

Edition 1 | September 2017 | 6,- €

HELLER

The Magazine



We have set our sights on the future but without losing sight of our heritage. The values established by the Heller brothers still guide our actions. We respect what was already indispensable to them: listening closely, taking note of our customers' requirements and turning them into innovative solutions. That is why we place the HELLER Magazine at the heart of our communication with you. Read for yourself.

Dear customers, partners and colleagues

Industry 4.0 has become a reality in companies around the globe. Production processes are increasingly digitised, linking information and production technologies. As part of this process, communication also needs to change: in the course of the much discussed 4th Industrial Revolution, the relevant knowledge needs to be collected and made available to the parties involved in a fast and efficient way.

For Communication 4.0 we go back to what is already part of our DNA: dialogue. Dialogue with our customers, partners and employees. We optimise the exchange of expert knowledge and make our know-how available to you. In this context, we are proud to present you the HELLER Magazine as our new, central medium for information! Every six months as of now, we will provide you with insights into a wide variety of topics on our mind and the minds of everybody connected to us.

Klaus Winkler
CEO HELLER Group

Now, let the HELLER Magazine speak for itself. We hope you will enjoy this first issue focusing, of course, on Industry 4.0. We look forward to receiving your feedback on our new magazine and to the dialogue with you.



06_ HELLO_

6_ Editorial

What the industry cares about, what moves us and what this magazine focuses on

6_ Communication 4.0: HELLER says HELLO_

14_ HELLER4Industry

18_ HELLER and Industry 4.0: Interview

22_ Portrait

The company HELLER – yesterday, today and tomorrow

22_ HELLER in the course of time

24_ In black and white

26_ Global presence. Proximity for a close partnership

28_ A new business unit looks into the future

32_ Awarded

34_ Technology

From practice: of technology, machines and partners

34_ HELLER HF series: customer reports

38_ Point of view: KOMET // Fastems // HAIMER

44_ Production

Stagnation is regression: HELLER manufacturing competencies

44_ Optimisations secure manufacturing competencies

50_ Services

How services make your daily work easier and your production more productive

50_ HELLER4Use

52_ HELLER Services

58_ Retrofit “Made by HELLER”

62_ Retrofit in practical application: KSB AG (Germany) and Detroit Diesel Corporation (USA)



14_ HELLER and Industry 4.0

64_ Market

In and off the market

64_ References: Wärtsilä (Finland) and BITZER (Germany)

72_ People

From, of and for staff who make up our company

72_ HELLER as employer: active around the globe with a permanent focus on employee qualification

76_ Field of work start-up: the link between HELLER and the customers

78_ HELLER China: part of a versatile production network // Far from home – experiences

82_ Events

84_ Working with HELLER: our new Head of Training // Awarded employer // HELLER takes the initiative

88_ HELLER health management

44_ Optimisations secure manufacturing competencies





Industry 4.0 no longer is a vision for the future but has already become a reality in companies around the globe. Production processes are increasingly digitised, linking information and production technologies. The much discussed, so-called Fourth Industrial Revolution appears to have a sustained effect on the way we work and produce: following the steam engine, the assembly belt, electronics and IT, the next step is the Smart Factory. However, Industry 4.0 will not be possible without Communication 4.0.

Industry 4.0 requires Communication 4.0

Intelligent digital networked systems form the technical foundations of Industry 4.0. They enable a largely self-organised production: people, machines, systems, logistics and products communicating and cooperating in a direct manner. Production and logistics processes between companies within the same production process are linked in an intelligent way. Value-added chains comprising all



phases of the product life cycle become more transparent. Machines and systems become more productive and more effective. Companies can respond to the challenges resulting from an increasing part variety by using customisable production processes. _



Industry 4.0 made by HELLER

Under 'HELLER4Industry' we pool all activities in the context of Industry 4.0 and the digitisation of the process chain. We facilitate the application of the machine, integrate it into networks in an optimal way and offer expanded functionalities and service possibilities. As a result, we are able to increase machine productivity,

to minimise the commissioning period as well as downtimes and service times and to support continuous engineering chains. This creates genuine added value for our customers. New industry standards for data exchange and data security as well as standardised interfaces make up an essential framework for this. _



HELLER – always in dialogue

As a result of progressive digitisation, information-driven business models have become the new paradigm. The relevant knowledge needs to be collected and made available to all parties involved – in a quick and efficient manner. Intelligent communication from machine to machine and from man to machine requires Communication 4.0.

We make our communication fit for Industry 4.0 – by going back to what is already part of our DNA: the dialogue with our customers. We listen closely, take note of our customers' requirements and turn them into innovative solutions. Communication becomes faster, more interlinked, more intelligent, more comprehensive and more efficient: with HELLO_ we are heeding the wake-up call in the

age of the Fourth Industrial Revolution, transferring the dialogue into the digital world. We keep up with the pace of our times. _

HELLO_

HELLER

Knowing how it's done

To consistently live up to our claim HELLER solutions: Knowing how it's done, we take it one step further, optimising the exchange of expert knowledge: we make our know-how gained throughout more than 120 years of experience available to our customers – together with the knowledge we acquire every day in our networked environment.

With HELLER4Industry we are offering our customers specific solutions responding to the challenges of manufacturing. With HELLO_ we are providing them with answers to all questions – and the knowledge that really makes a difference to them. /

HELLER and Industry 4.0

Today, the potentials for achieving productivity increases using conventional means have nearly been exploited. We see Industry 4.0 as an approach to make the machine tool's current status more transparent and to evaluate the information gained in combination with existing data for purposeful diagnostics. Whilst achieving this, efficient and productive manufacturing and the reduction of workpiece costs continue to be in the foreground. To this end, we combine the future machine functions with powerful data extraction.

Increased manufacturing productivity and simplified operation

For years now, HELLER machines and turnkey systems have met the requirements in terms of a consistent digitisation and network integration of information and production technologies. In numerous reference projects, the key elements of Industry 4.0 have already been applied:

- workpiece individualisation in high-volume production
- full data collection regarding workpieces and tools with feedback to the customer's ERP system
- comprehensive networking of the machines with a wide range of service options in remote operation

We accelerate the implementation of the Industry 4.0 goals by connecting our manufacturing systems to cloud-based platforms. Available are holistic solutions using the customers' internal 'private clouds' or internet-based 'public clouds'. A large volume of the process data stored in the machine control is relocated using an intelligent BigDataClient. Only the most relevant data are transferred to the network. The processing results are visualised in the web browser and reflected back to the machine to expand the control capabilities.

Data security and standardisation as the basis for digitisation

We ensure that data exchange meets highest security standards and that data standardisation in the context of Industry 4.0 meets with VDMA and ZVEI guidelines. This approach ensures consistent digitisation across the complete engineering chain.

We have set ourselves ambitious goals for the future.

HELLER will use the increasing quantity and quality of digitised data in intelligent network structures to further increase the availability, quality and flexibility of machine tools, systems and processes. By doing this, we contribute to the lasting profitability and competitiveness of our customers.

The concept

Under the heading 'HELLER4Industry' we pool all activities in the context of Industry 4.0 and the digitisation of the process chain.

The continual objective in metal-cutting manufacturing is to further increase productivity, creating added value for our customers. To us, Overall Equipment Effectiveness (OEE) is the product of availability, productivity and quality; and we are able to increase OEE when the machine complies with the boundary conditions. To achieve this, we look at every detail of the manufacturing environment. All solutions have to be measured against their capability to reduce cycle times by providing higher productivity, resulting in a reduction of workpiece costs.

Already today, HELLER is generating added value for customers through greater ease of use of the machine, with optimal integration into the network and expanded functionalities and service possibilities.

To enable HELLER to act in a targeted way, the company modernised its internal structures and, a few years ago, established the Development New Business & Technologies department under the leadership of Bernd Zapf (see interview on page 18). On the way from being a machine tool manufacturer to becoming a technology and service partner, this approach enables us to address all crosscutting issues and to translate them into functional models. Moreover, innovation cycles are likely to accelerate further in the future.

Three fields of application

HELLER4Operation directly aims at the value-creating processes, i.e. operation and production processes involving the machine. The module provides a new, easy-to-use and operator-oriented user interface for HELLER machines.

The HELLER Operation Interface enables visualisation of the relevant information on a main screen and two subscreens, whilst guaranteeing clear arrangement and easy operation despite the greater range of information presented.

The benefits at a glance:

- use of touch controls at the tool/workpiece loading station to enable fast and robust operation
- customer-specific programs in web environments, familiar Siemens standard operation using the new main operator panel
- extended functions (Xtends) provide enhanced performance and an expanded function range for the 24" touch interface
- clear arrangement and easy operation despite the extensive range of information provided

HELLER4Services comprises digital services helping to reduce service and maintenance costs over the life cycle of the machine tool and to enhance their predictability.

Performance indicators and notifications from production and maintenance fundamentally change machine maintenance: moving away from fault rectification after a failure has occurred towards preventive and predictive maintenance, preventing downtimes and providing predictable maintenance cycles. That is why the HELLER Services Interface focuses on the transparency of the manufacturing and maintenance processes.

The benefits at a glance:

- health Monitor provides a comprehensive overview of machinery: machine status, degree of wear of individual components, temperature and torque curves of the drives and further downtime-relevant parameters
- analysis periods and machines to be inspected are freely selectable
- process data from productive phases can be analysed in view of expired error message
- shortcut functions, e.g. the ten most common alarm messages or ten recent maintenance actions and OEE calculation are already pre-installed
- provides the basis for evaluations and statistics, thus offering support in reducing machine downtimes
- visualisation of specific information and identification of the wear status enable preventive measures

HELLER4Performance aims to provide a situational, workpiece-specific performance increase of the machine tool within the guaranteed machine characteristics. This is achieved through analysis of process and machine data and applying the resulting findings to the situation inside the work area, either interactively with the operator or autonomously.

The machine analysis, for example, can be used to achieve a process and performance optimisation either using time-synchronous extraction of CNC real-time data or through data compression in the BigDataClient into the network and through evaluation and graphical display using a cloud platform.

The benefits at a glance:

- time-synchronous recording of up to 100 process data
- varied data evaluation options ranging from individual signals through to an imaging and visualisation feature
- direct data transfer to the cloud enables visualisation of the paths actually traversed by the machine/tool during the workpiece design phase
- ability to predict whether the machine will be able to perform the operation prior to the start of machining
- synchronisation of the process in the 3D CAD workpiece with the CNC program and the recorded process data provides a quick overview and the possibility to optimise the process

Prerequisites for HELLER4Industry

All HELLER machines of the latest generation are prepared for the HELLER4Industry applications. This provides customers buying these products with optimum prerequisites for increasing the efficiency and with access to enhanced evaluation possibilities for the machine and process data and to the additional services provided by HELLER. An agreement about data transmission and data processing using the HELLER4Industry functions lays out the conditions for usage and security of the data.



"Added value is always the most convincing argument"

With HELLER4Industry, HELLER has set the framework for the company's new Industry 4.0 technologies. In this interview, Bernd Zapf, Head of Development New Business & Technologies at HELLER, and Michael Brückner, Vice President Sales Machine Tool Systems at Siemens, explain the benefits to users and manufacturers and also for the development of new services when combining the know-how of a machine manufacturer with that of a control and automation expert.

Gentlemen, what are the benefits of the long-term partnership between HELLER and Siemens in the context of Industry 4.0?

Brückner: HELLER is one of the leading international machine tool manufacturers and Siemens belongs to the leading suppliers of controls and automation technology for that industry. Throughout our many years of cooperation we have seen time and again that when strong partners team up, the result will be exceptional solutions for the customers in the market, and the same is true for Industry 4.0.

Zapf: Both companies have long realised that digitisation was likely to play a key role in the future. Numerous benefits result from the partnership with a diversified industrial group like Siemens. Siemens is able to draw on a vast knowledge pool from the most diverse branches of industry, enabling the transfer of expertise from one business area to other fields of application.

Are there any concrete results yet?

Zapf: Yes, and we will present them at EMO! Together with Siemens we will be showcasing the new features at the HELLER stand as part of our HELLER4Industry presentation. For the first time, we will demonstrate an imaging method comparable to magnetic resonance imaging (MRT) which we use to visualise the workpiece inside the machine.

How does that work? An MRT inside a machine tool?

Zapf: No, that would be too costly and also unnecessary from the technical point of view. We create new algorithms comparable

to the mentioned MRT procedure used in medical engineering and 'feed' them with the signals of our machine tool. Following some development work of the Siemens engineers, we have succeeded in creating a high-resolution image of the workpiece that is displayed at the output end, i.e. the web browser and the operating panel of the machine, without requiring cameras or additional sensors in the machine – an invaluable advantage for quality control, during set-up or for documentation of the machining results. In cooperation with Siemens we are working on incorporating the knowledge gained based on the machine signals into the function in order to obtain even more meaningful results.

You are obviously taking a different approach to Industry 4.0 than most. For many, the term remains abstract and only becomes tangible in practical application, for example, in the form of condition-monitoring and forecasting solutions. What is the focus of your other innovations?

Zapf: They are not only directed towards the life cycle but to all key areas of a machine tool. For example, Services, thus ensuring high availability which is one of the prerequisites for productivity. Additionally, we are targeting operation and performance optimisation of the machine tool. Customers will benefit from our new functions to a much higher degree when the features are able to support them with their specific situation at hand. Ultimately, our goal is to equip the machine tools with assistance systems similar to those found in modern vehicles. _

"Ultimately, our goal is to equip the machine tools with assistance systems similar to those found in modern vehicles."

