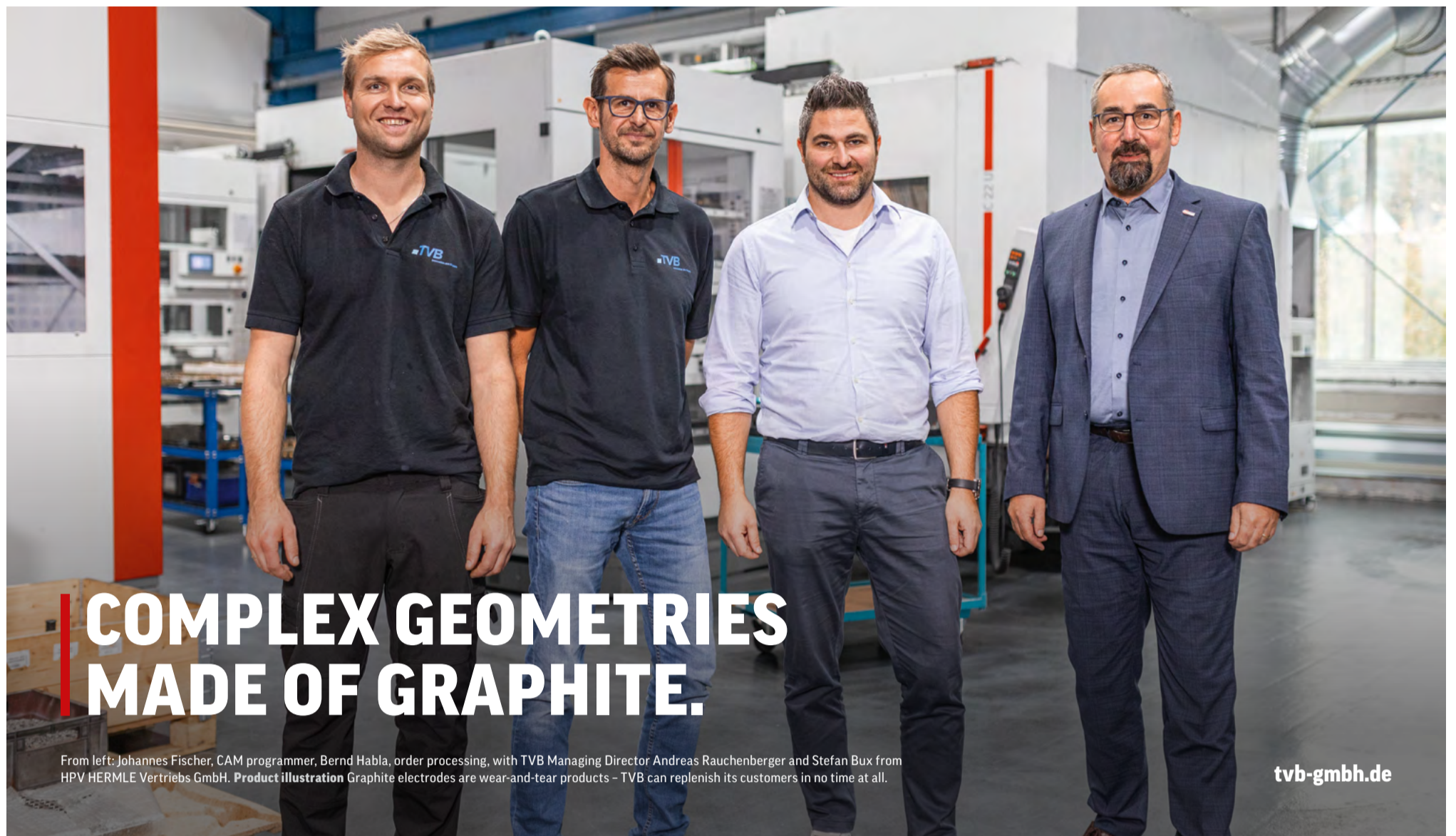
Top Matthias Bücherl, Head of the Milling Department at SK TECHNOLOGY GmbH, with Managing Director Benedikt Kulzer. Centre Higher quantities are required for series components for the automotive industry. Below In 2017, SK TECHNOLOGY inaugurated the new fully air-conditioned production hall including administration building with social wing and canteen in Roding. This increased the production area from 4,000 to 10,000 m².

