INSIGHTS

ISSUE **2** 2016

PERFORMANCE LINE AND HIGH-PERFORMANCE LINE

Two series for all sectors and areas of use

BETTER MILLING INCLUDING 3-AXIS MILLING

Five models for your high-performance machining

USER REPORTS

Hermle machining centres in Germany, Austria, China and the USA in operation

HERMLE

milling at its best

Preface

Dear business partners and customers,
colleagues and employees,

another successful year is drawing to its close. One of the main pillars of this success is the confidence that our valued customers have in our company. I would like to express my heartfelt thanks for this, myself and also on behalf of the entire Hermle team, and I look forward to a continuing, mutually beneficial partnership.

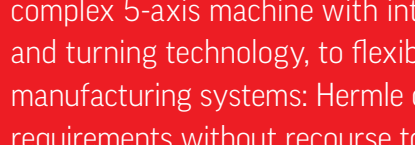
The C 250 presented in the spring of 2016 has been very well received on the market. Together with the C 400, it constitutes the PERFORMANCE LINE production series. The PERFORMANCE LINE machines with their high precision, compact dimensions and adequate dynamics represent an important complement to the HIGH-PERFORMANCE LINE with its six models. This means that we cover a broad spectrum that enables us to meet all kinds of challenges that the market may present. From the 3-axis machine to the highly complex 5-axis machine with integrated milling and turning technology, to flexible connected-plant manufacturing systems: Hermle can provide for all requirements without recourse to outside suppliers.

The scheduled construction activities, including the superstructure for the milling manufacturing facilities here on site in Gosheim and the new production hall in Zimmern ob Rottweil where we shall manufacture machine beds in future, are going according to plan.

We are already looking forward to September 2017; after four years of absence, the leading machine construction trade fair EMO is returning to Germany, specifically to Hanover. We shall already be holding our open house exhibition here in April, and I should like to take this opportunity to extend a warm invitation.

I wish you and your families a blessed Christmas season, the best of health and a good and successful 2017.

Kind regards,



Franz-Xaver Bernhard
Director of Sales, Research and Development

PERFORMANCE LINE

ADAPTIVE DYNAMICS WITH HIGHEST PRECISION

Hermle's PERFORMANCE LINE machining centres have all the high-precision capabilities of the HIGH-PERFORMANCE LINE, and the only concessions they make concern the range of equipment.

Hermle has developed a specific machine series for customers who are looking for high degrees of precision over long periods and competent and fast service provision, but do not need highly dynamic machining capability. The series consists of the C 250 and C 400, both of which are available in 5-axis and 3-axis versions.

Both models have a modified gantry-type design, and only high-quality components are involved. Both the pick-up magazine and the table set-up are integrated into the machine bed, as is the case for all Hermle machine models, and especially regarding the table drive, Hermle has paid great attention to a high degree of precision.

A large range of options is available for day-to-day use under production conditions. Both machines are equipped with HEIDENHAIN's latest-generation TNC 640 control system, and Hermle's own large collection of software tools can be used.

HIGH-PERFORMANCE LINE
THE BEST FOR YOUR MILLING NEEDS

With its HIGH-PERFORMANCE LINE, Hermle has been supplying high-tech sectors of the international market with highly precise and high-performance machining centres for several years now. Whether as stand-alone machine, automated system or connected manufacturing facility, our machines are second to none.

Six machine models that differ mainly in the size of the components that can be processed, all of them suitable for use in a very wide range of sectors.

High precision, long-term accuracy, highly dynamic and very reliable: In combination with reliable, competent and fast service provision, this is what Hermle has to offer with its HIGH-PERFORMANCE LINE machining centres.

All the models can be configured according to individual customer requirements, and the huge range of components ensures a solution for practically all situations. Hermle also provides flexibility in terms of the number of tools available: Customers can choose between many kinds of additional magazines and manage and deploy the tools via easy-to-handle software.

For control tasks, the choice is between HEIDENHAIN'S TNC 640 or SIEMENS'S 840 D. These are supplemented by a large number of Hermle's own software tools or machining setups, something that has become indispensable for the programming and operation of the machines these days. The main current developments in this area concern operating state monitoring and diagnosis systems.

Hermle's three MT models also provide for fully integrated turning technology in addition to milling – and they can handle components weighing up to 1500 kg for turning and 2500 for milling. As with all the items supplied by Hermle, safety is the paramount concern.