Bernd Zapf, Head of Development New Business & Technologies (HELLER)

Users will probably place the focus on the area of performance as it determines the profitability of a manufacturing order. What will you be showcasing at EMO in this respect?

Zapf: In order to demonstrate the benefits to customers, we will be presenting three use cases that vividly illustrate how digitisation, networking and intelligent algorithms interact. Among these solutions is an option for the optimisation of the tool assignment in the rack-type magazine, one for increasing the workpiece axis dynamics and the so-called automatic feed control. We have been pursuing these ideas for quite some time. But only now – with edge computing – we have sufficient computing power available for processing the data. At the same time, the cloud enables us to evaluate the data and to draw the relevant conclusions, helping us to realise our ideas at such a high level.

What exactly does that mean?

Zapf: With the 'Rack-type Magazine' use case focusing on the machine performance, we demonstrate how to optimise the tool position inside the magazine. We offer a function for optimising the place assignment in the rack-type magazine according to the requirements of the next workpiece to be machined. Optimum storage place assignment enables a reduction in cycle time by up to 20 percent. This creates tangible added value for customers.

Brückner: This vivid example shows how to create added value without any hardware or software modifications by using intelligent algorithms for data evaluation – tailored to the current situation of the machine.

How do you increase the dynamics of the workpiece axis?

Zapf: Again, this function focuses on the machine performance. In principle, the goal is to adapt the traversing speed of the workpiece axis to the loading weight. Until now, it made no difference whether the machine table was loaded with 2t or only 200 kg. We are now in a position to respond to the situation by adapting the dynamics accordingly, i.e. providing increased dynamics for lighter components.

Are there any negative effects on the availability of the machine in the long term?

Zapf: Theoretically yes, if you take it too far – comparable to engine chip tuning. Knowing our components, we take the utmost care that availability is not increased beyond their long-term or short-term availability. Maximum reliability and, in particular, availability are prerequisites for the processes in automotive series production, and our expertise gained from these processes has helped us to go to the limits of the machine without ever exceeding them. After all, a machine breakdown would nullify all our

optimisation efforts. Knowing this, and based on our experience, we have succeeded in transferring the approaches taken in highly-specialised series manufacturing to single-part production.

Did you install additional sensors in the machine?

Zapf: No, contrary to other manufacturers, HELLER is taking a different approach, because every additional sensor poses a potential risk in the work area and would reduce availability in case of a failure. Our approach is based on the enhanced possibilities to evaluate existing sensors using the additional computing power in the machine provided by SINUMERIK-Edge in combination with the cloud, enabling us to make better use of the data, also using additional information based on dependencies of the sensor signals. As a result, we are generating added value without compromising the availability of the machine.

Does this require manual intervention of the operator or does the machine react autonomously?

Zapf: Of course the operator is able to monitor all processes on an easy-to-read dashboard display on our new 24" multi-touch panel. With a single touch of the fingertip, the operator can choose to accept or reject the suggestions, e.g. re-assignment of the tool storage places or modification of the machine parameters. The dashboard provides him with all the necessary information for

making that decision. The same applies to the automatic feed control. The operator can set the limits in which the machine can autonomously adjust the override. In case of fluctuations in stock allowance, the machining speed can be adjusted according to the current spindle-tool-workpiece combination. We have customer examples in which machining time reductions of up to 20 percent have been achieved.

What developments do you have in store for the future?

Brückner: Increasing productivity is very much in our customers' focus. Basically, there are two driving factors for this: transparency of the processes in manufacturing and new methods of data collection (Big Data). Evaluation of data enables us to draw much more accurate conclusions about the production process. Digitisation expands our possibilities to communicate, e.g. with our cloud-based MindSphere that is used as a data storage and analysis platform. It can be accessed as a web service with any web-enabled device and provides the user with a precise overview of multiple machines, even for different manufacturing locations around the globe, and thus provides transparency and long-term storage for previously collected information. The method knowledge we have gained as a big corporation working with many different branches of industry, including logistics, turbine construction or medical engineering, enables us to derive solutions for the manufacturing industry.

Many have reservations about data security and data usage. What do you think has to be done in order to gain wider acceptance?

Brückner: We provide a maximum level of security for the communication to and from the cloud. And, we have clear rules concerning the rights and roles for data storage. It means that every user storing data in the cloud is able to decide if and how the data will be released for usage. The user always retains data sovereignty. When the framework conditions provide the necessary transparency and security, I think data usage should not be restricted. After all, multiple use of data enables to achieve the highest possible benefit for all. In this respect we are all on a learning curve at the moment.

Zapf: That is exactly why these specific use cases are so important. They illustrate that our customers can achieve perceptible added value when they are open to these new possibilities. I am confident that eventually the benefit gained will help overcome these concerns. By the way: for owners of older HELLER machines we also offer uncomplicated ways to upgrade their equipment. Some of the functionalities can also be used on existing systems, e.g. our HELLER Services Interface for condition monitoring. So, get ready to be surprised by the progress you can make with HELLER4Industry! /

"When strong partners team up, the result will be exceptional solutions for the customers in the market, and the same is true for Industry 4.0."

Michael Brückner, Vice President Sales Machine Tool Systems, Siemens



HELLER in the course of time: from bench vice to highly flexible manufacturing system

1894: Chimney heads and spiral steel stairs are among the most important products made by the mechanical workshop.

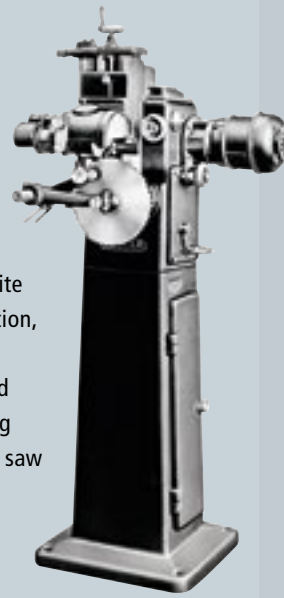


1899: The portable oscillating saw and the manual sharpening device significantly contribute to the economic success of the company. It becomes an indispensable tool in railway construction. Its price, including 6 saw bands and a manual sharpening device, amounts to 160 German Marks. The company develops further machines. In addition to customers in the Swabian region, HELLER gradually established business relations throughout the whole of Germany.

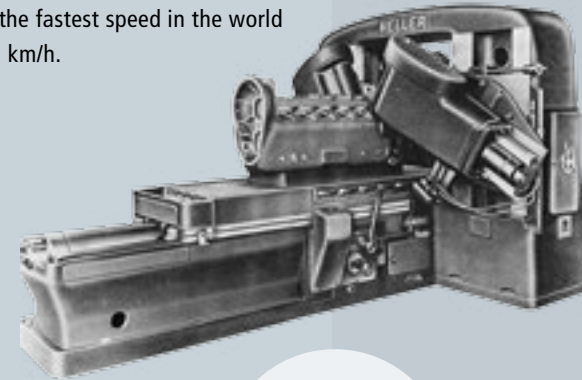


1908: Construction of the first radial drilling machine model, the RB1: This radial drilling machine is characterised by its simplicity, robust and attractive design as well as highest performance.

1932: Despite keen competition, HELLER sells successful cold circular sawing machines and saw blade skiving machines, for example the model B250.

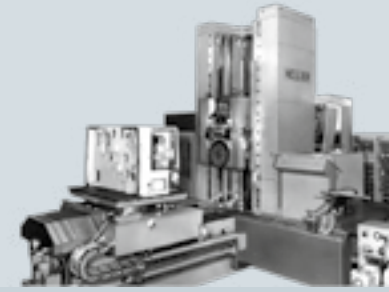


1935: HELLER develops special purpose milling machines for surface machining of a light-metal crankcase for an in-line aircraft engine. The engine is Daimler-Benz model DB 601 which powered the Messerschmitt 109 R, enabling it to reach the fastest speed in the world of 755 km/h.



1938: The world's largest saw: the heavy column-type cold circular saw model SKS 2000 weighs 220,000 kg, has a 3 m saw blade diameter and 60 m bed length.

1954: HELLER introduces electro-hydraulic control using 24V control voltage – against the general trend of the time. This technology is a key characteristic to achieve the high reliability HELLER products are known for.



1962: HELLER builds numerically controlled milling machines and machining centres, featuring automatic tool change and NC surface milling and boring heads, enabling to perform complex operations on a single machine.



1982: The machining centres from the BEA range are produced in series and equipped with state-of-the-art CNC technology – HELLER uniPro NC 80 control. At the end of November 1986, the company receives its 750th order for a machining centre.



2011: At EMO 2011 in Hanover, HELLER presents the new C series for combined mill/turning operations.



2013: HELLER receives the German Innovation Award for Climate and Environment for the marketable arc spraying technology called CylinderBoreCoating.



2016: The new HF series from HELLER stands for dynamic and productive machining in five axes. It is optimally equipped for the exacting requirements of modern production processes.

Today: what started out with 7 journeymen and 3 apprentices 120 years ago has become a globally active company, which can be proud of its success story and looks to the future with confidence.



First industrial revolution

Introduction of mechanical production facilities with water and steam power

First mechanical loom



Second industrial revolution

Introduction of collaborative large-scale production with electrical energy

First assembly line



Third industrial revolution

Use of electronics and IT for further automation of production

First programmable logic controller (PLC)



Fourth industrial revolution

"Cyber-physical Systems": real objects and virtual processes get connected

Industry 4.0 – networked production

In black and white: facts and figures of the
first six months 2017

Global economic conditions in almost all markets relevant to us are positive and, according to the IWF, even show a slight upward trend. The economic situation in our industry is also satisfactory. In terms of products and organisation, HELLER is well set up and consistently working on further improvements. All in all, we expect a moderate growth as far as the economic development in 2017 is concerned and a continued positive development of business throughout 2017 for HELLER in terms of turnover and earnings.

Order intake

EUR 296.9 m

Europe: 50 %

North- and South America: 15 %

Asia: 35 %

Performance

EUR 274.5 m

Turnover

EUR 254.4 m

Equity capital

EUR 94.5 m

ratio: 27 %

Employees

2,564

HELLER Group worldwide

**+ Continuity on shareholder level and
in terms of management**

ASSOCIATES OF HELLER GMBH:
HELLER family

SUPERVISORY BOARD:
Berndt Heller (Chairman)
Horst Geidel
Christian Hald

HELLER GROUP MANAGING
DIRECTORS:
Klaus Winkler, CEO
Manfred Maier, COO

MANAGING DIRECTORS
PRODUCTION LOCATIONS:

Germany (Nürtingen)
Dieter Drechsler, Patrick Rimlinger,
Dr. Jürgen Walz

United Kingdom (Redditch)
Matthias Meyer

USA (Troy/Michigan)
Keith Vandenberg

Brazil (Sorocaba)
Alfredo Griesinger

China (Changzhou)
Andrew Parkin

MANAGING DIRECTORS,
SALES/SERVICE LOCATIONS:

EUROPE
Peter Weber
Andreas Müßigmann

**Germany (Hattingen, Salem, Goslar,
Saarbrücken, Nuremberg, Nürtingen)**

Italy (Verona)

France (Paris)

Poland (Posen)

Spain (Barcelona)

Sweden (Värnamo)

Switzerland (Niederbüren)

Slovakia (Vráble)

Russia (Moscow)

NORTH AMERICA
Keith Vandenberg

USA (Troy)

Mexico (Querétaro)

SOUTH AMERICA
Alfredo Griesinger

Brazil (Sorocaba, Belo Horizonte)

ASIA
Andrew Parkin

**China (Changzhou, Beijing,
Chongqing, Shanghai)**

India (Pune)

Thailand (Bangkok)

Singapore (Singapore)

HELLER

THE COMPANY HELLER.

Global presence. Proximity for a close partnership.

GLOBAL PRESENCE MEANS

- keeping a finger on the pulse of markets, industries and current developments
- versatile production, procurement and logistics network with five production locations close to the markets
- sales and competence network with local contacts
- more than 30 local sales and service subsidiaries around the globe

BENEFIT FROM PROXIMITY

- worldwide access to know-how and project experience provides security
- versatile production and procurement network ensures reliable, secure quality and (spare part) availability
- local contacts guarantee optimal customer proximity and competent customer care
- global service network provides maximum availability and quality of machines independent of their location

NORTH AMERICA

- **HELLER USA**
largest supplier of horizontal machining centres to companies from the off- and on-highway heavy-duty industry final assembly and application installation sales and service
- **HELLER Mexico**
sales and service

SOUTH AMERICA

- **HELLER Brazil**
production and assembly of machining centres and manufacturing systems sales and application engineering comprehensive service from additional local bases

ECONOMIC DEVELOPMENT

Our perception is that the economic situation in the machine tool business is stable and we expect a moderate growth as far as the economic development is concerned. Yet, we are closely following the developments of world political events. With this in mind, we need to ask ourselves how we can best distribute the tasks

between our individual locations. We are currently working on various scenarios regarding the production and procurement strategy that will enable us to adapt to different world political developments. With our global production and procurement network we are well set up to respond to these changes.

