

INSIGHTS

ISSUE 2 2019

THE NEW NAVIGATOR USER INTERFACE

Another digital building block

SERIES FOR ALL MACHINING REQUIREMENTS

Overview of workpieces and products

USER-BASED

Five industry reports



Preface

Dear business partners and customers,
dear members of staff,

As 2019 draws close the end, there is much uncertainty, extending well beyond the machine tool world. For the full year, the company expects a Group-wide decrease in incoming orders of up to 20%. True to our motto as a "breathing enterprise", we have already adapted the production plans and also the working time of the employees to the reduced buying behaviour. Despite the looming weaker economy, the highest number of new employees in Hermle AG company history were hired with 30 apprentices and 11 students. The main emphasis of upcoming capital expenditures is certainly the construction of a completely new sheet metal production plant in Zimmern ob Rottweil. It is scheduled to begin production already in 2020.

The most important international trade fair for the industry, EMO in Hannover, also faltered. Only 117,000 visitors were recorded this year. Nevertheless, backing up EMO's claim as leading international trade fair, more visitors from outside of Germany were recorded this year than two years ago. Hermle had an impressive trade fair stand: six machine models, two equipped with automation solutions and two competence areas, "Digital building blocks" and "Generative manufacturing" were presented. More than two thirds of our new contacts were also from outside of Germany.

We look towards 2020 with mixed feelings. However, we will continue to push our product development forward, both in model updates and in the rapidly developing business with Hermle's own automation solutions and digitization. Please make a note now of one of the most important dates in 2020: the Hermle in-house exhibition, April 22 to 25 in Gosheim, already today we would like to cordially invite you to attend.

I wish you and your families a very happy Christmas and a prosperous and healthy 2020.

Kind regards,



Franz-Xaver Bernhard
Director of Sales, Research and Development

THE NEW NAVIGATOR USER INTERFACE

ANOTHER DIGITAL BUILDING BLOCK.



The digital transformation is now becoming the focus of many different production operations. Hermle is there to provide support while you chart your individual course towards Industry 4.0 and the smart factory.

We offer a wide range of software solutions for improving your efficiency, precision and productivity. In this way our digital building blocks lay the foundation for smarter production: intelligent order management and transparent machining processes; smart machine tuning, paperless manufacturing and sophisticated technology cycles as well as the option of remote or preventive maintenance. With the new "Navigator" operating concept, Hermle will be presenting another digital building block at this year's in-house exhibition. The Navigator user interface is a cost-neutral internal development for the customer and can be used with different control systems. Optimised for touch application, Navigator offers a modern and contemporary user interface. Intuitive operation due to the graphical menu navigation makes day-to-day work easier for machine operators.

The interactive buttons that appear in Navigator are used for general machine control. At the same time, all relevant equipment tools such as internal cooling lubricant supply, the chip conveyor or the emulsion mist extraction system can be selected and adjusted directly in the 3D display of the machine. General relevant information and all maintenance settings are transparently displayed for the operator in Navigator. An additional benefit is the capability of jumping directly to the operating manual. In this way Navigator contributes towards more convenience and efficiency in day-to-day work.

THE NEW NAVIGATOR USER INTERFACE

- + Cost-neutral in-house development
- + Can be used with different control systems
- + Optimised for touch application
- + Graphical menu navigation for intuitive operation
- + More convenience and efficiency in day-to-day work



DIGITAL TOOL MANAGEMENT

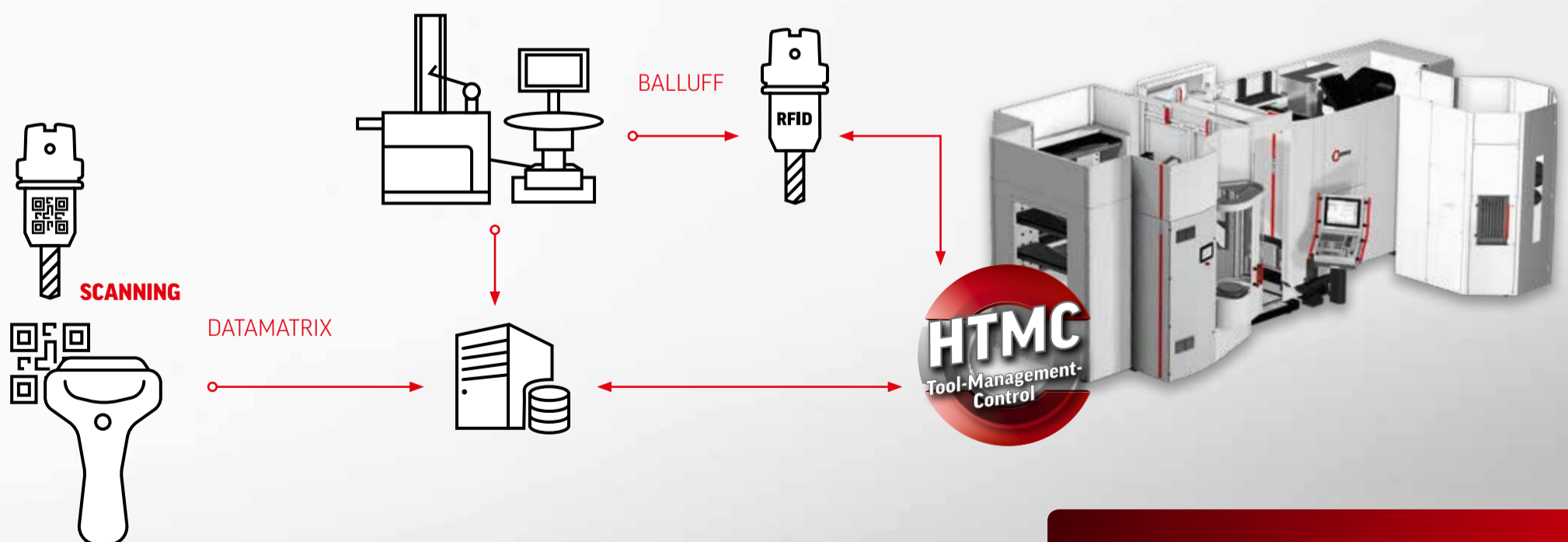
MORE EFFICIENCY AUTOMATICALLY.