Another of Hermle's specialities is to be seen in the automation of high-production and high process reliability tasks involving batch sizes from 1 upwards. From simple handling systems to pallet changers with pallet storage for heavy and bulky workpieces, to complex robot systems or connected plant involving several machines, Hermle covers the entire range of state-of-the-art automation solutions.

HIGH-PERFORMANCE LINE

PERFORMANCE LINE

COMPANY.

BETTER MILLING INCLUDING 3-AXIS

YOUR ADVANTAGES

- *vibration damping, mineral-cast machine bed for optimal surface quality*
- *highest degrees of precision thanks to perfectly harmonised machine components*
- *large working area in comparison with the installation area for large components to 2000 kg*
- *workpieces do not have to be moved during processing; linear axis dynamics therefore unaffected by weight issues*
- *ergonomic table orientation and optimal crane loading*

With five machine models, Hermle can provide the optimal solution when it comes to highest degrees of precision and the best possible surface quality in classic 3-axis machining.

MODIFIED GANTRY-TYPE CONSTRUCTION FOR PERFECT MILLING RESULTS

For over 20 years, Hermle has been supplying machining centres for all sectors with a mineral-cast, modified gantry-type design for the manufacture of components with perfect surface quality and highest degrees of precision, economically and with high chip volumes. Hermle also covers this classic area of high-precision milling with five models that are perfectly designed for 3-axis processing.

EQUIPMENT OPTIONS THAT LEAVE NOTHING TO BE DESIRED

Our 'equipment sets' with their wealth of options and tools allow you to configure your individual machining centre for practically all processing tasks. A large number of software tools are available to help with programming and operating. Not to forget the automation options: With Hermle's own handling systems, pallet changers or robot systems you can exploit your machines to even greater advantage – even for batch sizes as small as one.

WORKPIECE DIMENSIONS

C 250	C 400	C 22 V	C 32 V	C 42 V
600 x 550 x 450 mm	850 x 700 x 500 mm	450 x 600 x 330 mm	650 x 650 x 500 mm	800 x 800 x 550 mm
max. 1100 kg	max. 2000 kg	max. 750 kg	max. 1500 kg	max. 2000 kg

Read the complete article at www.hermle.de
in the Info Centre / User Reports section.

TURBO PRODUCTIVITY FREE OF CHARGE

From left to right: Patricia Temel, responsible for CNC milling and the production of mechanical parts, Ingo Temel, Managing Director and Technical Director, and Brigitte Temel, Head of Commercial Operations, all from tmv Temel Metallverarbeitung & Vorrichtungsbau, and on the right Florian König, Sales Manager for Austria/South Tyrol at Maschinenfabrik Berthold Hermle AG

Medium-sized company tmv Temel Metallverarbeitung & Vorrichtungsbau has invested in Hermle 5-axis technology and uses a pallet changer and standard HACS and AFC control software features to ensure effective productivity

Overall view of the high-performance, 5-axis Hermle C 32 U CNC machining centre with a PW 250 pallet changer with storage; the PW 250 setup station is located at the front

From added value through milling complex components for in-house device manufacturing to added value through machining cubic workpieces that are part of customer orders – this is probably the best way to summarise the investment philosophy of the Austrian family-run business tmv Temel Metallverarbeitung & Vorrichtungsbau. “Today, we are able to machine turned parts with diameters up to 500 mm and measuring 800 mm in length and milled parts up to 2,000 mm in length. Nonetheless, the focus of our work is centred on the multi-axis complete machining of small and medium-sized workpieces, which means we can cater for batch sizes from single parts to several thousand for our own requirements and for those of our customers from various industry sectors," explains Temel.

GREATER CAPACITY DUE TO 5-AXIS TECHNOLOGY AND A HIGH LEVEL OF AUTOMATION

After a thorough evaluation, the decision was taken to purchase a high-performance CNC C 32 U 5-axis machining centre. The Temels decided to equip the machining centre with a PW 250 pallet changer due to increasing integrated functionality of workpieces, the resulting complexity of machining and the longer cycle times required for complete machining. The pallet changer will also help to minimise idle time and enhance utilisation in two and three shift operation. The PW 250 pallet changer and pallet storage provide the best possible setup for high-production, automated complete processing of complex workpieces.