EUROPE

- **HELLER Germany**
headquarters of the global network central functions and market support, tight-knit network, of service bases
- **HELLER UK**
series manufacturing of horizontal machining centres for the global market, sales and service for the UK market
- **HELLER France/Italy/Poland/Russia/Sweden/Switzerland/Slovakia/Spain**
subsidiaries with regional sales and service contacts, comprehensive support in terms of technology and application

ASIA

- **HELLER China**
long years of experience with automotive projects in the heavy-duty and light-duty industry, final and application assembly in Changzhou, sales and service subsidiaries in Beijing, Chongqing and Shanghai
- **HELLER India/Singapore/Thailand**
local contacts provide consulting and support for prospects and customers in the region

PRODUCTION FACILITIES IN CLOSE PROXIMITY TO THE MARKET PROVIDE A COMPETITIVE ADVANTAGE

The development of an international production network has crystallised as the ideal solution for the supply of our customers. With production facilities close to the markets in Germany, England, Brazil, the US and China (from mid 2013), HELLER today operates a versatile global production and procurement network which is continually expanded and optimised. The HELLER production network globally comprises two plants providing a full value-added chain (Germany and Brazil) plus three further plants for final assembly and application installation (England, USA and China). Via our network we are supporting our customers from more than 30 local sales and service bases in the individual markets.

The HELLER production network operates in accordance with a specially conceived production strategy. In addition to production locations close to the market and the continual optimisation of the value-added chain, a high real net output ratio and strict adherence to delivery dates in supplying the assembly plants with pre-fabricated components are indispensable preconditions for us.

To ensure that the company can live up to its brand and quality promise 'Made by HELLER' around the globe, the international production network is managed from a central location. This ensures that the production strategies, principles, methods and tools developed and tested in Nürtingen can be transferred to the other locations together with the 'spirit of lean management'. The goal is for all plants of the group to be able to meet the customers' discerning demands. The following are only some of the factors helping HELLER to achieve highest flexibility in production:


- flexible, multifunctional production equipment at minimal fixed costs,
- manufacturing technology and product design tailored to the location,
- exchangeable value-added contents in each plant – depending on market requirements, logistic costs and exchange rates.

⚙ Production 📍 Sales and Service



"For more than 120 years, we have seen ourselves as an innovative and solution-oriented partner to our customers and will remain so in the years to come. To ensure this, HELLER has adopted a forward-thinking approach."

Manfred Maier, COO HELLER Group



New Business at HELLER: A new business unit looks into the future

Well prepared for the future

In response to new challenges, HELLER has adapted its corporate structures by establishing Development New Business & Technologies. The division was founded in 2010 with the mission to look beyond the traditional fields of business, thus assuring the growth of the HELLER Group in further areas of operation. Its task is to explore new technologies and to derive new future fields of business. To achieve this, the team is scouting trends in various areas, e.g. ways to reduce CO₂ emissions and fuel consumption of combustion engines as well as electromobility, lightweight construction and Industry 4.0. Manfred Maier, Managing Director and COO at HELLER, explains the ambitious goals: "We plan to develop each new viable idea into a business model within three years." _



The future of mobility is electric: HELLER automotive expertise

Approx. 75% of the HELLER Group's business comes from the automotive industry. This includes passenger cars and trucks as well as agricultural and construction machinery. HELLER supplies automotive customers from various segments, including heavy-duty powertrain on- and off-highway and light-duty powertrain, with manufacturing solutions for the machining of cylinder blocks and heads, crankshafts and camshafts as well as transmission and chassis components. The systems are comprised of 4-axis and 5-axis modules with direct loading as well as special-purpose and process machines which can be linked to a fully automated manufacturing system at any time.

The topic of electromobility and the impact on future technological developments and market distribution of the various drive types are the centre of controversial public debate. We are closely following the development in order to be prepared for possible impacts on our business with the automotive industry.

Automotive production is characterised by faster and faster innovation cycles, growing model variety and extreme cost pressure. Minimal per-piece costs are a key factor to success in global competition. Manfred Maier explains what this means for machine tool manufacturers as suppliers to the automotive industry: "Rather than maximum productivity, many companies from the automotive industry place the emphasis on achieving maximum flexibility – with a minimum of investment. The time between the investment decision and start of production has also become an increasingly important criterion."

HELLER is a manufacturing partner providing insider know-how built over decades of cooperation with the automotive industry and its suppliers. Our development engineers contribute their extensive product and process knowledge, whilst customers provide their experience from manufacturing. Our manufacturing systems reduce unproductive idle times by providing increased flexibility and maximum productivity, resulting in enhanced competitiveness. Drawing on our extensive know-how, we are able to offer innovative and comprehensive production solutions for powertrain, driveline and chassis components, whilst ensuring minimal per-piece costs.

Development New Business & Technologies explores the possibilities

In collaboration with a team from Application Development, Application Assembly and Sales, the development team has successfully established a first project in the market with HELLER CBC (CylinderBoreCoating). The coating technology based exclusively on HELLER machining modules is based on the twin-wire arc spray technology used by Daimler and BMW. For this new process, we have developed the CBC 200 coating module and brought the coating process to maturity. So far, it is the only method of this kind providing the necessary process dependability for use in high-volume production.



Business with the HELLER CBC technology for the coating of cylinder bores of automobile engines developed excellently in 2016. Major vehicle manufacturers have already equipped their production facilities worldwide with this systems technology and are producing high volumes or are planning to do so in the coming years. From this year onwards, Daimler will use it in the production of approx. one million 4- and 6-cylinder engines per year at their facilities in Untertürkheim/Germany. Until 2018, a total of 65 systems for the coating of more than 8 million engines worldwide will be in operation.

Another current project is metal additive manufacturing. The experts are working on a cost-effective process, providing high material application rates in an industrial environment supplemented by downstream machining. The idea is to use this technology for making additions to the component whilst integrating downstream machining operations in order to achieve the required drawing specifications. As with CBC, the goal is to find solutions for relevant applications in series production for the general machine and automotive industry.

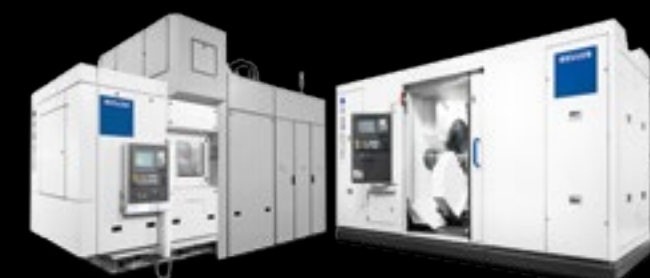
Other developments of the department focus on light-weight construction. The demand for lighter vehicles inevitably requires the use of light metals and carbon fibre-based plastics. In this context, we are researching suitable machining processes.

Development New Business & Technologies also developed and launched first concrete solutions in response to Industry 4.0 called HELLER4Industry. Read more about HELLER4Industry on pages 14–17. /



Product portfolio for the automotive sector

- **H series of 4-axis machines:**
productive machining in all disciplines
- **HF and F series of 5-axis machines:**
complete machining in five axes
- **C series of 5-axis machines:**
process competence also for combined milling and turning operations
- **MC series:**
highly productive and flexible series production
- **Light duty:**
MC 20 machining modules with direct loading, equipped with 4 axes in the standard version, upgradable with a 5th axis as an option, linkage to an automated manufacturing system is possible
- **Heavy duty:**
existing range is complemented by additional models, e.g. machines with direct loading and head changer systems as well as process modules for special tasks
- **TRS series:**
stand-alone machine for transferlines, designed for high volumes
- **WENZLER VKM series of 5-axis machines:**
machining of lightweight components and structural parts
- **RFK, DRZ and RFN series:**
flexible manufacturing of crankshafts and camshafts – a wide range of technologies to meet the various requirements for perfect internal and external milling or turn-chasing operations, either as stand-alone solution or linked manufacturing system
- **CBC series:**
coating of cylinder bores of light-duty engines



RECOGNITION FROM HELLER

Outstanding achievements in performance and innovation



HELLER Supplier Awards 2017

To maintain and expand its position in the market, HELLER depends on working with reliable and innovative partners. In June this year, the fifth HELLER Supplier Awards were presented in the categories Best Performance and Best Innovation. The companies HYDROKOMP Hydraulische Komponenten GmbH and Schubert System Elektronik GmbH were honoured for their outstanding achievements. We would like to take this opportunity to thank them again for the excellent and successful cooperation. The prerequisite to qualify as one of the Top 40 Suppliers is a minimum turnover of €250,000/year with the HELLER Group and a delivery performance of at least 91 out of 100 points. HELLER's key criteria for Best Performance include Product Quality (50%), Adherence to Delivery Schedules (37.5%) and Delivery Quantities (12.5%).

HELLER RECEIVES AWARDS

Outstanding achievements as a supplier



General Motors: 2016 Supplier of the Year

At the 25th Supplier of the Year awards ceremony held on 31 March 2017, General Motors named HELLER a GM Supplier of the Year. With this award, GM recognizes its best suppliers from 15 countries that have consistently exceeded GM's expectations, creating outstanding value or bringing innovations to the company. According to Steve Kiefer, GM Vice President Global Purchasing and Supply Chain, the companies recognized "not only have brought innovation, they delivered it with the quality customers deserve". Winning suppliers were chosen by a global team of GM Purchasing, Engineering, Quality, Manufacturing and Logistics executives. They were selected based on performance criteria in Product Purchasing, Indirect Purchasing, Customer Care as well as Aftersales and Logistics.



John Deere: Achieving Excellence in Recognition of Partner-level Performance 2016

On 29 March 2017, HELLER received the Achieving Excellence supplier award from John Deere during the company's annual Supplier Conference in Zweibrücken. According to John Deere, HELLER as a supplier exceeds the performance standards, reaches world-class level and makes a measurable contribution to increased customer satisfaction. The goal of the award is to help develop successful business relations based on a continual evaluation process, promoting communication and continuous improvement. The fundamental principles are integration, commitment, trust, cooperation and teamwork. John Deere evaluates suppliers in the categories Quality, Delivery Reliability, Technical Support, Partnership and Cost Management. "Successful suppliers stand out through their unique performance. These high standards are what distinguishes John Deere and its delivery chain from the competition," said Pierre Guyot, Vice President, Global Supply Management and Logistics Deere & Company.

The HF series:

PRODUCTIVITY IN 5 AXES

For HELLER, the HF series embodies the next step in the consistent development of our existing machine range. The new series is highly productive and flexible, enabling universal application for medium and large batches. Easy to operate and maintain, the HF series is available in two variants, for direct loading or use with a pallet changer. This guarantees maximum output with minimal handling requirements. Thanks to the fifth axis provided by the workpiece, combined with optimal dynamics, the 5-axis machining centres HF 3500 and HF 5500 offer a significant reduction in idle times. The main target groups for this new machine concept are the automotive industry and its suppliers and the general machine building industry.

We checked in with a number of companies that already own a machining centre from the HF series.





“Everyone has a different take on what Industry 4.0 entails. In our eyes, two main components are machines that are easier to operate and greater transparency with the network. We can reconstruct processes at any time in case of complaints and we have measurement data to document quality.”

Dr. Carsten Binder, CEO
ZSO Zerspanungs- und Systemtechnik GmbH

ZSO Zerspanungs- und Systemtechnik GmbH

Founded in 1997, ZSO currently has 150 employees. Over the years the company has carved out a niche in the metal-cutting industry as an expert in milling, turning, grinding and assembly, including complete component groups. The main focus lies on medium-sized batches of technically complex units produced on standard machines. ZSO produces for customers in machine and plant construction, as well as the automotive and commercial vehicle

industry. ZSO was well aware that the decision for a new 5-axis machining centre HF 3500 would signify an investment in a completely new concept. Thanks to the company's previous experience, it knew HELLER would deliver – and that initial assessment was spot on. ZSO is especially pleased with its investment when looking ahead to future customer projects that fall under the category of smart manufacturing or Industry 4.0.



“For the fifth axis in the tool, in the past we needed to drill angled holes separately on some workpieces. With the HF series, we can now do this in a single setup which lets us achieve a 30 percent time savings.”

Anton Ölberger, Managing Partner
Präzisionsmechanik Weissenhorn GmbH

Winfried Klöckler, Managing Partner
Präzisionsmechanik Weissenhorn GmbH

Präzisionsmechanik Weissenhorn GmbH

PMW is a modern service provider that strives to provide its customers with premium quality products. PMW's people always look forward to challenging new assignments requiring the utmost precision. The company's customer base covers a variety of industries including gear manufacturing, automotive and aviation as well as machine building. PMW's 20 employees produce batch sizes ranging from one to 50 pieces, with larger batches in about five percent of all cases.

PMW already owned two HELLER 5-axis machining centres FP 4000. To ensure a machine concept that fit individual workpieces while achieving both dynamic and simultaneous 5-axis machining, the company was one of the first to decide on a 5-axis machining centre from our HF series – the HF 3500.

Digitisation from the perspective of KOMET

Digital systems conquer the world of machining

For years, the KOMET GROUP has been driving the digitisation of production. An important instrument developed for this purpose is the ToolScope assistant system developed by KOMET. Through acquisition and evaluation of process data it contributes to the optimisation of production and machining in particular. At the company's production facilities in Besigheim near Stuttgart, a cloud-based version has meanwhile commenced operation.

KOMET GROUP sets the mark for the digital future of machining

Digitisation is reflected in the precision-tool manufacturer's product portfolio with the ToolScope assistance system, mechatronic tools, digital data transfer and various smartphone apps. Moreover, the KOMET GROUP increasingly uses digital systems in their own manufacturing facilities, including their ToolScope system in combination with a cloud function.

KOMET ToolScope is an assistance system for acquiring and recording internal machine signals, e.g. spindle torque or the feed force of an axis, during the machining process. Data logging also covers events such as tool change or machine downtimes for further evaluation. The software combines the data recorded with known process markers read from the control, e.g. program, tool, block number etc., to calculate characteristic variables after the process and to derive trends.

The technology offers particular advantages when automatically linking the digital information to draw the relevant conclusions. To make it easy for customers to benefit from this added value, KOMET has developed applications for the various services that can be licensed and unlocked individually. In practical application they contribute to decentralised data evaluation in the production hall and subsequent transfer of the evaluation results to a central storage location in the cloud (e.g. tool change logs, wear monitoring, process logging, etc.).