Digital tool management is an important part of smart production today and tomorrow. For Hermle this means that the geometry data is automatically transferred to the machine. In most manufacturing companies, tool data is still entered manually by the operator. This is not only tedious and time-consuming, but also risky: with an incorrect entry comes the danger of a machine collision and the production downtimes associated with it. That is why we support our customer moving in the direction of digital tool management. Two options are currently available for selection.



With Balluff **tool identification**, all of the tool geometry data is saved on an RFID data carrier on the tool holder. That means that all tool data is reliably associated with the tool at any time. This also makes it possible to use tools on different machines. When the tool is loaded, the tool geometry data is automatically transferred to Hermle tool management. When the tool is unloaded, correction data and remaining service life times are automatically written back to the data carrier. This ensures maximum operator convenience with higher machine availability.

With Datamatrix **tool identification interface**, Hermle offers standardised data transfer from the Zoller tool database on the preset device to the Hermle tool management. The tool is identified by scanning the unique tool ID, which is placed on the tool holder in the form of a Datamatrix code. For customers that identify their tools with laser labelling or adhesive labels, this solution offers an economical alternative.



Our experts will be pleased to speak with you and find out which option is better suited for you and your company.

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PRODUCTS.



OVERVIEW OF WORKPIECES AND PRODUCTS

SERIES FOR ALL MACHINING REQUIREMENTS

In theory, the machining centres from Hermle offer impressive performance data. In practice, they are possibly the best machines in the world. With some sample machining tasks and products, you can at least catch a glimpse of the performance range of our machines.

MACHINING VIDEOS
www.hermle.de/videos

HIGH-PERFORMANCE-LINE C 42 U

PRODUCTS.



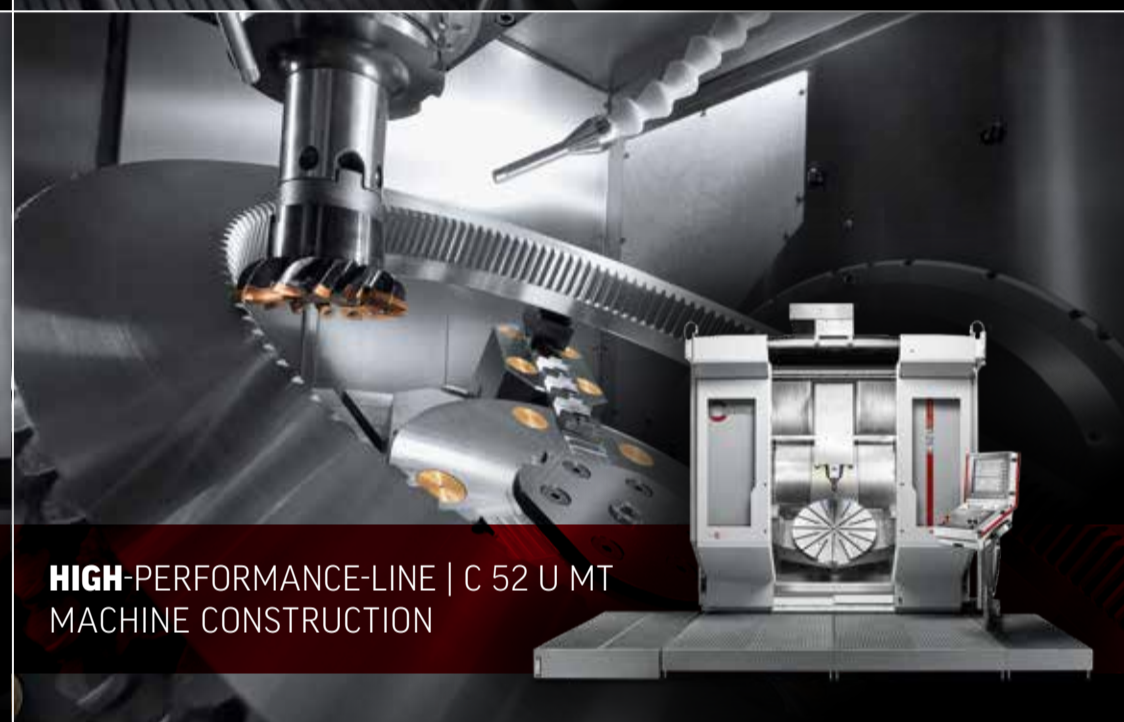
PERFORMANCE-LINE | C 250
SPORT AND LEISURE INDUSTRY