GREATER PRODUCTIVITY AND RELIABILITY WITH HACS AND AFC

The combination of a C 32 U machining centre with a pallet storage and pallet changer means that the system can accommodate up to seven 400 x400 mm pallets. Needless to say, they can be loaded with the same or different workpieces and clamping devices, and enable the highly flexible and complete machining of single parts in automatic mode. This is controlled and monitored by the new Hermle Automation Control System (HACS), although this feature is reserved for machines that have been automated with pallet changers. HACS is part of the standard software integrated without additional costs. HACS facilitates production planning, enables priority changes, automatically ranks workpieces in the sequence plan as soon as they are set up, allows you to adapt the sequence plan via drag & drop and additionally incorporates tool planning. As mentioned above, HACS is a standard feature just like the remarkable AFC. AFC stands for "Adaptive Feed Control" and automatically controls the feed rate of the TNC control. This depends on the respective spindle output and other process parameters. The advantages are the reduced lead time, manufacturing processes that are easier on the machine and its mechanisms, tool monitoring and longer tool service life.

THE STATED GOAL: WORKS AUTOMATICALLY ONCE SWITCHED ON!

Patricia Temel emphasises: “Our declared goal was and is: Start the machine and let it run automatically! HACS has contributed significantly to this goal, as operation is continuous, irrespective of whether we are producing single parts or small batches of up to 50 pieces. The automation capability is put to good use for second and third shifts of unmanned production at the end of the first manned shift. The HACS can be viewed as the milling management system for SMBs, especially as the included simulation makes it very easy to program, adapt and operate. The HACS and the pallet changer with storage have allowed us, without too much effort, to reduce throughput times, increase output, utilise the machine's full potential and optimise operating performance. And even though we rely on a relatively small workforce, we’ve still managed to minimise idle time through faster set up in parallel to production time. This not only benefits us but also our customers, and that’s what I call a real win-win situation.”

The additional display at the setup station of the PW 250 pallet changer for quick registration and visual monitoring of the process sequences and pallet information stored in the HACS

The PW 250 pallet changer with storage (rear right) and the setup station (left); including the pallets in the working area, there are seven pallets in the system that can be loaded with the same or different multiple clamping fixtures and/or workpieces

www.tmv-cnc.com

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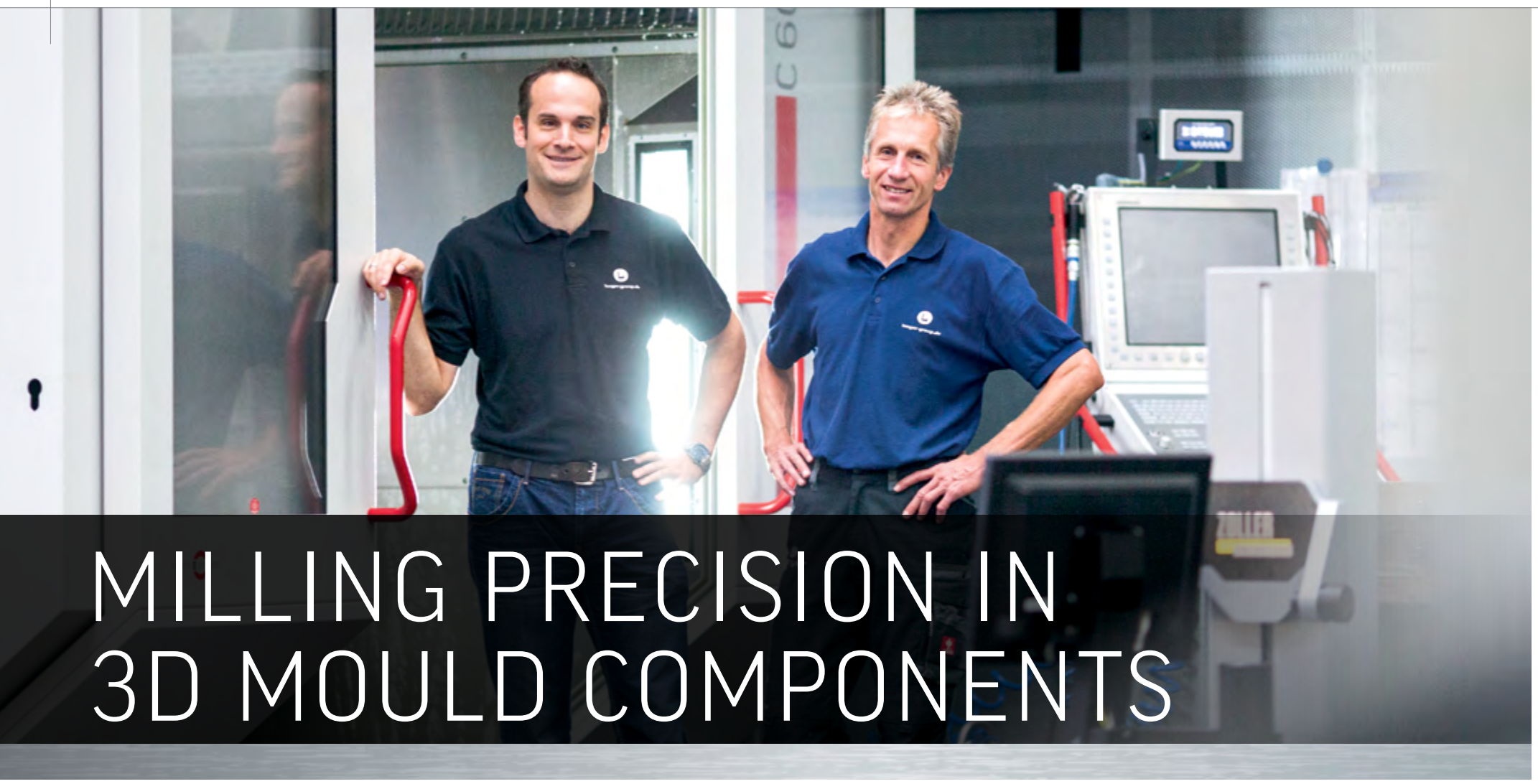