QUICKER RAMP-UP THANKS TO STANDARDISATION

SK TECHNOLOGY bought two C 42 U with HS flex handling system in 2022. The switch to the flexible handling system initially came as a surprise. "Ideally, we would have accommodated both machines in our second plant in Waldmünchen, where we had not yet introduced any automation to date. In the end, there was only room for one," Kulzer reports. The change in Roding from the robot to the HS flex handling system went smoothly: "HERMLE's own HACS operating software is so intuitive that we were able to familiarise ourselves with it within a very short time," Kulzer recalls. This is also due to HERMLE's uniform operating concept: "The employees here know the interface, the machines, the little details that go into them. Added to this is a reliable and competent service."

PRECISION, UNIVERSALLY USABLE

Today, Kulzer no longer buys anything without automation because it allows him to expand his production capacity without worrying about staff shortages. In addition, the system provider is more flexible, can accept more orders and grows further into the value chain of its customers up to pre-series production. This also benefits capacity utilisation: "We are now at a planning horizon of six months and more," explains the Managing Director. Contract manufacturing is also characterised by the wide variety of parts to be machined. "As we will definitely be using the HERMLE machines to produce parts for the next six to ten years, they not only need to be precise and powerful but also universally usable. This means that we are equipped to meet all possible new challenges," says Kulzer with confidence.

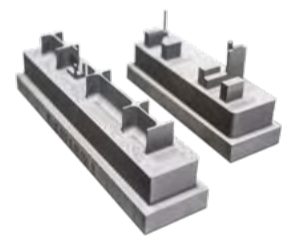


COMPLEX GEOMETRIES MADE OF GRAPHITE.

From left: Johannes Fischer, CAM programmer, Bernd Habla, order processing, with TVB Managing Director Andreas Rauchenberger and Stefan Bux from HPV HERMLE Vertriebs GmbH. Product illustration Graphite electrodes are wear-and-tear products – TVB can replenish its customers in no time at all.

tvb-gmbh.de

TVB assembles and sells graphite blanks, mills electrodes for die-sinking EDM and manufactures the holders for them. With regard to processing, the specialist relies on HERMLE: Two automated 5-axis milling centres process the porous material, while a C 32 U including a robot is responsible for metalworking.



With photovoltaics on the roof and a liquid-gas-powered combined heat and power unit – Andreas Rauchenberger spent yesterday thinking about tomorrow and is reaping the benefits today. It all started with a leaking compressed air hose. “That is money that we have to earn in addition to the calculated machine hours,” says the Managing Director of TVB GmbH. However, sealing hoses and using more efficient LED lighting was not enough for him: “We also use the waste heat from our HERMLE machines. In summer, we pipe the warm exhaust air into the basement through our heat exchanger, and in winter we use it to heat the halls directly.”

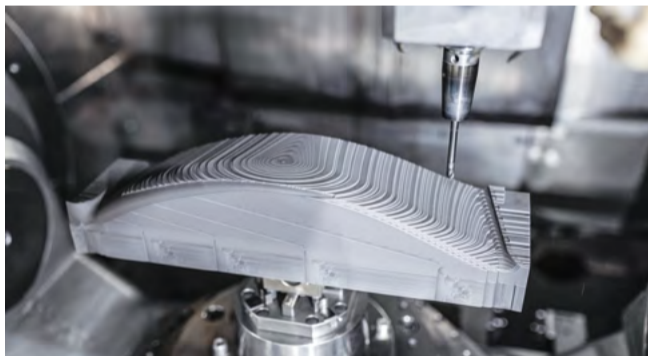
TVB GmbH is a family business in Murnau that specialises in graphite processing and that offers everything around the black blocks: from graphite blanks with 24-hour delivery service to graphite semi-finished products and electrodes to matching clamping systems in the form of milled brass or aluminium holders.



When it entered 5-axis machining, TVB also invested in automation – to maximise capacity.