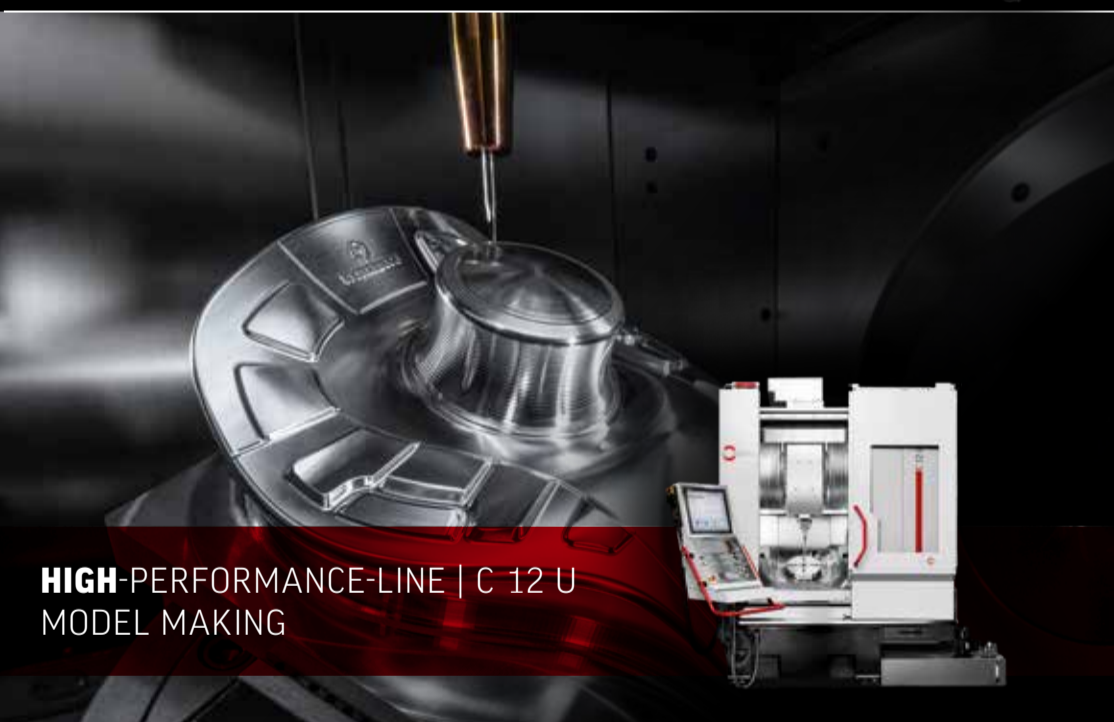
PERFORMANCE-LINE | C 400
GENERATIVE MANUFACTURING