The so-called cloud services provided by KOMET facilitate handling of the acquired data. This includes the provisioning of cloud storage to enable direct linkage of the ToolScope assistance system to the evaluation tools. As a result, users save the costs for providing data storage capacity.

The KOMET GROUP also uses these cloud storage solutions for machines installed at their own production facilities in Besigheim. Detailed information and a test account are available on the company's website on www.kometgroup.com/en/products/digital-40/clouds.

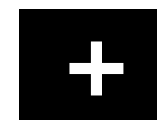
Software in the cloud replaces hardware in the control cabinet

Recently, KOMET has taken another step forward. For test purposes, the tool manufacturer equipped the machine tools in their own production facilities with the latest cloud-based ToolScope assistance technology.

Until now, the ToolScope system was only available as a hardware-based solution. This requires a service engineer to install the relevant modules in the control cabinet of the machine plus a modification of the PLC and electronic system. Now, KOMET's goal is to eliminate the additional hardware required for the machine tools and the time-consuming installation work, using its new ToolScope product family. For this purpose, the company installed the assistance software and the apps required for data processing in the KOMET cloud at the production facilities in Besigheim.

The KOMET GROUP believes that the move to the cloud provides great potential for supporting the digitisation of production. Material and human resources required to equip 20 machines with the cloud-based ToolScope version are about the same as required for a single machine. This allows customers centralised recording of all machining processes in a production hall.

The cloud-based ToolScope system provides numerous other advantages, as many functions are much easier to implement from the cloud than from a control cabinet. This includes, for example, a tool planner with tool cost visualisation in diagram form and the use of large screens in the maintenance room for displaying pie charts of machine downtimes. The new system also offers new possibilities in terms of monitoring technology. Artificial intelligence based on neural networks has made significant progress in recent years. Cloud-based monitoring solutions provide the ideal basis for combining artificial intelligence with machine data. /



The KOMET GROUP is one of the leading full-range suppliers of precision tools, marketing technologically pioneering solutions and premium products for machining processes. For nearly 100 years now, the successful international group of companies has been one of the innovation and technology leaders in the industry, focusing on consistent development and implementation of innovative ideas, efficient solutions and high-quality products. In terms of digitised production, the KOMET GROUP has played a pioneering role, continually developing new solutions with a coherent approach to Industry 4.0. The group employs more than 1,500 staff in 22 affiliate companies and is represented in approx. 50 countries.

 **KOMET**[®]
GROUP

Automation from the perspective of Fastems

The advantages of a consistent systems strategy for highly flexible automated manufacturing

“Never change a winning team”: with this motto, Georg Kauschinger, Head of Horizontal CNC Milling at Rohde & Schwarz in Teisnach/Germany, summarises one of the principles for the organisation of his department. The machines made by HELLER play a key role in this context. The same is true for the Flexible Pallet Container (FPC) supplied by Fastems for the automation of production which has been in use at the company for 7 years now.

Machinery from a single supplier provides many advantages

Due to the growth it was experiencing, the company divided its metal-cutting manufacturing operations into a horizontal and a vertical machining division about 10 years ago. For horizontal milling, Rohde & Schwarz strives to use machinery from a single supplier and currently operates a total of 13 HELLER machining centres. “The advantage is that we can use the majority of the 40-strong staff in my department at almost any of our production locations, because they are all familiar with the machines. In terms of production organisation this is certainly one of our strengths,” explains Georg Kauschinger.

High product and variant diversity

According to Georg Kauschinger, 95% of the components machined are made of aluminium. The rest are made from a diverse range of materials, ranging from plastics through to difficult-to-machine materials like molybdenum. “Despite this, we specialise in high-speed machining of aluminium materials.”

The Rohde & Schwarz factory in Teisnach manufactures a diverse range of milled parts for the parent company. “The product and variant diversity we are dealing with makes us a small-batch manufacturer with medium batch sizes of up to 25 parts – batches of 100 units are

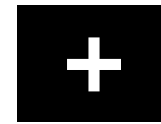
a rarity. According to order intake, we currently manufacture approx. 3,500 different milled parts. When we started CNC machining some 30 years ago, we invested in a solution for the automation of our machining centres by interlinking 3 machines with the aim to introduce low-manned manufacturing,” explains Kauschinger, adding: “At the time, the technology had not reached technical maturity yet. Ultimately, the system did not fulfil our expectations.” An experience that was about to change.

New investment in a machining centre plus automation

About 7 years ago, Rohde & Schwarz Teisnach invested in a HELLER 4-axis machining centre model H 2000 for highly productive machining in all disciplines, including high-speed cutting, heavy-duty cutting as well as dry and MQL machining. “In any case, we were looking for an automation solution that would enable us to run unmanned shifts, also because we were not planning to use a regular team for some of our machines.” As a solution, HELLER suggested a Flexible Pallet Container (FPC) made by Fastems.

Cost-effective solution in compact design

The FPC is a complete flexible manufacturing system installed in a compact container and designed for the machine tools of various manufacturers. The system comprises all components required for an



Added value in production can only be achieved when it runs smoothly. Fastems is a leading, independent manufacturer of systems for factory automation. Our goal is to increase our customers’ competitiveness through automation. We achieve this by creating the prerequisites enabling our customers to obtain maximum output from the 8,760 manufacturing hours of the year. We are known for our flexible manufacturing systems (FFS), robot-supported automation solutions, production control software, gantry and interlinking systems as well as our comprehensive range of services. More information see www.fastems.com.



automatic pallet storage and handling system and comes as a pre-configured unit, allowing it to be linked to a machine within a very short time.

Ultimately Rohde & Schwarz Teisnach opted for an FPC-750 with a total of 12 pallet storage places and 750kg nominal load per pallet. From the company’s perspective it provided a very cost-effective automation solution. Additionally, the compact design allowed easy integration into the production environment. Due to the space restrictions in production at the time, this was a strong point in favour of the solution.

Flexible planning of machine and labour utilisation

The Horizontal CNC Milling department mainly produces in 3-shift operation. HELLER’s H 2000 combined with the FPC allowed to schedule additional unmanned shifts quite flexibly and according to requirements. The time for complete processing of all 12 pallets in the FPC varies according to part range between under 2 hours and machine running times of up to 10 to 12 hours.

Reduced manned shifts, increased productivity

Due to its consistently positive experience with the first FPC system, Rohde & Schwarz in 2013 decided to invest in two further FPC-750 for the automation of two additional HELLER H 2000 4-axis machining centres the company had purchased. In the following year, the company bought another machine of that type together with an FPC-750.

After about 7 years, Georg Kauschinger draws an extremely positive conclusion regarding the automation solutions for the HELLER machining centres: “The investments have paid off and the overall systems have proven themselves multiple times. For example, we have been able to reduce manpower on one of the systems and also reduced manned 3-shift operation to 2 shifts. The third shift is completely unmanned. Production on the latest HELLER H 2000 combined with the FPC-750 runs completely unmanned with the exception of set-up and loading/unloading.” According to Georg Kauschinger, it is quite probable that future machine investments in the Horizontal CNC Milling department will again comprise an FPC.

Industry 4.0 from the perspective of HAIMER

Tool Management 4.0

The HAIMER Group is the global leader for tool shrink-fit and balancing technology and has developed into a systems supplier for the entire tool management. Managing Director Andreas Haimer explains: “Our aim is to make tool management as easy as possible for metal-cutting manufacturers by offering a consistent range of systems. Customers receive perfectly matched solutions from a single source: from tools and tool holders, shrink-fit and balancing equipment through to high-precision pre-setting technology.” A highlight of HAIMER competency is the Microset tool presetting technology that was added to HAIMER’s product portfolio at the beginning of the year.

Tool clamping and presetting belong together

Due to their high quality and their intuitive operation, the Microset tool presetters perfectly complement the established HAIMER products. They also cover a wide range of applications – a philosophy that HAIMER also applies to its shrink-fit and balancing machines. The HAIMER Microset range also comprises base models that are a reasonable investment, even for occasional use. Moreover, the company offers powerful semi-automated machines equipped with autofocus for the average user through to fully automatic presetting machines with linear drive designed for demanding, continuous operation. All tool presetters are equipped with premium hardware and provide excellent ergonomics and ease of use. A particular advantage is that they are constructed from thermo-optimised grey-cast iron, allowing for easy operation, high repeatability and reduced calibration requirements for direct use in the production hall.

Consistent network compatibility

Whilst the Microset tool presetters are already equipped with network interfaces and prepared for communication with machine tools, HAIMER now also offers shrink-fit and balancing machines that are equipped accordingly.

The new Power Clamp series comes in a completely new design and with new software designed to make the handling of the shrink-fit machines even easier. The developmental leap is visible from the outside: the machines are equipped with a new touch operating panel suitable for industrial purposes that enables integration of the Power Clamp machines into the network. Additionally, HAIMER has developed a simplified tool management, designed for the combined use of the HAIMER products. Andreas Haimer explains: “For many small and medium-sized companies, the tool management systems currently available on the market are much too powerful and complex. We offer an entry model providing intuitive operation, ideal for many small to medium-sized enterprises for the



Andreas Haimer,
Managing Director Haimer GmbH

organisation and digitisation of their tool presetting operation.” Another HAIMER solution for data transfer has been available for some time now: on request, the company can equip its tool holders with an RFID chip that customers can use for storing key tool data. In the future, all HAIMER units will be available with the corresponding read/write stations (optional) to prepare them for advanced data exchange in accordance with Industry 4.0.

New Duo-Lock and solid carbide end mills for universal application

Apart from the digital enhancements, HAIMER is presenting a number of practical novelties for machining, e.g. the expansion of its portfolio of solid carbide end mills. In addition to the existing Power Mill series the company is now offering the recently launched Basic Mill series. Focusing on the key product characteristics, the tools can be used for



HAIMER is a family run, medium-sized enterprise located in Igenhausen, Bavaria near Augsburg/Germany. The company, employing 650 staff, designs, produces and sells innovative high-precision products for metal cutting as well as other branches including automotive, aerospace, energy, rail and general machining. The company’s comprehensive portfolio comprises solid carbide cutting tools, a diverse range of tool holders, shrink-fit and balancing machines and tool presetters. All products are matched to each other in terms of their construction and offer the prerequisites for network integration and a consistent data flow.



almost all materials and are suited for slotting, side and square shoulder milling as well as ramping up to 45 degrees. Due to a special face-cutting geometry, they are also suited for drilling. Compared to the performance-optimised Power Mill tools, the Basic Mill cutters are more cost-effective without compromising on quality.

Moreover, the company offers a wide variety of tool geometries and product extensions for the modular Duo-Lock interface. The patented, innovative thread design with double cone and an additional third contact area guarantees a high degree of stability and stiffness for milling operations.

Open House in Igenhausen

From 27 to 29 September 2017, HAIMER will be staging an Open House event at the company’s headquarters in Igenhausen which houses the largest manufacturing facilities for tool holders in Europe. At the event, HAIMER will be celebrating its 40-year anniversary and the successful development of the company. In addition to top-class key-note speakers, an attractive seminar programme and an opportunity for a professional exchange with experts from 26 technology partners, the company will be presenting its current product highlights. In accordance with its corporate philosophy, HAIMER will seize the opportunity to demonstrate in live machining that ‘Quality Wins’. For more information about the event and to register visit the company’s website on www.haimer.biz/open-house/open-house-2017

Optimisations secure core competencies

HELLER's core-competency components are supplied to all global locations where HELLER machining centres are produced. Therefore, the manufacture of these parts is of paramount importance. Each one of these components contributes to the productivity, quality and precision of the machining centres built from them. That is why we continually and consistently enhance our in-house manufacturing capabilities, optimising manufacturing processes and investing in machinery and organisation. Additionally, digitisation, MDA/PDA (Machine Data/Production Data Acquisition) and also current CAD/CAM projects (Computer Aided Design/Manufacturing) help to ensure productivity and transparency. _



For every permanent investment in the machinery and organisation aimed at optimising the manufacturing processes, HELLER manufacturing first needs to set out in a clear and comprehensible manner which potentials the investment is offering in terms of rationalisation or quality, provide the supporting arguments and submit the necessary applications. A good example is the new 5-axis machining centre from the HF series. According to Head of

Production, Dr Peter Herrmann, the machine, proving a 5th axis, high dynamics, a horizontal spindle and free chip fall, is practically tailor-made for the machining of smaller components. Herrmann explains that although the machine concept is primarily based on market requirements, HELLER manufacturing – as a potential user – was also involved in the product development process. That is also why the Head of Production was eager to put the first machine prototype through rigorous testing in the company's own

operation. With more than 210 staff and an intercompany turnover of approx. EUR 40m, the production facilities in Nürtingen supply all global HELLER locations, e.g. in the US, the UK and China, with core-competency parts.

Relocating processes, increasing in-house production depth

Continuous optimisation is necessary for economic reasons, not only for HELLER. During our annual WerkTage in-house event,

we still meet many users unaware of the potential that 5-axis machining centres or combined processing (combined milling and turning on a single machine) provide over 4-axis machining centres. However, we have been able to achieve productivity increases of 10 to 20% with 5-axis machining and even 20 to 40 % with combined processing.

manufacturing facilities in order “to support optimisation of stability, positioning accuracy, speed, etc.,” explains Herrmann. Following a first 4-month test period, the true stress test began with the manufacturing of the annual production volume of selected machine components over a period of 3 weeks. Subsequently, the machine was returned to R&D for optimisation, bringing it to technological maturity.