AUTOMATED 5-AXIS MACHINES

In 2015, TVB entered the world of automated 5-axis machining with the C 22 U and the IH30 handling system from Maschinenfabrik Bertold HERMLE AG. “We work in a one-shift system. To ensure that the machine would pay for itself and run without supervision, we had to



The relationship between speed and feed is critical when it comes to machining graphite. If the electrode ends up gleaming, something has gone wrong.

introduce automation”, was Rauchenberger’s view at the time. He made the right call: just one year later, the system was so well utilised that he ordered a second identical machine in Gosheim. One machine spends between five minutes and 36 hours milling an electrode. Throughout the process, it must master complex geometries while maintaining absolute dimensional accuracy. “We manufacture in the range of plus/minus one-hundredth of a millimetre. However, if we produce ten identical electrodes, they should ideally be identical when they emerge from the machine,” explains Rauchenberger.

It is not only the machines that are convincing: Rauchenberger also appreciates HERMLE’s down-to-earth appearance, the competence of the employees and the service, which he describes as incomparable. However, the real reason he chose a milling centre from Gosheim is different: “The working area below the machine tapers into a funnel shape, which enables optimum extraction of the fine dust created during the milling process,” explains Rauchenberger.

BLACK, SILVER, GOLD

In 2019, TVB invested in an additional HERMLE machine: a C 32 U with a RS 2 robot system. The company uses it to produce the

clamping system made of brass and aluminium for the electrodes itself. To ensure additional capacity utilisation for the machine, he also branched out into traditional contract manufacturing. The use of automation with the help of a robot was a deliberate decision: he explains

“... BUT THE HERMLE GROWS WITH US AND CAN BE RETROFITTED OR EXTENDED WITH A SECOND HERMLE AT ANY TIME VIA THE RETROFIT DEPARTMENT.”

Andreas Rauchenberger

that an RS 2 gives him total flexibility – from the component size to the option of using pallet and single-part handling all the way to the subsequent expansion of the entire system. “Nobody knows where the journey will lead. The HERMLE machine grows with us and can be refitted at any time by the retrofit department or supplemented with a second HERMLE machine,” says Rauchenberger in praise.



TVB uses the two C 22 U machines (in the background) exclusively for machining graphite. The robot loads the C 32 U (front right) with aluminium and brass components.



COOLER THANKS TO COPPER IN THE CORE.

There is no space for a cooling duct in the tip of the core. Instead copper – invisible from the outside – provides rapid heat dissipation, in turn ensuring high-quality results for the injection moulding. **Product illustration** Top right is the core as delivered by HMG to S & S Werkzeugbau for final machining (top left). The cast handle element and the mounted pruning shears can be seen in the front of the picture.

sus-werkzeugbau.de

S & S Werkzeugbau manufactures complex injection moulds completely in-house. However, the mould makers make an exception in the case of a reliable cooling solution for narrow cross-sections: HERMLE Maschinenbau uses metal powder application technology (MPA) to optimise heat dissipation in the injection moulding process.



To achieve optimum results, Gardena, a gardening tool manufacturer based in Ulm, Germany, relies on injection moulds with cores that house a reddish shiny secret: Inside the thinnest places, copper smoothly directs heat to the nearby cooling duct. The underlying manufacturing process is the metal-powder application technology (MPA) of HERMLE Maschinenbau GmbH (HMG). In 2018, Gardena approached S & S Werkzeugbau in Schlitz, Hesse, with a request for a new tool optimised using this special technology. S & S stands for the company founders Heinz Starch and Walter



The multi-cavity mould, which S & S Werkzeugbau manufactured for Gardena, weighs several 100 kg.

Susemichel. In 1985, they started mould making for the mass production of complex plastic parts. Today Harald Starch manages the family-owned enterprise, S & S is known for its high vertical range

“MPA TECHNOLOGY IS A QUALITATIVE AND HIGHLY FUNCTIONAL SOLUTION.”

Harald Starch

of manufacture and technological know-how. About 90 injection moulds leave the manufacturing facilities every year. They weigh up to six tonnes, have up to 64 cavities and produce plastic parts



Harald Starch leads the family-owned enterprise, now in its second generation.

with grained, eroded or highly polished visible surfaces. A tour through the operating facilities with about 50 employees is as impressive as these details would suggest: Several halls are lined up like a labyrinth. The tour ends in the Managing Director's office with the inconspicuous mould core that is responsible for the hollow area in the pincer grip on the table. The more delicate and intricate the geometry, the more difficult heat management becomes. MPA technology offers a smart solution: Copper conducts heat away from the narrow areas and ends where cooling ducts have sufficient space. The cooling water can flow here without difficulty.