MILLING PRECISION IN 3D MOULD COMPONENTS

Left: Jörg Lehmann, team leader of NC production, and right: Harald Schreiber, milling specialist and operator of the C 60 U machining centre, both from Langer GmbH & Co. KG

From developing initial models and prototype tools to making moulds for large batch series of injection mould components – discover how the technology firm Langer Group has used the high-performance, 5-axis C 60 U CNC machining centre from Hermle to streamline its manufacturing capacities

The products and services provided by Langer range from development and construction to sampling and mass production in the fields of model making/cubing technology, test tool construction, prototype mould construction, mould making for series production, composite/RTM up to injection mould parts for the automotive, medical technology, aerospace sectors. As a technology company Langer boasts extensive and high-capacity production facilities to provide customers with models, samples, prototype moulds and production moulds as quickly and as flexibility as possible.

5-AXIS MILLING EXPERTISE FOR ALL TOOL ELEMENTS AND MOULD PARTS

Jörg Lehmann, team leader of NC production at Langer says: "In our independent department, thirteen highly qualified members of staff produce all the tool elements for mould making at ultra-modern CNC machining centres. These include moulds and dies, mould plates, mould inserts, slides and production mould parts using tool steels up to hardnesses of 60 HRC. We additionally produce all the tool components for prototype moulds made of aluminium. A real challenge for us are the ever larger and, in terms of the conformal cooling systems, considerably more intricate injection mould tools. This is the reason why we need highly flexible and high-precision 5-axis systems with appropriate working ranges. A CAM system is absolutely essential for machine programming due to the complexity of the mould parts involved.

Demonstrates the 5-axis complete machining of big and heavy mould plates for large moulds/tools in one setup; the large working range and the '3 axes in the tool and 2 axes in the workpiece' machining concept enable optimum positioning of the tools

(ALMOST) IDENTICAL EQUIPMENT OF THE HIGHEST STANDARD

Today, the two large high-performance, 5-axis C 60 U CNC machining centres form the backbone for the flexible and time-saving production of mould parts, as they, for example, enable the simultaneous mirror image machining of components (mould plates) for a complete tool. Jörg Lehmann explains: "The two Hermle C 60 U machining centres allow us to execute the complete machining of intricate workpieces, from roughing to finishing, in one setup. Depending on the complexity and size, we have cycle times of up to 125 hours, which was yet another reason to invest in a further C 60 U machining centre. In addition, we can carry out deep hole operations up to 360 mm on these machines, thus avoiding the need to change over to a deep hole machine, including savings in workpiece handling and more setting up and programming. Hermle machining centres cover the lion's share of the precision processing tasks to be done. In addition to this, they represent a kind of backup facility, or alternatively they can deliver correspondingly high production capacities and flexibility, which Jörg Lehmann puts at roughly 5,900 hours annually per machine based on the actual range and complexity of parts that require machining.