Meanwhile, in-house manufacturing uses 5-axis machining centre models FP 16000, CP 4000, CP 8000 and HF 3500 – proof that this rationalisation approach worked very well. All machines have demonstrably contributed to a productivity increase. A 5-axis machining centre model HF 5500 is to follow soon. By then, HELLER manufacturing will have a total of 17 machines used in three-shift and approx. 40 machines in single and two-shift

According to Dr Herrmann, HELLER is also setting new standards as far as quality and precision are concerned: “In terms of tolerances we are talking about a range of one to two hundredth of a millimetre, partly even within a few microns. Ensuring this kind of quality on a permanent basis requires skilled and reliable quality control and the willingness to continue to break new ground in terms of the processes.” At the moment we are taking a new approach with spline-shaft and spline-hub machining, transferring

the process to our 5-axis machining centres. This step has helped to optimise the process and to increase quality, resulting in a cost reduction and shorter cycle times. Similar investments also become necessary for the company to enhance its manufacturing depth. Although HELLER already manufactures 50% of the tool spindles in-house at competitive costs, the company plans to expand in-house production by adding mill/turning centres and grinding machines. _

Transparency to the last detail

The TOR project (Technology Optimization Review) is a good example to illustrate how we continually work on the potentials for improvement in mechanical manufacturing. Originally, the TOR project was known as 'HELLER Focus', a priority project of the HELLER management. At the beginning of the year, HELLER manufacturing took over responsibility for TOR with the aim to optimise individual processes and the manufacturing of part families. Other objectives of HELLER Focus include digitisation, introduction of MDA/PDA as well as a new CAD/CAM project.

Digitisation has been on HELLER's agenda for a few years now. The goal is to provide a transparent and, at the same time, paperless flow of information and materials from planning to engineering and programming through to the machine and quality control. At the moment, the ExaptSolid 3D CAM program is being introduced. It directly accesses the 3D model provided by the engineering department and enables the programmer to create and simulate the NC program, have it translated by the postprocessor and then send it to the machine as an NC code over the network. Development priorities are agreed with Exapt as a strategic partner under consideration of HELLER-specific optimisations. It is expected that the targeted 30% productivity increase in the programming chain can be achieved in a timely manner.



By introducing MDA/PDA we aim to obtain a real-time status description of production, including machine data, job data, availability and productivity, making the data available to the managers in a quick and transparent manner. This will enable them to respond promptly to any deficits. Moreover, PDA makes an important contribution to quality assurance. Dr Herrmann distinguishes three different levels: on the first level, we have the components that are inspected on the measuring machine. They can be identified throughout their service life by a serial measurement log. The second level comprises the classic measuring techniques used for sampling, 100 percent measurement or initial sampling performed in the inspection zone of production. For the third level, HELLER is increasingly using self-inspection by the operators and for the future is planning to introduce MDA/PDA. As a result, an operation cannot be completed without measurement and documentation.



Pre-emptively assuring availability and quality

Transparency of manufacturing processes demonstrably helps to protect against workpiece damage, lack of precision or productivity losses. That is one of the reasons why HELLER production is currently in close negotiations with HELLER Services. Dr Herrmann believes that services such as CDS (Condition Dependent Services) and RDS (Remote Diagnostic Services) are meaningful contributions to digitisation: "In order to reach our 98 percent availability goal, we need to adopt a pre-emptive approach. Our aim is to only have scheduled downtimes for our machines, whilst eliminating downtimes due to failure. To achieve this, we use TPM (Total Productive Maintenance), comprising machine monitoring, condition monitoring, maintenance and statistical evaluation. One of the reasons why this is so important for us is that our components are very cost-intensive and raw part provisioning takes a lot of time. It means we cannot afford quality defects. We need to prevent errors, not try to save components."

Staff at our manufacturing facilities significantly contribute to the prevention of errors. At HELLER's own training facilities we are laying the foundations for the future. For our commitment, we were awarded the 2016 Education Certificate of the Federal Employment Office of Germany. /



By the way

HELLER's Mechanical Manufacturing is the supplier and testing partner of HELLER R&D for new products. At the same time, it is HELLER's 'largest showroom worldwide'. That is also why it sometimes benefits from a manufacturer bonus when applying for an investment. Dr Peter Herrmann: "HELLER does a great deal for its production. At the moment, we are investing in mill/turning centres and grinding machines as well as a new HF 5500. That alone totals an investment of 3 million Euro."

HELLER4Use

Our operator model providing a new level of flexibility

With ‘HELLER4Use’, HELLER is now offering you an attractive operator model for the use of HELLER machining centres. With this model, you only pay for the use of your machine, helping you to avoid fixed costs. Based on the acquisition and evaluation of the actual machine utilisation, it helps you to remain successful in the future with advanced technology, whilst maintaining full financial flexibility.

Shorter innovation cycles, growing material and component variety and complexity as well as constant cost pressure are posing significant challenges to enterprises aiming to remain competitive. Planning horizons become shorter and shorter whilst planning dependability decreases. How is a system planned today supposed to be able to produce the part range in demand over the next 8 to 10 years? Will today’s solutions still be able to respond to tomorrow’s requirements? How can security of investment be maximised?

When purchasing capital goods, companies often place the main focus on the initial capital cost. Frequently, the purchasing price plays a more important role than the actual life cycle costs.

In particular, companies from the automotive industry are plagued by uncertainties over the recent discussions about alternative drive concepts and therefore are cautious with their long-term financial investment commitments.

HELLER4Use guarantees flexibility
HELLER machining centres do not only meet the current needs and requirements of modern production, they also have the capability to be used efficiently and productively throughout their entire life cycle. Therefore HELLER has developed the **HELLER4Use** operator model

for its machines, offering you maximum flexibility in terms of usage and billing. HELLER provides the machine whilst ensuring maximum availability around the clock. You only pay for the time during which you are producing, turning fixed costs into variable costs.

HELLER4Use builds on the transparency provided by **HELLER4Industry**. The newly developed **HELLER Services Interface** provides transparency of manufacturing and maintenance processes. Visualisation of specific information, including status displays of axes, spindles or other assemblies, enables users to determine the wear status and to take preventive measures in order to avoid unscheduled downtimes. In case of **HELLER4Use**, the HELLER Services Interface acquires all relevant data concerning maintenance, wear and the evaluation of utilisation and uses them as the billing basis.

In order to guarantee you maximum utilisation over the entire life cycle of the machine, HELLER provides a comprehensive range of services to ensure maximum machine availability. They include measures like regular assessment of the machine condition as part of a manufacturer inspection, the prevention of unscheduled downtimes through preventive maintenance and servicing as well as participation in the HELLER product maintenance programme.



Additionally, Integrated Process Monitoring (IPM) for collision monitoring and load evaluation, a maintenance manager keeping a maintenance log as well as the media monitoring are performed for diagnostics of maintenance actions, ensuring that all measures taken during the usage and maintenance of the machine remain transparent throughout.

Conclusion: achieving transparency whilst eliminating the risk for HELLER customers
HELLER4Use enables you to use machines in accordance with current requirements at variable costs, ensuring you maximum flexibility. The required machine data are collected, evaluated and provided to a digital billing system using the existing **HELLER4Industry** functionality. **HELLER4Use** provides flexibility in terms of your capital costs: you benefit from extremely efficient machines without any capital commitment and with the right to return or to replace the machine, enabling you to adapt your HELLER machine to changing production requirements according to your needs. As usual with HELLER, you can count on personalised advice and drafting of the contract to individual requirements as well as quick and hassle-free processing.



By the way
Under the heading **HELLER4Industry** we pool all activities in the context of Industry 4.0 and the digitisation of the process chain. Already today, we are generating added value for customers through greater ease of use of the machine, with optimal integration into the networks and expanded functionalities and service possibilities. Read more about it on pages 14–17.

HELLER Services Lifetime Partnership

**Your competent partner. Available at any time
wherever you are with fast on-site service**

As a reliable service partner we support you throughout the complete life cycle of your machines, ensuring their productivity and availability. From project planning to the utilisation phase, right through to the decision about the re-use of equipment. The machines and services offered by HELLER are perfectly matched to each other, ensuring maximum performance and productivity in production. Speed is one of our strengths. Quick support in parts ordering, repair enquiries or technical queries. Fast response times in case of machine faults.

We are here for you, with more than **500 employees** working at **30 service bases worldwide**. More than **40,000 spare parts** are available from stock. HELLER Services offers you a comprehensive range of transparent and clearly structured services. Partnership-based support, outstanding expertise, short response times and customer proximity form the cornerstones of our service range.



Hotline



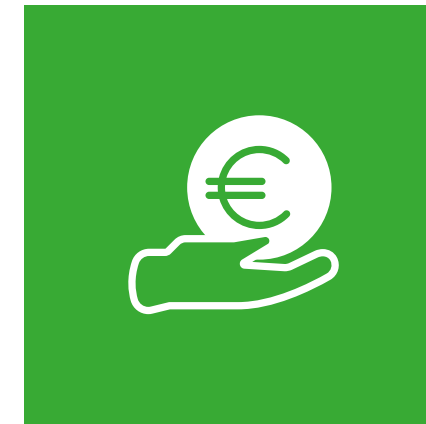
Spare Parts



Customer Service



Retrofit Packages



Financing



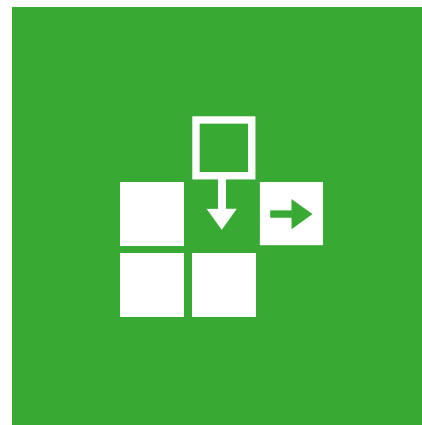
Insurances



Service



Training



Rebuilds



**Component
Repair**



Retrofit



Used Machines



Hotline

The right contact person for any requirement

Our HELLER service specialists guarantee quick support with any technical queries concerning your HELLER machines and equipment. With one contact person for repairs, spare parts or other services. In addition to our regular service hours, we also offer extended service availability on request.



Spare Parts

Original spare parts immediately available

Whether you need original spare parts or wear parts – the HELLER Spare Parts Service backed a global logistics network is your partner to ensure maximum machine availability. In addition to short delivery times, all HELLER original spare parts reflect the state of the art and come with a 12-month guarantee.



Customer Service

Services covering every aspect of your machine

HELLER service means first-class service with no ifs or buts. Always close by, available at any time with fast on-site service. Our range of services covers the entire life cycle of your HELLER machine – from commissioning to servicing and inspection through to maintenance and repair.



Retrofit Packages

Develop yourself

HELLER Retrofits offer you wide-ranging, innovative options in terms of production, maintenance and sustainability. Through technological enhancement of your existing machines we help you increase reliability and flexibility, improving your ability to respond to changing market and manufacturing requirements.



Financing

Financing solutions tailored to your individual needs and requirements

Whether new or used machine: we offer you attractive financing and leasing solutions in co-operation with our financing partners. This ensures you have flexibility in financing at favourable and competitive terms. In addition to personalised advice and drafting of the contract to individual requirements, we ensure quick and hassle-free processing.



Insurances

Insurance coverage – just in case

Maintain your innovative strength with an all-round carefree package, guaranteeing comprehensive insurance coverage. With HELLER Protect we offer you coverage for your machines far beyond the usual market standards, whilst HELLER Protect Plus includes compensation of downtime costs in case of a machine standstill.





Service Agreements

Opt for continuous productivity

HELLER Total Productive Services (TPS) – service agreements ensuring continuous performance in your production. Benefit from fixed prices, and thus, predictable costs for inspection, maintenance and repair as well as guaranteed response times for service and parts deliveries.



Training

Transform your staff into experts

From basic course to expert training: the HELLER Academy supports you with hands-on customer-specific training courses, covering the entire life cycle of a machine and helping your staff to become experts in their own right. Whether you opt for training at one of our global training centres or at your own premises, on request we offer you a customised training concept.



Rebuilds

Expect more than the standard

With constructive modifications of individual components or assemblies, HELLER Rebuilds open up new possibilities in production. Contrary to standard solutions, we respond to your specific needs to achieve optimal results with your existing machine.



Component Repair

Count on performance made to measure

The HELLER component repair centres provide repairs of machine components based on current value or installation of replacement assemblies and ready-to-install service kits. As a result, downtimes are minimised. The use of HELLER original spare parts and quality testing before delivery ensure that the components and assemblies are in fully functional condition.



Retrofit

Keep up with the best

Update your equipment without purchasing new machines – HELLER Retrofits help to keep your existing machines up to date. The continued use of the existing infrastructure and peripheral equipment makes retrofits a cost-effective alternative. Our specialists overhaul the existing equipment tailored to your needs and wishes to achieve improvements in productivity and precision. In addition to using HELLER original spare parts we ensure comprehensive quality assurance with a full warranty on the complete scope of services.



Used Machines

A safe choice in any case

HELLER Used Machines focus on the purchase and sale of used HELLER machines. The benefit to you: all HELLER used machines are in a technically flawless condition and checked in accordance with HELLER standards. Additionally, all services are provided by the manufacturer, ensuring you can fully rely on your used HELLER machine.



RETROFIT

MADE BY HELLER

Revitalising HELLER machines

One life is not enough for HELLER machine tools. The company impressively demonstrates this time and again whenever it contributes its retrofit experience. The customer specifies what he expects his old machine to be capable of again (or, for the first time) and we will do the rest, achieving amazing results with minimal effort.