SUPERSONIC MATERIAL APPLICATION

How does the copper get in the core? For this purpose, HMG has developed the MPA 42, based on the C 42 U five-axis milling centre, which can not only remove but also apply material. Heat, nitrogen, superheated steam and a laval nozzle ensure that metal powder is accelerated to supersonic speed and bonds with the clamped blank on impact. The five axes of the machining centre

align the stream of powder at almost any angle to the component, thereby allowing the cooling duct or copper inlays to form even on curved surfaces. S & S finally receives a matt core. “Then we manufacture the outer contour here,” reports Starch.

THE BEST OF BOTH WORLDS

The Managing Director is convinced of the MPA technology. This technology makes it possible to manufacture complex moulds while at the same time ensuring efficient heat dissipation. “It is a qualitative and highly functional solution,” says the mould maker. His designers and technicians also have a positive assessment of the technology: “There are no problems in the application. With the combination of MPA technology and conventional temperature control technology, we achieve the best results and meet our customers' needs.”



S & S Werkzeugbau grew steadily. In 2000 the mould maker moved into the building of what had previously been a weaving plant and secured the surrounding land. The most recent tool hall (left) was built in 2017.



THE PERFECT 13 – IN CHINA.

From left: Xue Yu, Sales Manager HERMLE China, Patrick Lindbichler, Chief Representative Officer HERMLE China, Gao Hua, General Manager of the Tool Systems Department at Huarui Precision Cutting Tools.

zzhrjm.com

Huarui Precision Cutting Tools wants to become the leading supplier of cutting tools in China. He therefore looked for the best machines for production – and decided on thirteen 5-axis machining centres from HERMLE in 2022. HERMLE China was not only convincing in respect of hardware.



Huarui Precision manufactures carbide cutting tools for turning, milling and drilling as well as tool systems and holders for customers at home and abroad. The tool manufacturer invests heavily in science and technology to become the best company in its field. "About 16 per cent of the 758-person workforce focuses on research and development," clarifies Gao Hua, General Manager of the Tool Systems Department at Huarui Precision Cutting Tools. They work on new substrates and coatings, further develop their process for precision forming and optimise the structures of the cutting tools for better swarf formation. These precise carbide inserts need equally precise



Thirteen HERMLE C 22 U have been in operation at Huarui Precision since 2022.

tool holders – which have been given their final shape on HERMLE 5-axis milling centres since mid-2022.

FULL POWER AROUND THE CLOCK

A total of twelve C 22 U and one C 650 U – all automated for non-stop operation – are located in the production hall in Zhuzhou (Hunan province), some 730 kilometres north of Shenzhen. "I have been in the tooling industry for a long time and I know: Many of the world's leading companies in the industry rely on 5-axis machining centres from HERMLE. That aroused our interest," Gao explains, adding: "I bought my first HERMLE 20 years ago when I was working for a foreign tool manufacturer in China. It still runs extremely reliably and

precisely." The Chinese tool specialist expects a lot from the milling centres: Long-term stability and a high degree of accuracy even during continual use. "We need machines that fulfil these characteristics to ensure the high quality standard of our cutting tools," says the General Manager and sees his positive experience confirmed.

PIONEER IN CHINA

He is equally satisfied with the cooperation: In addition to on-time assembly and commissioning, the remote support provided by the experienced engineers from HERMLE China and HERMLE AG helped Huarui Precision to start manufacturing tool holders on the new machining centres. He describes the direct linking of tool data and milling machines, which HERMLE realised with Zoller, as a milestone. The software enables an automatic tool data import from the setting device to the machining centre in real time. After measuring, the tool holder receives a data matrix code that reveals

"MANY OF THE WORLD'S LEADING COMPANIES IN THE INDUSTRY RELY ON 5-AXIS MACHINING CENTRES FROM HERMLE." Gao Hua

all relevant data to the CNC control via scan when it is later used in the HERMLE machine. "This makes us a pioneer in China," emphasises Gao Hua.

With HERMLE, Huarui Precision Cutting Tools strengthens its standing in the tool industry, Gao Hua is certain. "We can rely on the HERMLE milling centres. Their low failure rate ensures continual production and prevents costly downtime."

DATES

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SAVE THE DATE

16 – 19 APRIL 2024

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