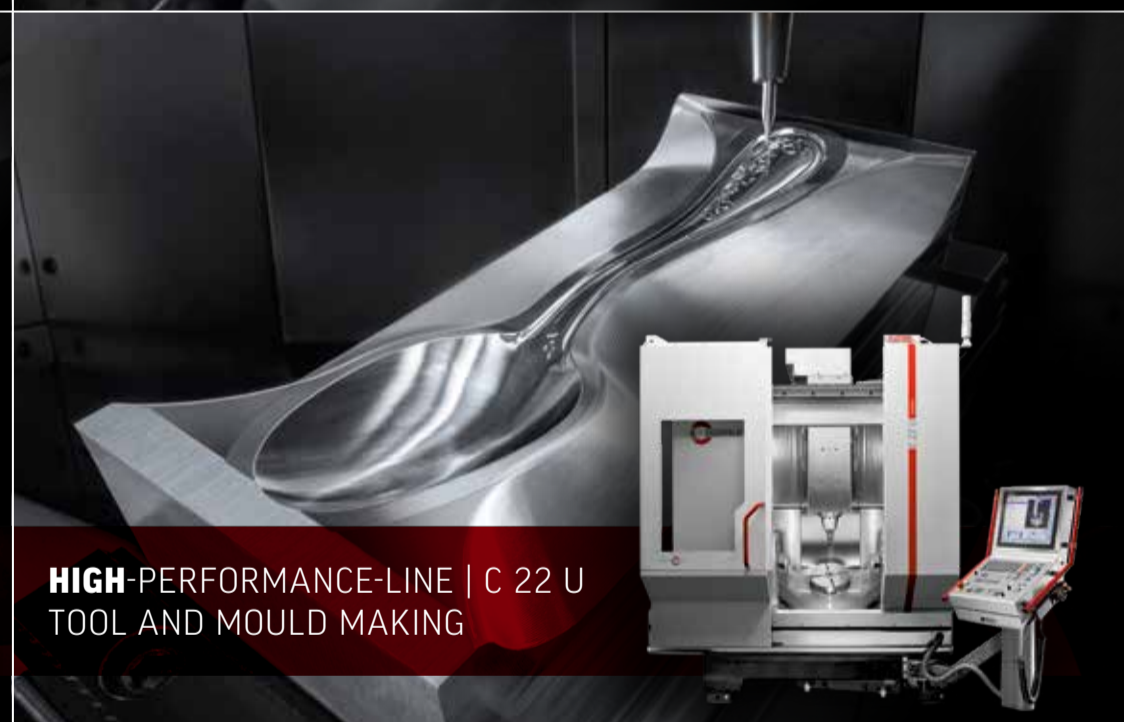
PERFORMANCE-LINE | C 650
MODEL MAKING



HIGH-PERFORMANCE-LINE | C 52 U MT
MACHINE CONSTRUCTION



HIGH-PERFORMANCE-LINE | C 12 U
MODEL MAKING



HIGH-PERFORMANCE-LINE | C 22 U
TOOL AND MOULD MAKING



HIGH-PERFORMANCE-LINE | C 32 U
AEROSPACE INDUSTRY



HIGH-PERFORMANCE-LINE | C 62 U MT
MACHINE CONSTRUCTION

COMPANY.



INFORMATION ABOUT ANTONOV

Crew	6 persons
Length	69.10 m
Wingspan	73.30 m
Wing area	628.00 m ²
Height	20.78 m
Freight space (LxWxH)	36.50 x 6.40 x 4.40 m
Max. payload	120 t (civilian version)
Range with load	4800 km with payload of 120 t / 12,000 km with pa of 40 t

The Antonov AN-124's tubular hold can be accessed by raising either the rear section or the aircraft's nose.



WHEN THINGS HAVE TO MOVE FAST!

HERMLE SENT THREE C 42 U FIVE-AXIS MACHINING CENTRES WITH AUTOMATION CAPABILITY TO THE USA – AN ANTONOV AN-124 TRANSPORT AIRCRAFT PROVIDED THE MEANS.

Hermle machining centres make for intelligent fabrication of metal components. They are used in high-end sectors such as aerospace, medical technology, mechanical and precision engineering, to name just a few. The machines, which themselves achieve tolerances below 10 µm for milling and turning (a human hair has a diameter of around 70 µm), must also be given precision treatment when they are transported. So most Hermle machines are transported either by means of vehicles with air suspension or by sea. Sometimes, though, time is of the essence and the machines must be moved very quickly.

So on October 11, 2019, three C 42 U dynamic, five-axis machining centres, each equipped with an HS flex handling system, were transported from Stuttgart Airport to Arizona using an Antonov AN-124 – one of the world's largest cargo aircraft. The machines, each weighing around 14 t and measuring 3.50 x 3.50 x 4.50 m plus the associated HS flex handling system weighing in at another 8 t each together with ancillary equipment – altogether around 80 tonnes – were taken to the airport in six lorries by the specialist firm Allgaier Verpackung based in Neu-Ulm, and then properly loaded into the hold of the Antonov and secured.

The whole procedure took place in an atmosphere of calm and concentration – there is no room for error here. This transport also represented a highlight for Stuttgart Airport, as it is relatively rare for an Antonov AN-124 to take off there.

It took off for the USA punctually at 12 noon. After stopping for fuel in Iceland at Keflavik Airport and then in Montreal, the Antonov delivered the precious freight in Arizona. After another week with installation and commissioning, the three machines were already producing their first parts at our end customer's premises – fully automatically.



AUTOMATION, DIGITISATION AND FULL MACHINE POWER

EMO 2019

Hermle presented six machines September 16-21 at EMO 2019. In keeping with the trade fair motto "Smart technologies driving tomorrow's production", there was also a special exhibition of our digital module. The three areas "Digital Production", "Digital Operation" and "Digital Service" were presented in detail here, focusing on the topics of transparency, efficiency, and making operation easier. The new Navigator user interface and the individually configurable home screen were especially popular among visitors to our stand from all around the world. Another big draw for the public was the new UMATI interface for easy networking of different machine tools. The area of generative manufacturing, with components manufactured using MPA technology, also had its own area in the 560 sqm exhibition stand.

EMO 2019 was a complete success for Hermle. Even in uncertain times, it provides orientation to the industry for further development in production technology. Of course the technological leaders are the companies that benefit the most.

SAVE THE DATE
IN-HOUSE EXHIBITION, GOSHEIM 22.-25.04.2020



THE KEY IS SPINDLE RUNNING TIMES



The two storage modules of the HS flex system provide space for 15 pallets.

HZT Honermeier Zerspanungstechnik manufactures moulded dies, components, gages and prototype for machine manufacturers. That means that no order is like any other. For flexible and efficient machining, Honermeier invested in a 5-axis machining centre with adapted automation from Hermle.



HZT Honermeier Zerspanungstechnik, located in Bünde, a town in North Rhine-Westphalia, manufactures prototypes, individual parts and series for the printing and food industries as well as machine and automobile manufacturing. Lars Honermeier made himself independent in 2001 and since then has relied on flexible manufacturing and a personal relationship with his business partners.

Currently twelve qualified employees are working in the successful family business. They create CNC programs and develop economical metal cutting and clamping strategies. Workpieces are also machined on milling centres from Maschinenfabrik Berthold Hermle AG. "For cost reasons, our first Hermle was a used 3-axis machine", recalls Honermeier. This was followed about five years ago by a series C 12 U compact machining centre. "There are many small details that make day-to-day work easier", explains the Managing Director, and he cites tool management as an example: "Instead of the operator looking for the tools manually, the Hermle machine indicates after the simulation whether the required tools are loaded."