The robust mechanical construction of HELLER machines guarantees long-term precision far beyond the depreciation period. After a service life of many operating hours, a machine tool's production performance and precision often no longer satisfy current requirements. Partly this is due to unavoidable wear and tear but also to the changing requirements of today's machining tasks. We can make your HELLER machines fighting fit for new tasks. With a solution that is more cost-effective than buying a new machine: the original HELLER Retrofit factory overhaul restores your existing machines to state-of-the-art condition. Our knowledge and quality awareness as a designer and manufacturer provide the perfect foundation for this.

A factory overhaul pays dividends for older machines from the BEA, MCP, MC 16/25/26 and MCH series. Not only will we restore the performance of the machines, we will also increase productivity by up to 20 percent. With a control upgrade and numerous retrofit options and software updates, the performance of the machine will enjoy an additional boost.

New machine or refurbishment?

The question many users ask themselves when productivity decreases is whether they should buy a new machine or invest in the refurbishment of an existing one. When calculating workpiece costs, it is not enough to consider the per-piece cost. Other important factors to be taken into account are spare parts availability and maintenance costs.

Andreas Markpfleger, Head of Technical Support Global Services at HELLER, takes a holistic view of the decision-making process. He says that apart from the component portfolio the production infrastructure has a major impact on the concept of the planned modernisation. "First of all, you need to look at the workpiece range. High dynamics and machine speeds are prerequisites for companies producing high volumes of identical parts. In these cases a retrofit is unlikely".

However, it is also important whether the machine is used as a stand-alone unit or if it is integrated into a manufacturing line.

Productivity can be increased by up to 20 percent.

Is it possible at all to integrate a new machine into a line and, if so, what are the impacts? Andreas Markpfleger explains that if, for example, the old machine was equipped with a 100-place rack-type tool magazine, purchasing a new machine would mean that new tooling, tool holders and fixtures would be required. "In this case I would not recommend buying a new machine. All in all, the question is always whether availability or per-piece costs are in the foreground." _

20%

MORE PRODUCTIVITY



RETROFIT PERFORMANCE LEVELS

- control retrofit: upgrade to state-of-the-art control technology, achieving an increase in productivity of up to 15% (depending on machine type, year of construction and machining process)
- HELLER Premium machine retrofit: productivity boost using all available technical upgrades
- HELLER Quality machine retrofit: cost-optimised, tailor-made machine overhaul

RETROFIT FACTS

- overhaul on site or at a HELLER location by experienced retrofit specialists
- extensive portfolio of rental machines to bridge the time until completion of the overhaul
- using only HELLER original spare parts
- same acceptance procedures as for new machines and testing of all overhauled components
- complete machine backed by warranty

BENEFITS OF A RETROFIT

- continuity of ongoing production
- minimised start-up risk on reinstallation
- avoidance of peripheral costs (process, tooling, pallets, clamping fixtures, spare parts)
- avoidance of multiple operating systems
- same warranties and guarantees as a new machine

Part range, infrastructure and the productivity level to be achieved not only determine whether a retrofit is a possibility, they also determine the scope of it. When replacing one component with another as part of a general overhaul, HELLER distinguishes between 'Quality' and 'Premium' machine retrofits. 'Quality' means that the original state is restored.

Wolfram Stein, Head of Component Strategy at HELLER, considers the 'Premium' retrofit the most cost-effective solution, focusing on optimal per-piece costs: "You don't expect to achieve higher productivity with a general overhaul, but in fact, a measurable increase is feasible," says Stein. "According to the customer's wishes, we can install all available technological upgrades released since the original delivery of the machine – enabling productivity increases of up to 20 percent."

Dr Gerd Schöllhammer, Head of Sales Support Global Services at HELLER, considers a retrofit an important contribution to Lifetime Productivity of a machine. Following the motto 'increasing performance and preserving value', the machines' productivity can be increased by up to 120%, resulting in a long life cycle and maximum productivity and reliability of HELLER machines – to guarantee economic efficiency of production throughout the equipment's service life.

As a result of the retrofit action, the existing machine is as good as new, delivering increased performance and productivity and hence greater benefit and security. We ensure that all components and the complete electrical equipment as well as the drive and control technology including the installation meet with the HELLER standards. /

Retrofit-advantages at a glance

GREATER SECURITY

- functional safety of machines: mandatory in Europe
- risk assessment in accordance with EN ISO 14121-1 or EN ISO 12100
- Siemens Safety Integrated feature
- safety standards EN ISO 13849-1 and EN 62061

GREATER PRODUCTIVITY

- latest generation Sinumerik 840D sl control
- operation identical to that of a new machine (Sinumerik Operate)
- Sinamics S120 modular drive technology for increased dynamics and precision
- latest technology cycles/automatic measuring cycles
- option: maintenance and diagnostics parallel to machining with new fluidics module

GREATER BENEFIT

- standardisation based on HELLER requirements
- re-use of existing tool sets
- re-use of existing clamping fixtures and pallets
- compatible with existing loading system (if any)
- HELLER BLUE energy efficiency
- possibility to install optional extras (e.g. measuring probe, tool breakage detection etc.)
- scope can be adapted to customer budget

For more information about the retrofit performance levels and benefits go to

 www.heller.biz/en/services/retrofit



Retrofit: a practical example

Initial situation and implementation

Before the retrofit, KSB AG based in Frankenthal/Germany precisely assessed their requirements in terms of future productivity and per-piece costs, concluding that retrofit measures do not always have to comprise high-end solutions. Although initially KSB AG had not specifically planned to retrofit their existing equipment, the company decided to revitalise two 12-year old HELLER horizontal machining centres model MCH 300 equipped with a Schuler automation system in order to make them fit for heavy-duty machining. For this investment, the company deliberately opted for proven solutions. They chose to keep the Siemens Powerline control but decided that all mechanical components subject to wear needed to be replaced. New equipment to be installed on account of the part range to be machined included a heavy-duty machining unit and the HELLER out-facing head for turning operations. KSB AG also wanted the machines to be prepared for a later electrical retrofit to ensure that the machining centres would not have to be disassembled again later on.

HELLER reconditioned the machine column and the guideways and integrated the out-facing head and the heavy-duty machining unit, meeting the high torque requirements and providing 60kW drive power and 1146Nm torque. In terms of electrics, the cabling, hydraulic lines and the Schuler automation were brought up to date using original parts.

KSB AG is well-prepared for the future

Production on the line was started in August 2016. Both, productivity and flexibility fully meet KSB's expectations. Although staff still need to familiarise with the first automation, the new level of flexibility is impressive. The pump and valve manufacturing process can be transferred onto the "new equipment" without any problem.

Initial situation and implementation

The retrofit experts of HELLER USA are currently working on a retrofit project for 49 HELLER machines of the types MCH 400, FST and TRS – a major project that will continue throughout the coming years. Nine years of intensive use with over 50,000 hours of operation are a testament to the rigidity of the machines installed at Detroit Diesel Corporation (DDC) in Redford/Michigan. Now the task is to ensure that they will continue to operate at the same high productivity level in the future. The retrofit is part of a \$50m production line renovation programme for the DDC production line. Keith Vandenkiesboom, Managing Director of HELLER USA, is proud that they have been entrusted with the retrofit: "A major job!"

Regular updates at DDC

Due to the smooth execution of the project and the great success achieved throughout the past 2 years, Detroit Diesel Corporation have now expanded the retrofit programme to take on six machines a year. The company praised the HELLER experts for their excellent work: the teams involved utilised manpower from HELLER USA and HELLER Brazil and completed the mechanical retrofit of the machines in only four weeks. The HELLER experts are currently continuing their efficient work.

HELLER USA also has other customers attracted to the retrofit programme. Keith Vandenkiesboom sees machine retrofit work as an important part of the Aftermarket business in the upcoming years and "will be adding controls upgrades and retrofits."



KSB AG, Germany



Detroit Diesel Corporation, USA

Apart from facts and figures, competent consulting and target-oriented commitment are what matters

To achieve their goal of being the most reliable premium supplier of ship and power plant engines, the Finnish multi-fuel engine developer Wärtsilä decided to produce key components in-house. Consequently, the company invested in a fully automated manufacturing line for the production of cylinder heads and connecting rods comprised of HELLER machining centres.



Several years ago, the company Wärtsilä based in Vaasa/Finland realised the importance of operating its own component manufacturing, and so established an associated investment programme. The goal was to achieve a high level of automation, using the existing flexible Fastems manufacturing system. The basic system allows to control the entire production chain of a component – from raw part entry to final inspection of the finished parts. The Vaasa location accommodates two of these systems: one is used for the machining of steel parts, e.g. connecting rods, the second one for cast iron components. To Jukka Saari, responsible

for Delivery Centre Development, the strategy was almost a natural choice: “We are not looking for automation at any price. But the raw parts are transferred from the foundry and forge to the system’s loading station and are then automatically machined right to the finished engine component. We use integrated robots and measuring equipment for inspection of the workpieces before they leave the manufacturing system. Additionally, every connecting rod is subjected to an ultrasound test. The automated approach has proved successful and contributes significantly to the improvement and assurance of quality and productivity.”

Expectations fulfilled by delivering performance and a cooperative partnership

Wärtsilä planned to invest in new machining centres as in particular the machine tools used for the machining of cylinder heads and connecting rods had to be replaced for age reasons. To the people responsible at the company it was important that the new machines perfectly fitted into the Fastems environment and fulfilled the high performance requirements.

The selection of a machine manufacturer caused heated discussions among the manufacturing experts. Whilst the engineering experts focused exclusively on facts and figures, the other decision makers involved

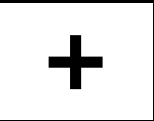
also placed the emphasis on competent consulting and reliable cooperation. During the decision-making process, Wärtsilä’s team of experts visited a number of machine manufacturers, looking at their references.

Ultimately, they opted for a HELLER 5-axis machining centre model FP 8000 for the machining of the cylinder heads and a HELLER 4-axis machining centre model H 10000 equipped with pallet changer for the connecting rods. Especially the machining process for the connecting rods had proved difficult in the past due to their material, a heat-resistant alloy containing chromium. In Nürtingen, HELLER performed trials with actual workpieces going to the limits of the machining centre. The result obtained, but

above all the commitment shown by HELLER during the trials convinced Wärtsilä. “During these visits, the doubts regarding the capabilities of the various machine manufacturers began to disappear. There are always issues to resolve when introducing a machine tool. But the way the HELLER experts responded to these issues and solved them was impressive. The same is true for the way the HELLER machines handled their tasks in the reference projects,” Saari recalls. That is probably also why today the company has a total of 6 HELLER machining centres in operation. Two of them were delivered to Vaasa as part of the Fastems system, four are installed in Trieste/Italy and used for the production of even larger Wärtsilä engines.

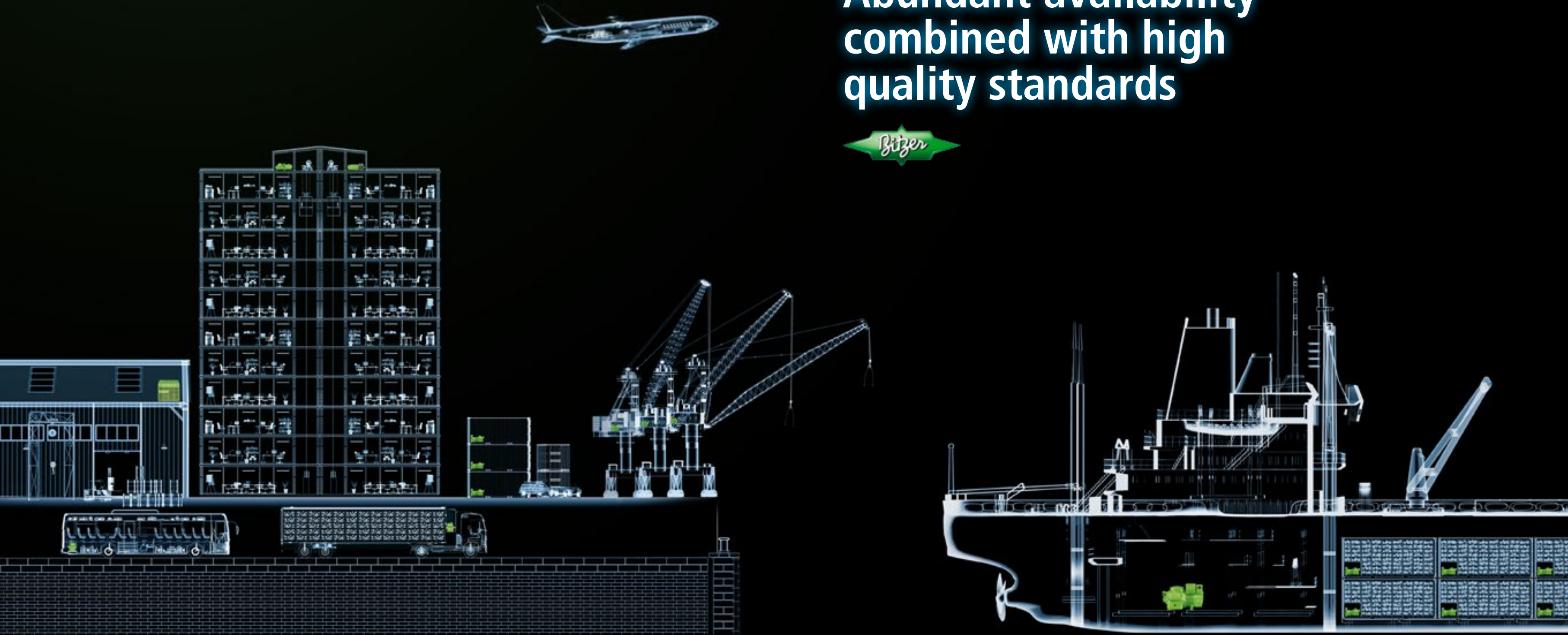
New engine puts production system to the test

In 2016, Wärtsilä expanded its product range with the highly efficient Wärtsilä 31 engine. What sets it apart is the cylinder head. The cast-iron component incorporates functions that were realised using separate parts in previous engines. Not only did the FP 8000 help Wärtsilä to solve these issues, it also helped to increase the required performance and precision. The 5-axis machine allowed to significantly reduce the number of machining operations and required set-ups. The machining of the cylinder head had been a very challenging task from the start and with the current engine versions the demands are even higher due to the precision requirements. On the HELLER 5-axis machining centre model FP 8000 this level of precision can now be achieved with only two set-ups and partly critical contours without any problem whilst providing high repeatability.