Shows the simple crane loading procedure for a C 60 U machining centre with the double doors open

MANY COMPANIES CAN BUILD MACHINES..., BUT...

"Besides the fact that Hermle machining centres are in a class of their own when it comes to the machine concept, performance, accuracy and reliability, the service is the icing on the cake. Should any problems arise, the hotline is always answered by a support professional; and if I have a real problem at four-thirty in the afternoon, an engineer arrives the following morning with all the necessary spare parts. All our qualified members of staff have no problem with the Hermle products, as they always use the same concept and the same kinematics. Or, to put it another way: If you know how to operate the C 42 U, you can also operate the C 60 U and vice versa, which means our staff have no trouble swapping machines with each other if they need to," explains Jörg Lehmann.

www.langer-group.de

HIGH-END PARTS MANUFACTURING IN THE FAR EAST

The new 'Hermle Road' at STMC with the row of twelve C 42 UP high-performance CNC 5-axis machining centres with pallet changers

Partner to the best: With its high-performance CNC 5-axis machining centres supplied by Hermle, STMC Shanghai Tobacco Machinery Co. Ltd. sets standards in terms of precision and productivity.

From a tobacco and cigarette producer to one of Asia's leading tobacco processing machine manufacturers and a competence centre for economical manufacturing of customer-specific precision parts – the story of how the STMC Shanghai Tobacco Machinery Co. Ltd. in Pudong/Shanghai has evolved is in many ways a mirror of China's explosive industrial development. The company was founded in 1902 as a British-American tobacco and cigarette manufacturer ShenZhong, and by 1952 it had developed into a manufacturer of machines for tobacco processing and cigarette packaging. The company was successful on the Chinese and neighbouring Asian markets, and then as a result of the increasing industrialisation in China from 2002 onwards, it was restructured to become the present-day Shanghai Tobacco Machinery Co. Ltd. Then, in 2009, the management set the stage for further expansion with the development of a new manufacturing facility. In China, STMC has a 65 % share of the market for cigarette packaging machines, and it has similar shares in Vietnam, Indonesia, South Korea and Turkey.

ONLY HERMLE MACHINING CENTRES FOR PRECISION PART MANUFACTURING!

A high degree of competence when it comes to developing and making machine components has to be based on a great deal of know-how in production technology. STMC has been relying on machine tools from the Maschinenfabrik Berthold Hermle AG for cubic machining for many years now. That came about as follows: On the basis of a targeted international call for tenders, Hermle machining centres performed so well in all areas such as precision machining, high production efficiency, reliability and service provision that as early as 2001 three C 800 U CNC machining centres were purchased. By 2010, these had been followed by four C 40 U high-performance CNC 5-axis machining centres that were then coupled with two RS 2 robot systems, so the four C 40 U machines are now fully automated. These machining centres are and were used primarily for the manufacture of components for cigarette packaging machines. With the purchase of twelve type C 42 UP high-performance CNC 5-axis machining centres, however, the company has something quite different in mind.

Robot components in various sizes that are fully manufactured on the twelve new Hermle C 42 UP machining centres

CONSTANT PRODUCTIVITY THROUGH ADAPTIVE LEVELS OF AUTOMATION

For the supplementary business area already mentioned, namely parts production for customers, has been making steady progress because of the company's demonstrable capabilities as a supplier of machining technology services. Today, STMC supplies many machine manufacturers in China and elsewhere in Asia and has been obliged to increase its capacities by a considerable margin. Once again, STMC accepted Hermle's bid in view of its extremely good track record, the various automation solutions offered and its ability to deliver reliably and from a single source. Hence the investment in the twelve C 42 UP high-performance CNC 5-axis machining centres. The highly qualified and trained employees can operate two or even three machines in 2-shift or 3-shift operation, and with an appropriate level of automation this allows a very high level of productivity as well as the best possible degree of precision. In addition to this, the STMC employees appreciate the Hermle machining centres' extremely high degree of deployment flexibility: This enables them to cope with the small production batches (5 to 10 pieces) as well as the rapidly increasing number of parts involved reliably – and this will be possible in future, too.

Top: The two C 40 U high-performance CNC 5-axis machining centres with RS 2 for the highly automated manufacture of cigarette machine components
Image left: Mr Hu, Service Manager at Hermle China, and Mr Zhu, Project Leader at Shanghai Tobacco

www.sh-ctmc.com.cn

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in the Info Centre / User Reports section.