AUTOMATION INSTEAD OF ADDITIONAL SHIFT

To respond effectively to the order situation with the usual quality and speed, Lars Honermeier decided in 2018 to introduce automation instead of investing in a second shift. Concerns that accessibility would be restricted by the HS flex handling system were resolved during a visit with extensive consultation at Hermle in Gosheim and he ordered a series C 400 U machining centre - including the handling system.

"THE KEY IS SPINDLE RUNNING TIMES, AND THE WAY TO INCREASE THEM IS THROUGH AS MUCH AUTOMATION AS POSSIBLE"

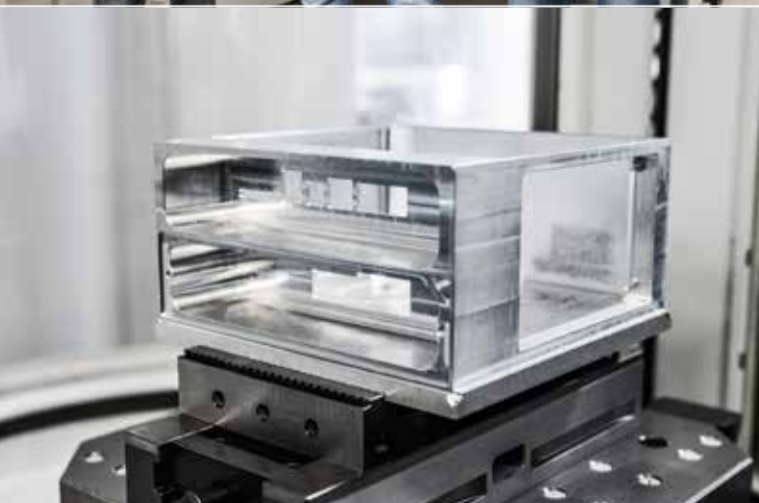
The advantage: The skilled worker can load from the side setup station in parallel to machining time during the day and later allow machining to continue running into the evening. "The key is spindle running times, and the way to increase them is through as much automation as possible", explains Honermeier. Thanks to the HIMS software solution (Hermle Information Monitoring Software) he always has an overview. The central monitoring tool not only returns the live status and a detailed evaluation of the status history, but also sends an e-mail for machine events or errors.



top The Hermle manufacturing cell at HZT Honermeier, consisting of the C 400 U 5-axis machining centre and the HS flex automation solution.

Using HACS order management (Hermle Automation Control System), machine operators can prioritise and plan orders, calculate runtimes and tool usage, and change the sequence plan dynamically. "That means we keep fewer important assignments waiting, which the machine can accommodate when there is a suitable time slot", explains Honermeier. That helps to avoid idle times and optimise utilisation.

"My expectations were more than met", summarises the company founder. From consulting through commissioning and on to service, everything went optimally for him. He has also completely dismissed his initial scepticism concerning the front adaptation of the automation solution: "I wouldn't do anything differently. If we had to make the investment again, it would be for this combination."



top, left to right Christian Sieks, Work Preparation, Marco Laute, CAD/CAM Programming, Lars Honermeier, Managing Director of HZT Honermeier Zerspanungstechnik
bottom Setup while the machine is running - a great advantage of automation with HS flex



RIGHT FROM THE BEGINNING



left to right Benjamin Finck, Product Manager, Swen Emde, Managing Director, and Tool Engineer Benjamin Paulus from Recyclinghof-Diemelsee Emde oHG.

Swen Emde illustrates how to turn a lack of job prospects and trust in the following generation into a successful mould and tool making company. After the company was founded in 2016, he immediately invested in a 5-axis machining centre from Hermle with the assurance that he would be able to machine tools and machine parts on it precisely and efficiently without risking downtimes.

Swen Emde is a skilled tool mechanic. After his career outlook in his original training workplace was lacking, he entered the business his father had run for 26 years. Wilfried Emde had been producing single-variety granulate from plastic waste at the Diemelsee Recycling Yard for 23 years. After Swen Emde had passed the examination for Master Precision Mechanic, he developed the idea of expanding the family business to include toolmaking and mould making.

In addition to three CAD/CAM workstations, he built a machine park including a wire eroding and turning machine as well as two machining centre from Maschinenfabrik Berthold Hermle AG. "We were already impressed with the reliability of Hermle machines from our previous employer", confides the Managing Director. "If you have only one machine, as we did in the beginning, you have to be able to rely on it 100%", emphasises Benjamin Finck. He is a project manager and about three years ago Swen Emde talked him into setting up the toolmaking area with him. Its highlight is the C 400 U 5-axis system that Emde uses to produce not only the moulding dies for the plastics industry, but also prototypes for furniture and automobile manufacturing. One year later he invested in a C 400 V. He uses the 3-axis machining centre mainly to prepare the workpieces quickly and effectively for precision machining on the 5-axis machine.