Wärtsilä Corporation is an internationally operating supplier of technology and life cycle solutions for the marine and energy markets. The company’s net sales exceed 5 billion Euro and it employs approx. 18,000 staff at more than 200 locations in over 70 countries. In marine medium-speed main engines Wärtsilä holds a market share of 50%. In terms of gas and liquid fuel power plants Wärtsilä engines have a market share of approx. 16%. Wärtsilä engines are produced in Finland, Italy and China. The production facilities in Vaasa were established in 1894.

Abundant availability combined with high quality standards



In search of replacement investments BITZER was looking for new flexible machining centres for the company's production facilities in Rottenburg/Germany. To ensure that the machines provided the required traverse paths and performance characteristics, the company conducted a comparative calculation. What was also important to BITZER was that the machines were able to meet its high quality standards without being equipped with optional extensions. The world's largest manufacturer of cooling compressors achieved this with two HELLER 4-axis machining centres model H 6000.



Semi-hermetic compact screw



Semi-hermetic reciprocating compressor (2-stage)



Semi-hermetic reciprocating compressor – ECOLINE

In 2014, BITZER had first discussions with manufacturers, performed a comparative calculation and also reflected its experience with the machine manufacturer it had worked with so far. Traverse paths, performance characteristics and the defined future targets were in the centre of the company's considerations. High availability was also among the requirements. Availability was an important factor, since the company had changed its manufacturing strategy. Instead of using a Kanban system, BITZER had decided to build to order in the future. With maximum batch sizes of 3 components, the machining centres had to be capable of performing reliably immediately after switch-on, even after scheduled downtimes.

Another key factor was service. Frank Brunner, Head of Production and Operations Scheduling: "We use some of our machines for up to 14 years in three-shift operation. We heavily invest in preventive maintenance, but the machine manufacturer also needs to be able to provide quick and reliable service. From our first discussions with HELLER we had the impression that they place a strong emphasis on service."

Following various tests focusing on operation, precision and loading flexibility, BITZER invested in two 4-axis machining centres model H 6000.

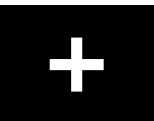
Active involvement of staff in the decision-making process

From the beginning, HELLER guaranteed the required availability of more than 95 %. Tooling was a much more complex subject. At the Rottenburg location, BITZER uses angular-drilling heads exceeding the usual weight standards, partly weighing more than 30 kg. Additionally, the company works with bridge-mounted tools with a 460 mm diameter and 280mm height. That is why it was important that there were no space restrictions impeding tool change and that the machine was capable of handling the tool weight. In response to these requirements HELLER provided a chain-type tool magazine with 150 storage places suitable for the handling of tool weights of up to 35 kg.

What was particularly interesting in the context of the investment in the two machining centres was the fact that the machine operators and maintenance staff were actively involved in the decision-making process. It also included trial machining of a test component at the HELLER TechnologyCenter. Although it was not possible to adopt the company's previous strategies due to the differences in axis kinematics, neither the precision nor the performance requirements (H 6000: 8000rpm, 43kW, 822Nm) posed a challenge for the machining centres.

According to Frank Brunner, quite the contrary was the case: "We are cutting high-quality grey cast iron. The material is not easy to machine, but for our part range the performance of the machine is more than enough. What is much more important to me is that with HELLER we have found a machine manufacturer offering machines able to meet our high standards without adding extensive options."

Technological leap in terms of cutting speeds
Since the HELLER machining centres were a replacement investment, the existing machines needed to be replaced within a short period of time without causing production losses. The plan worked out well. At the moment, the machines are still in the running-in phase but are steadily approaching their 95% target availability. All in all, Frank Brunner sees this as a confirmation of the trust the companies have in each other: "We were confident that new experiences would enable us to take a step forward. In terms of the H 6000 horizontal machining centres we were able to convince our management, highlighting their reliability and longevity, the HELLER service and also spare parts prices. Today, we feel vindicated in each of these arguments."



With 3,400 employees, the BITZER Group is the world's largest independent manufacturer of cooling compressors. BITZER operates sales companies and production locations for reciprocating, screw and scroll compressors and pressure vessels around the world. In 2016, the company with headquarters in Rottenburg Ergenzingen/Germany opened the SCHAUFLE Academy, an international training centre, named so in honour of Senator h.c. Peter Schaufler who for many years was the owner of the company. The centre provides application-oriented training courses under realistic system conditions and makes an important contribution to the advanced training of skilled employees from the refrigeration and air-conditioning industry.

HELLER

Active around the globe with a permanent focus on employee qualification

Today, HELLER belongs to the leading suppliers worldwide in the most important markets of metal-cutting manufacturing. The group of companies employs more than 2,500 staff. Their skills reflect in the quality of their work, resulting in the excellent reputation of HELLER around the globe.

HELLER is a leading partner for comprehensive manufacturing solutions for a wide range of industries. Among our customers are companies from the automotive industry and their suppliers, the general machine industry but also aerospace manufacturers, power engineering companies, job order manufacturing and many other industries.

One of the top priorities on our agenda is digitisation. Under the heading HELLER4Industry, HELLER pools inventive ideas and a diverse range of features, boosting machine productivity. Find out all you need to know on pages 14–17.

Customer orientation is the prerequisite for our success. In cooperation with our customers, our experts and engineers develop intelligent complete solutions with the goal to support them in mastering their production tasks and helping them to successfully compete in the market.

The key factor for our success, however, are highly qualified employees, contributing to the success of 'their company' with verve and enthusiasm. An average staff membership of more than 20 years speaks for itself. The majority of staff work at HELLER until their retirement. The reasons: maybe the positive working atmosphere and the fact that HELLER is a family business with a long tradition. Certainly it also has to do with the fact that the company offers attractive jobs providing interesting and varied tasks and challenges. _

HELLER looks back on a long history spanning 120 years. Throughout this time, the company achieved many milestones and numerous successes. The company is highly diversified, future-oriented and well set up for future challenges. As a globally active company we have production facilities in Nürtingen and in the UK, US, in Brazil and China and operate numerous sales and service locations. Read more about our global network on pages 26–27.

Our core business is machining and for that we offer a diversified product range, including 4-axis and 5-axis machining centres, mill/turning centres, machines for crankshaft and camshaft machining and flexible manufacturing systems as well as a modular range of services. Further areas such as electromobility, lightweight construction and Industry 4.0 are being investigated or already implemented.

Tenacity, innovative strength, keeping the finger on the pulse of the market and the development of technological expertise are what characterises HELLER. One example for this is the new CBC CylinderBoreCoating technology. CBC uses so-called electric arc wire spraying for the coating of cylinder bores of aluminium crankcases. In cooperation with Daimler we successfully developed the process, bringing it to maturity. Take a look into the future with us on pages 28–31.

At a glance: what HELLER has to offer

- modern, safe and skilled employment
- positive working atmosphere
- attractive fringe benefits
- a system of social values giving equal consideration to the objectives of the company and the interests of the workforce
- family-friendly employment with flexible working hour schemes
- workplace health management system with a wide range of offers
- systematic qualification and development of employees
- regular training requirements analysis as the basis for all training measures
- Together, employees and executive staff compose a qualification package implemented in daily practice
- company-owned TrainingCenter and HELLER Academy: well-targeted personnel development instruments and concepts
- promotion of new talent
- training of executive staff
- international staff exchange



HELLER is on a growth curve and very well positioned for the future. New faces welcome. **“We provide great opportunities for team players eager to work hand in hand with colleagues and customers in order to contribute to great results and transformations,”** says CEO Klaus Winkler.

Go to our website for further information about our fields of business, job profiles and current job offers.



<https://recruitment.heller.biz>

Start-up engineers

Acting as the link between HELLER and the customers

Once a machine leaves the HELLER factory premises, the sales process is concluded for the time being. However, much remains to be done before the customer can start production. Before acceptance by the customer takes place, the start-up engineers ensure that the machine is installed and connected ready for use in the fastest possible way. Additionally, these highly skilled experts guarantee the smooth start-up of the machines and equipment but also of the entire machining process, ensuring the customer gets off to a good start with HELLER.

A German adage says "You have to begin, before you can win." Life also teaches us that success is built from a strong foundation. That is why the machine start-up engineers play such a decisive role. Not only do they ensure that the customer can start producing with the new machinery as quickly as possible, skilled start-up engineers also guarantee smooth production with the new equipment in the long run.

If you were to compare the commissioning of a product on customer site with a train journey, you could say that the start-up engineers are the ones responsible for getting the carriages on the tracks in a seamless manner. Additionally, they work the switches to set the optimal direction. Therefore the goal is to ensure that the contracted project is optimally and effectively implemented according to schedule. HELLER start-up engineers are in close communication with the customers and also with the responsible project engineers of the HELLER Application Installation. The department is responsible for the global implementation of turnkey projects, comprising the installation and commissioning of not just one but several machines. Apart from transferlines, frequently this involves linked systems comprising up to 30 machines, resulting in an enormous expenditure

of time during the project planning and commissioning phase. How will the machines be linked on customer site? What is the targeted annual production volume? What specifics need to be considered during the installation? All these questions need to be clarified in advance between the project engineers and the HELLER proposals department. The start-up engineers are the ones implementing these things in their daily work. Having worked as skilled technicians in assembly or as process experts for several years in most cases, they provide the necessary technical know-how in assembly and/or machining. HELLER is working permanently on ensuring and developing the skills, quality and competence of staff to guarantee they are able to fulfil our customers' everyday requirements, meeting highest quality standards with the products, solutions, consulting and service we provide.

The working life of a start-up engineer often involves stays abroad lasting several weeks. After all, they accompany 'their' machines from the initial installation, commissioning and pre-acceptance by the customer at the factory in Nürtingen through to commissioning and final acceptance on customer site and the operator introduction.

Self-responsibility is paramount. That is why HELLER start-up engineers see unexpected things as a challenge and will find the best possible solution in the interest of the project. On site, they benefit from the fact that HELLER is operating 5 production locations and a network of 30 sales and service subsidiaries in the markets worldwide and is well set up internationally, ensuring the required service and commissioning competency is always guaranteed.

When asked about their self-concept, HELLER start-up engineers answer that they see themselves as the link between HELLER and its customers. They are all-rounders who know the HELLER machines inside out: they install and test them, interlink, adjust and fine-tune them and much more. They also keep the future machine operators in mind. To ensure a successful start of production on customer site the operators receive a thorough introduction to the machines. In other words, "You have to begin, before you can win."



THE BIG PLUS FOR OUR CUSTOMERS

Start-up engineers ...

- ... ensure a speedy installation of the machine.
- ... guarantee a quick start of operation.
- ... interlink the machines, if required.
- ... are highly qualified.
- ... collaborate cross-departmental and work as a team.
- ... are technically well versed.
- ... are available to answer the customers' questions.
- ... coordinate the necessary work.
- ... check all relevant components.
- ... are the first point of contact for customers on site.
- ... work on customer sites around the world.
- ... are flexible and open towards foreign cultures.
- ... optimise the machining processes of the project.
- ... familiarise the operators with the machines.

HELLER China

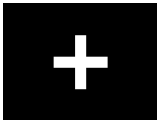
Part of a versatile production network

Changzhou at a glance

常州

- prefecture-level city in southern Jiangsu province of China halfway between the metropolis of Nanjing and Shanghai, about 150 km from both
- ca. 4,375 km² area
- ca. 3,490,000 inhabitants
- 2,500-year-old cultural city
- important attractions: Yangcheng County, the Tianning Temple of the Tang Dynasty and the Wenbi Pagoda of the Southern Dynasty

HELLER aims to further increase its regional market presence around the globe and to expand into new fields of business with strong local value-added chains. This will perfectly round off the company's existing factories and facilities in China, including its own Application Engineering and TechnologyCenter (founded in 2009) and a local spare parts warehouse. Since 1950, the company has been exporting its products to China. With the expansion of the regional presence, increasing the number of sales and service locations from two (Shanghai, Beijing) to a total of four, the company is making a sustained commitment to the Chinese market. In mid-2013, the new facilities in China began with the planning, assembly and supply of the first machining centres in accordance with market requirements. The services offered by the company also include repairs of sub-assemblies and machine overhauls.



HELLER Machinery (Changzhou) Co., Ltd.