MARTEN MACHINING LOOKS BACK ON NEARLY THREE DECADES OF PRECISION MACHINING

From left to right: Alan Marten (founder and CEO); Shawn Demski (Manufacturing Manager); Thomas Renier (trainee for HMC application technology); David Marten (Vice-President)

When Al Marten set up his business, he started with nothing but a passion to make things and a keen eye for detail.

Like many other American entrepreneurs, Marten's experience as an employee convinced him that he could be successful as his own boss. After eight years working as a toolmaker and mould builder, 1984 was the year in which he reckoned the time was ripe to found his own business. He had nobody working for him and no customers, and the only location he owned and could turn into a workshop was a double garage in Stevens Point in Wisconsin. The recurring theme in Marten's career had always been: "OK, so how does that work?" And that has not changed to this day – Marten is still consumed by curiosity and the desire to learn and make, which is why his business has expanded and he continues to leave a lasting impression on people around him.

Marten Machining's machine pool now ranges from the old C 800 up to the latest C 22

PUT TO THE TEST

In just three years the company had grown to the point when its capacity had to be increased through the purchase of the first CNC machine. Whatever machine he was finally going to buy, Marten was determined to put it through all the hoops. One of those suppliers who made it onto the shortlist was a German CNC machine tool manufacturer he had noticed in an advertisement – Hermle AG. Before taking a final decision, he decided to test the machine using a sample. During his meeting with the Hermle representative, the latter first had a close look at the test program for five long minutes. Then he said: "OK, and this is where WE come in." The two of them then went through every detail of the program, looking for possible problems and finding workarounds in advance. That took nearly 45 minutes, and then the time had come to mill the sample piece. Marten was duly impressed when the test piece came out of the machine, exactly as he wanted it and displaying the required precision after just a single run through. And because Marten was then able to manufacture highest-precision products, his company skyrocketed. Even after 30 years he still enjoys looking back to his first encounter with Hermle. "I COOPERATED with the representative for 45 minutes – and learned something."

THERE IS ALWAYS SOMETHING TO LEARN

What he learned with the purchase of his first Hermle machine simply fanned the flame of his "OK, so how does that work?" curiosity, and in the end that led to the whole company dedicating itself to training CNC machine operators. Over the years, Marten Machining has given dozens of prospective machine operators the opportunity to prove their mettle as trainers. Today, there are several fully automated Hermle machines operating at Marten Machining; in the course of time over 20 have been purchased. This makes the company from northern Wisconsin a shining example for successful training of highly qualified specialists. "There is always something to learn," says Marten. "Even after all those years that I've been in this business, I'm still learning, and we're unbelievably proud of the work we do for our customers. But being able to pass on this knowledge and to open up learning paths for the next generation gives me the same amount of satisfaction as everything that I've already achieved during my working life."

THE JOURNEY GOES ON

Marten Machining is continuing to prosper, 30 years after the purchase of the first Hermle machine. The company premises are now almost 2800 square metres in size and the days of the double garage are almost lost in the mists of time. Marten is expecting delivery of his 22nd Hermle machine in November.

www.martenmach.com

DATES

VTM, ODENSE/DENMARK
28 FEBRUARY – 3 MARCH 2017

INTEC, LEIPZIG/GERMANY
7 MARCH – 10 MARCH 2017

TECMA, MEXICO CITY/MEXICO
7 MARCH – 10 MARCH 2017

MNE/MTMS, KORTRIJK/BELGIUM
22 MARCH – 24 MARCH 2017

MECSPE, PARMA/ITALY
23 MARCH – 25 MARCH 2017

CIMT, BEIJING/CHINA
17 APRIL – 22 APRIL 2017

OPEN HOUSE, GOSHEIM/GERMANY
26 APRIL – 29 APRIL 2017

METALOOBRABOTKA, MOSCOW/RUSSIA
15 MAY – 19 MAY 2017

EASTEC, WEST SPRINGFIELD/MA/USA
16 MAY – 18 MAY 2017

MOULDINGEXPO, STUTTGART
30 MAY - 2 JUNE 2017

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Hermle Demonstration Centre in
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Prague branch, Czech
Republic
www.hermle.cz

USA

Hermle Machine Co. LLC
Franklin/WI, USA
www.hermlemachine.com

Legal notice

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: Hermle AG
User contributions: Edgar Grundler
Photos: Inspirations · www.inspirations.de
Hermle AG · Hermle customers
www.istockphoto.com
Printed by: Straub Druck + Medien – Schramberg

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