IN USE AROUND THE CLOCK

The milling centres are programmed exclusively by computer using HSM Works or SolidCAM. The subsequent machining time for individual workpieces are between two and 80 hours. This means: While toolmaking is a purely one-shift operation with five employees, the 5-axis machining centre runs into the night. That increases the productivity of the small company considerably. "Of course that means trusting the machine to be able to work in unsupervised shifts as well", stresses Emde.

"OF COURSE THAT MEANS TRUSTING THE MACHINE TO BE ABLE TO WORK IN UNSUPERVISED SHIFTS AS WELL"

Hermle was also a decisive contact point when a specific manufacturing problem came up: "We were faced with the challenge in a small series of having to produce a turned surface inside the component", recalls Finck. Their consultant finally led them to interpolation turning. "By upgrading the control with an additional program, we were able to produce the rotation-symmetrical contours in the required surface quality with a milling tool", adds the project manager. This option is an absolute win for Emde: "We are one of the few companies in the North Hesse district that is able to offer interpolation turning", notes Swen Emde.



top Swen Emde shows what a machine and operator can do with the World Cup Trophy, which he milled for the last World Cup.



top Thanks to its precision, the C 400 U achieved the repeat accuracy required by Emde.

"Everything is working just as we imagined it", summarises Swen Emde. Considering the high level of utilisation, however, there is one thing he would do differently: "Seen from the perspective of today, we would also invest in an automation solution."



CUTTING TIMES SLICED IN HALF, SALES DOUBLED



left to right | Jason Heerema, responsible for marketing and special projects (left), and Joanna Heerema, company owner and Managing Director of Arbor Gage & Tooling.

Time is money. And not every investment really saves time. That is a lesson Joanna Heerema, Managing Director of Arbor Gage & Tooling, learned. Quality, precision and fast processes were the goals they first reached through a circuitous route with Hermle: With the C 400 and C 650 5-axis milling centres, Hermle meets the high requirements of device construction with significantly shorter machining times.



MOST EXACTING DEMANDS FOR QUALITY AND PRECISION

They were not disappointed: "In addition to reliability, we are impressed by the accuracy and the narrow tolerances of the Hermle machine", explains Jason Heerema, responsible for marketing and special projects at Arbor Gage & Tooling. Another important aspect for the device manufacturer is service. "When I contact Hermle I not only know that I will get an answer quickly, but also that I will be working together with someone who knows these machines inside and out. So the problem will be solved as quickly as possible", says Project Manager Jacob Verduin.

"IN ADDITION TO RELIABILITY, WE ARE IMPRESSED BY THE ACCURACY AND THE NARROW TOLERANCES OF THE HERMLE MACHINE"

Arbor Gage & Tooling is a family business with 50 employees in Grand Rapids, Michigan, USA. Founded in 1978 by Ed Heerema, the company grew from simple model making to become a sought-after service provider for device, gage and prototype construction. Today it is led by Joanna Heerema.

While analysing the machining department, she was struck by the lengthy machining processes and control measurements. "We had to rework up to 40 percent of the parts because they didn't meet requirements", adds Joanna Heerema. A 5-axis machining centre was supposed to optimise the process.

The machine was in use for two years before the old processes became established again in manufacturing. That was the moment when Arbor Gage & Tooling contacted Hermle USA, the North American branch of Maschinenfabrik Berthold Hermle AG and after extensive consulting invested in a C 400. Company management had great hopes given the promised machining speed, reliability and precision as well as high surface quality.

With the Hermle machine, Arbor Gage & Tooling was able to shorten its lead time from as much as twelve weeks to only eight weeks, thereby expanding its manufacturing capacities. "We are also equipped for any order: We know that the C 400 will master any challenge for quality, precision and execution", adds Joanna Heerema.

It was quickly clear to all those involved that the next 5-axis milling machine would also be a Hermle, and one year later a C 650 was ordered. "We were the first company in North America to own this new model of the Performance line", Heerema points out. "Hermle exceeded our expectations", says Joanna Heerema.



top Mike Veurink, CNC programmer at Arbor Gage & Tooling, takes a close look at the C 400. bottom The result is impressive: According to Arbor Gage & Tooling, the accuracy and surface quality of the parts exceed the requirements of quality control.

"Cutting times have been reduced by 50 percent and the accuracy and surface quality of the parts significantly exceed the requirements of quality control. In this way we were able to double the sales of the company in the past two years."

Arbor Gage & Tooling is sticking firmly to its growth plans. "With Hermle we have found the right partner. With them we will be able to maintain the high level in gage and device construction and develop it further", stresses Joanna Heerema. She is eyeing the next step now, the automation of metal cutting production.



CAPACITY TO CREATE SOMETHING NEW

The wide cheek spacing results in a collision circle of 990 millimetres.



Andreas Bruns has no trouble finding selling points for a Hermle machining centre: "The systems impress us with their high reliability and precision." He knows what he is talking about, as he has already added two 5-axis machines of the High-Performance line to his machine park since 2014 – one of them with additional turning function.

"A lot of things came together by themselves", recalls Andreas Bruns, Managing Director of Andreas Bruns Zerspanungstechnik GmbH in Isernhagen near Hannover. After his company was founded in 1994, it became a sought-after manufacturer of prototypes and small series for the automotive industry, medical technology and general machine construction and plant engineering. "Very demanding parts have a special appeal for me", explains Bruns. In addition to complex geometries and high precision, he is also drawn to materials that are difficult to machine such as Inconel, titanium and high-quality copper alloys.

Anyone who intends to meet such high demands needs an appropriate machine park. A look into the production hall shows that Bruns especially trusts one manufacturer: Alongside the systems for turning, electrical discharge machining and sawing stand four CNC machining centres from Maschinenfabrik Berthold Hermle AG. "Our first Hermle is about 20 years old", figures Bruns. "We were impressed by its reliability." So in 2014 the Managing Director invested in the High-Performance C 22 UP machining centre with pallet changing system.

GREATER PRECISION AND SHORTER SETUP TIMES

The more the company concentrated on complex products, the more we reached the limits of established work processes. "If a workpiece required machining on both the turning and milling machine, we risked making errors in dimensional accuracy by re-clamping", reports the Managing Director. To eliminate this risk, Bruns decided in 2018 to buy a C 42 U MT. "In addition to the greater precision, we will benefit from the Mill-Turn version of the 5-axis machining centre due to the enormous time savings and the resulting lower setup costs – that creates capacitance for something new."

The 5-axis milling-turning centre was delivered and placed in operation in November 2018. "Everything went perfectly", confirms the Managing Director. Accustomed to working with the C 22 U, the operator noticed quickly that Mill-Turn technology requires more initial training. "Fortunately Hermle is also as good as its reputation when it comes to service: When there were problems, an engineer was usually on site on the same day", recounts Bruns.



left to right Andreas Bruns, Managing Director, with Foreman and Managing Manager in front of the "Hermle C 42 U MT".

"VERY DEMANDING PARTS HAVE A SPECIAL APPEAL FOR ME"

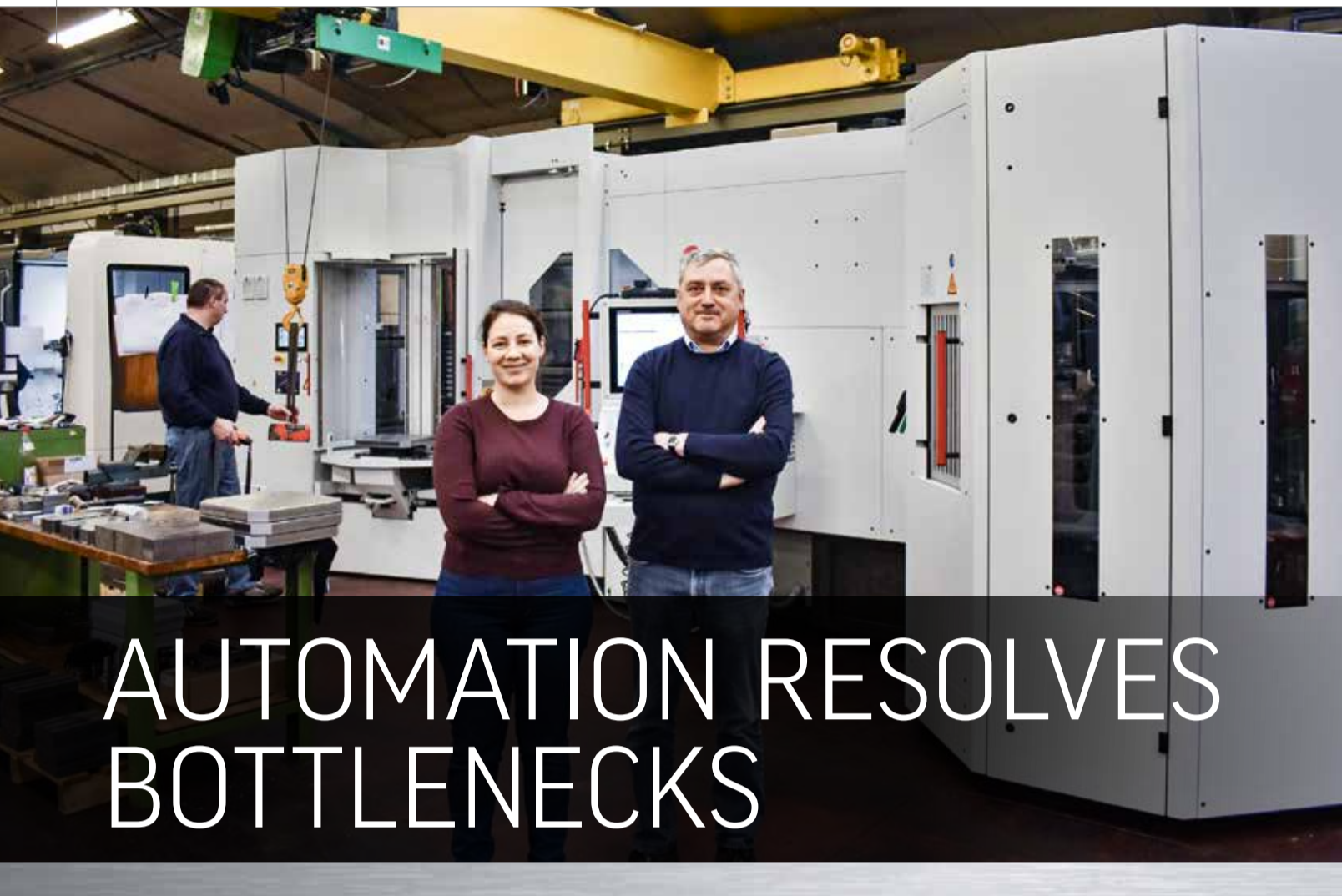
Like many other companies in his industry, he noticed that it is becoming increasingly difficult to hire new qualified employees. His strategy, beyond offering training inside the company, is to offer an employee-friendly working time model with single-shift operation. To maintain capacity, he needs machines that run reliably by themselves – even into the night. That encouraged the step in the direction of automation, which Bruns is taking with the latest investment, in a C 400 U with HS flex system. "Requirements for parts, specifically in terms of accuracy and availability, have risen greatly. So we needed a Hermle", explain the Managing Director. And Bruns is certain: "We will also be impressed by its precision and reliability".



left The C 22 UP has a pallet changing system that allows the operator to set up in parallel to machining time. right Manufacturing complex products means peak precision with materials that are difficult to machine.

USERS.

Read the complete article at www.hermle.de
in the Media / User reports section.



AUTOMATION RESOLVES BOTTLENECKS



Rik Denoo and his daughter Ann-Sofie Denoo began working with automation at the end of 2018.

Belgian mould maker Denoo Matrijzen is a progressive company. While it invested early on in CNC-controlled 5-axis machining, company owner Rik Denoo and his daughter Ann-Sofie have just now made the entry into automation.

Denoo Matrijzen from Zedelgem, Belgium has been designing and manufacturing high-quality cutting, folding and plunger moulds since 1966 – from prototype to small series. Much has changed since then. The small family business was one of the first in the Flanders region to working entirely CNC-controlled. The company also got started with the five-axis milling process early – more than 14 years ago. At the time a 5-axis machining centre from Maschinenfabrik Berthold Hermle AG replaced two older machines. In 2016 the mould maker began working with 5-axis simultaneous machining.

"We machine mainly individual pieces and occasionally small series. So we saw no need to automate our process. But this has changed now due to the positive trend of the past years", explains Ann-Sofie Denoo. "Another milling machine would not have freed us up, the more so as it is becoming harder and harder to find qualified personnel in our region." The logical conclusion was to go into automation.

With the idea of automating one of their 5-axis machining centres, Denoo Matrijzen started looking for concrete solutions. "One approach was for us to equip one of our machines with a robot and integrate the corresponding software into the production process", explains Ann-Sofie Denoo. "We compared this scenario with the Hermle complete package, which was more expensive." Our decision was to invest in Hermle.

The Hermle C 400 with HS flex was delivered to Denoo Matrijzen in December 2018, followed by a running in phase. Training from Hermle helped the employees become familiar with the machine, the automation system and the software.

NEW WORKFLOW

"The biggest change is in the workflow. Earlier we were mainly concerned with the question of whether to machine a part on a 3- or 5-axis machine. Now we concentrate on offline programming of the new 5-axis machine", explains Ann-Sophie Denoo. After programming, the order is sent to the machine. The remaining preparation is done in production itself: The employee clamps the workpieces on the pallets and temporarily stores them in the storage module.

"NOW WE CONCENTRATE ON OFFLINE PROGRAMMING OF THE NEW 5-AXIS MACHINE"

The HS flex solution is controlled by the Hermle Automation Control system, which supports the operator in production planning and tool usage calculations. The employee always has his or her upcoming orders in view via a touch screen.

Denoo Matrijzen mainly wanted to reduce downtime, create capacity and maximise productivity. The family business also derives another benefit from the Hermle automation solution: "Since we can now machine preprogrammed orders on the weekend on our Hermle C 400, we have won a significant competitive advantage", summarises Ann-Sofie Denoo.



C 400 HS flex

DATES

NORTEC, HAMBURG

21.-24.01.2020

SAMUMETAL, PORDENONE, ITALY

06.-08.02.2020

ExpoManufactura, MONTERREY, MEXICO

11.-13.02.2020

METAV, DÜSSELDORF

10.-13.03.2020

TECHNISHOW, UTRECHT, NETHERLANDS

17.-20.03.2020

UzMetalMashExpo, TASHKENT, UZBEKISTAN

25.-27.03.2020

MECSPE, PARMA, ITALY

26.-28.03.2020

Aerospace & Defence, SEATTLE, USA

06.-08.04.2020

CCMT, SHANGHAI, CHINA

07.-11.04.2020

MECHANICAL ENGINEERING, MINSK, BELARUS

07.-10.04.2020

IN-HOUSE EXHIBITION, GOSHEIM

22.-25.04.2020

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Imprint

Published by: Maschinenfabrik Berthold Hermle AG
Industriestrasse 8-12 · D-78559 Gosheim
Phone +49 (0)7426 95-0
Fax +49 (0)7426 95-1309
info@hermle.de · www.hermle.de

Editing and design: Udo Hipp

Layout: Schindler Parent GmbH

User reports: a1kommunikation Schweizer GmbH

Photos: Hermle AG · maikgoering photography

Printed by: Straub Druck + Medien - Schramberg

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