Task:
final assembly, application and delivery of HELLER machining centres

Plant management and responsible manager:
Andrew Parkin

Plot size:
24,264 m²

Building floorspace:
7,200 m²

Production and manufacturing floorspace:
approx. 5,000 m²

Office floorspace:
approx. 2,000 m²

Building facilities:
production and manufacturing, warehouse, offices (Management, Sales, Marketing, IT, Services, HR, Finance), canteen

Number of employees:
approx. 100

Investment volume:
€ 6 m



Name Division Age Residence
Werner Möller OA6 58 years Bempflingen

“In July 2013, I spent two weeks working in China in the province of Shangdong, near the provincial capital of Jinan. The region is not developed for tourism. I found that very interesting, because it gives you the opportunity to catch a glance of the old China, e.g. people working the fields by hand. I was on an assignment to repair a transferline on customer site. I had to travel on relatively short notice and needed to apply for a passport quickly. The whole experience was very exciting, great fun and immensely interesting. I was also impressed by the food, although it was less exotic than I had imagined. The friendliness of the people in general made a big impression on me. Whenever we gave the children little presents they were absolutely delighted. To me, my stay in China was a valuable life experience. And it was absolutely great that HELLER gave me this opportunity.”



Far from home

Employees of our company who spent some time in China share their impressions and experiences with us.

Name Division Age Residence
Andreas Queck AAPE 54 years Kohlberg

“I have been to China on business travels about 45 times with stays lasting one to three weeks. I visited customers or suppliers for discussions or acceptance negotiations. My destinations were mostly located in the centres of industry and I the noticed the extreme environmental pollution in these areas. Receiving final acceptance of a system sometimes proved quite a challenge. Establishing a common basis of understanding, coming to an agreement, convincing people or understanding the mentality of the Chinese was very difficult at times. They very much respect the way Europeans behave. Appearance is also very important to them. Sometimes language was a problem and communication was difficult. On other occasions, missing coordination was a challenge. Unfortunately, quite often, punctuality or the ability to plan in the long term is lacking. What I found odd is that often agreements made in writing were not adhered to. I also made the experience that conditions on site were not as previously confirmed in writing by the customer or supplier. Partly, people’s views differed greatly. However, once you have gained people’s trust, discussions and agreements are harmonious and constructive for both parties. Basically, I always enjoyed my stays in China. What really impressed me was the great collaboration with service staff from HCW. Reliability and optimal support – also outside business hours – is paramount to HELLER China. No matter, what problem you are dealing with: their advice and support is guaranteed. Collaboration with our Chinese colleagues at HNT has also been a pleasure. Apart from their helpfulness I noticed that people from China are very eager to learn and have a strong thirst for knowledge. They are open to being explained or taught things.”

Name Division Age Residence
Marc Lauster CMHE 36 years Wendlingen

“In April 2012, I had the chance to visit Changzhou College of Mechatronic Technology for about a week. Our facilities in Shanghai are located near the school and my task was to explore opportunities and new experiences for our apprentices. During my stay, I gained a very positive impression of China.

It is a country of multiple cultures, offering a colourful diversity of culinary and cultural traditions, especially in the big cities. The influence exerted by the state in the form censorship and stringent security measures is noticeable. I also noticed that the gap between rich and poor is much wider in China. In my experience, people in China are very obliging and polite, especially when addressed with respect. I also gained the impression that people immediately recognise you as being European and as such practically try to fulfil your every wish.

I liked most of the food in China. But there were some dishes I did not want to try because they looked too exotic to my taste. The language barrier is definitely the greatest challenge. Communication in English is possible within limits. However, if that does not work, you have to resort to sign language. Using public transportation is also difficult due to language problems and the great distances in the country. For the locals, having to cover a distance similar to that from Stuttgart to Munich on their everyday journeys is nothing unusual.”



Application Day and TaleNT Day in Nürtingen



On 20 May 2017, HELLER staged its 4th Application Day titled 'Backstage@HELLER Ausbildung' and on the same occasion hosted the 5th TaleNT Day in cooperation with 7 local companies from Nürtingen, presenting their apprenticeship programmes. The event targeted boys and girls who will be completing their school education in the coming year, eager to learn more about the available job prospects. HELLER used its home advantage and opened the doors of its training workshop and the adjacent TechnologyCenter to visitors. During their stay, they had the opportunity to gain insights into daily working life and the modern, technically oriented training facilities and were able to learn more about the broad range of apprenticeships and study models available. In addition,

numerous promotional and information stands, e.g. by the HELLER Apprentices' Initiative, HELLER Health Management and the BKK Voralb health insurance, offered information and an opportunity for personal discussions. In a hands-on do-it-yourself workshop, a group of 40 school graduates constructed their own illuminated HELLER 'H'. Additionally, the young people were able to attend a presentation focusing on 'tips for job applications' and to have their own application papers checked in terms of structure and contents. The informative Application Day was rounded off with a visit to the HELLER TechnologyCenter. There, participants were able to take a closer look at the HELLER product range and also attended a presentation showcasing various machining trials.

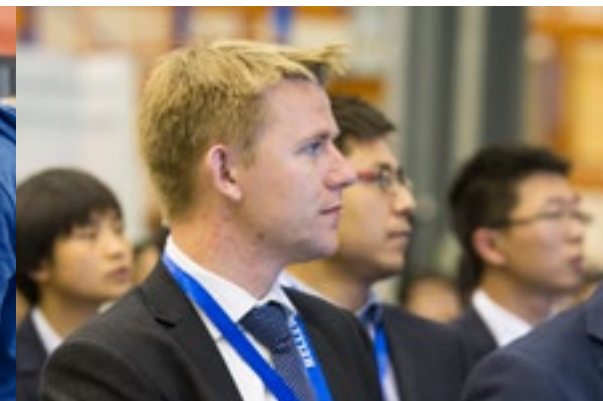
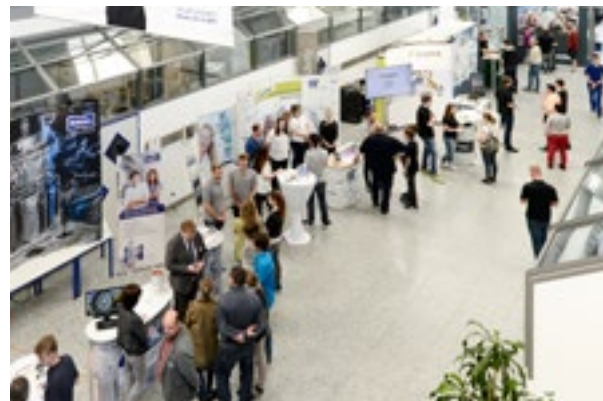
Future executives in Changzhou



In Germany, co-operations with universities provide an excellent opportunity for companies to attract qualified young professionals. In China, this is no different.

Xi'an Jiaotong-Liverpool University in Suzhou, for example, has its own curriculum for future executives of the China Railway Rolling Stock Corporation Limited (CRRC), a national rolling stock manufacturer. During a specially staged in-house event at our subsidiary in Changzhou on 6 April 2017, around 120 students of Suzhou University – all from CRRC – visited the HELLER facilities to learn more about the business and sales strategies of HELLER China. According to Andrew Parkin, Managing Director of HELLER China,

they received only positive feedback from visitors, who also wanted to learn more about Modern Production and Corporate Culture. According to Parkin, the students were very impressed by the presentations given at the in-house event, also because CRRC still operates a more than 30-year old HELLER crankshaft machine and is very satisfied with its availability and quality.



Introducing:
Our new Head of Training



Michael Holl ...

... was born in Göppingen on 26 October 1984.

... completed an apprenticeship as an Industrial Mechanic in Machine and Systems Engineering at Schuler Pressen GmbH in Göppingen.

... worked in Manufacturing and Assembly of various machine-building companies.

... obtained various further qualifications, including certification as a Master Craftsman for the Metalworking Industry and as a Technical Business Management Specialist.

... before joining HELLER worked as an Instructor and Site Coordinator for Training at Schuler in Göppingen.

... is an active member of the voluntary fire brigade.

... is married.



“We need to stay on the top of our game to be competitive”

If you always do what you’ve always done, you’ll always get what you’ve always got.

This quotation from American automobile manufacturer Henry Ford became Michael Holl’s maxim at an early age. Having obtained his General Certificate of Secondary Education and completing his training as an Industrial Mechanic in Machine and Systems Engineering, the young man realised: “I want to get on in life, obtain further training and continue to learn.” That is why he then obtained an advanced technical college entrance qualification. He then completed further training as a Master Craftsman for the Metalworking Industry and obtained vocational education and training qualifications. To expand his knowledge and experience, he participated in a work-integrated learning programme to become a Technical Business Management Specialist. Before joining HELLER, he was employed at Schuler Pressen GmbH in Göppingen where he worked as an Instructor and Site Coordinator for Training.

On 30 January 2017, Michael Holl officially succeeded former HELLER Head of Training Gerhard Mack. One of the positive things Michael Holl noted about HELLER is the very friendly and helpful staff. Numerous long-serving employees and open communication between team members are proof of the positive working atmosphere. Being a team player himself, Holl emphasises the term “team”, because he is convinced that to reach a goal you have to work as a team. According to him, his motto is: “one for all, all for one”, stressing that in a good team it was important “for everybody to share responsibilities and to delegate and share tasks in a cooperative manner.”

Actively participating in shaping the future of HELLER in an innovative manner is extremely important to Holl who describes himself as single-minded, curious and open to change. “Open communication is very important to me as well as fostering a culture of constructive criticism, appreciation for the young generations and promoting the transfer of knowledge,” he explains. His focus is also on the customers. By training people to become highly-qualified specialists he wants to contribute to meeting the customers’ needs and requirements. “We need to stay on the top of our game to be competitive.”



HELLER receives awards

Focus on long-term personnel development and welfare

FOCUS: Best Employer 2016 / 2017
Finding Germany’s Best Employers (2016) was the goal of an 18-month survey conducted by German news magazine FOCUS among the employees of more than 2,000 companies, using an online access panel and cooperating with XING and the Kununu rating portal. In the overall ranking, HELLER took 108th place and in the Machinery and Plant Engineering industry ranking an excellent 7th place. Among the metal-cutting machine tool builders we even succeeded in taking the top spot.

The 2017 survey is already the fifth one conducted by FOCUS news magazine to find Germany’s Best Employers. Compared with the previous year, HELLER has moved up in the ranking: in the Machinery and Plant Engineering industry ranking, HELLER climbed to an excellent 2nd place (2016: 7th place). Taking only medium-sized enterprises or machine tool builders into account, HELLER even holds the top spot. To acknowledge this achievement, Focus Business – a special edition of the magazine – featured a multi-page article portraying our company.

Our employees are our most valuable asset. Therefore we are delighted with the result and also feel honoured. We would like to thank them and look forward to continuing the good cooperation for many more years!

Municipal Association for Youth and Social Affairs in Baden-Württemberg honours HELLER as Exemplary Disability-Friendly Employer
In February 2016, HELLER was honoured as an Exemplary Disability-Friendly Employer by the Municipal Association for Youth and Social Affairs in Baden-Württemberg (KVJS). According to Professor Roland Klinger, Director of the KVJS, employing severely disabled people has been part of HELLER’s corporate culture for many years.

Federal Employment Office: 2016 Education Certificate
For its exceptional commitment in the field of training HELLER received the Education Certificate of the Federal Employment Office of Germany. The criteria for awarding this certificate include training rate, creation of additional apprenticeship training positions, above-average social commitment and quality of the vocational training. Klaus Winkler, Chairman of the Board of Directors at HELLER, explains that professional education has a long tradition at the company and is of paramount importance to HELLER. “Our first apprentice workshop was founded more than 100 years ago. Until today, our company is known throughout the whole region for offering high-quality apprenticeships for young people at very high standards.



HELLER takes the initiative

Tolerance instead of racism and disrespectful behaviour



‘Respect! – No Room for Racism’ Initiative
“HELLER as a company is open, many-faceted and diverse,” Bernd Haußmann, Chair of the HELLER Works Committee, is proud to say. Together with Managing Director Klaus Winkler he received the sign saying ‘Respect! No Room for Racism’ from Gerhard Wick, First Authorised Representative of IG Metall trade union in Esslingen.

The goal of this initiative is to prevent any kind of discrimination, for example, based on ethnicity, gender, religion or ideology. With the IG Metall trade union the initiative won a new and powerful partner in March 2011. The trade union’s priority is to communicate the message throughout the workforce. Racism is an issue not merely found in football stadiums or pubs, it can also be found in companies. Gerhard Wick is pleased that both the HELLER Works Committee and the Management support the initiative.

“Making a clear and visible statement to every visitor with this sign is important to us, especially in these times,” explains Bernd Haußmann, adding: “Of course this is a lifelong project. Rather, it is a process that we need to continue as this issue will never lose its topicality.” Klaus Winkler is strongly supportive of this commitment. He knows that mutual respect is an important cornerstone of corporate culture, especially considering the fact that HELLER employs people from many different countries and cultures. He emphasised that the company was proud on having good staff relations and that the initiative underscored HELLER’s strong commitment to the fair and respectful cooperation of all employees. “We advocate tolerance and respect for other people. At HELLER there is no room for racism and disrespectful behaviour.”

“We advocate tolerance and respect for other people.”

Klaus Winkler, CEO HELLER Group

HELLER: Health at work



Health Management at HELLER

Each year, we organise a range of different measures for our staff and their health and providing information various health-related topics. On the following pages you will get an insight into our programme and tips that will hopefully support you in enjoying a long and healthy working life!!

Guiding principle

Qualified, motivated and healthy employees are an essential, if not the most important prerequisite for the current and future performance of our company!

Our Health Management is about more than preventing illness or implementing occupational safety measures. Rather, we want to maintain and support our employees' physical and mental performance in the long run.

Tips & tricks

Long-term health at work – not only for HELLER employees:

Self-treatment of trigger points and fascias

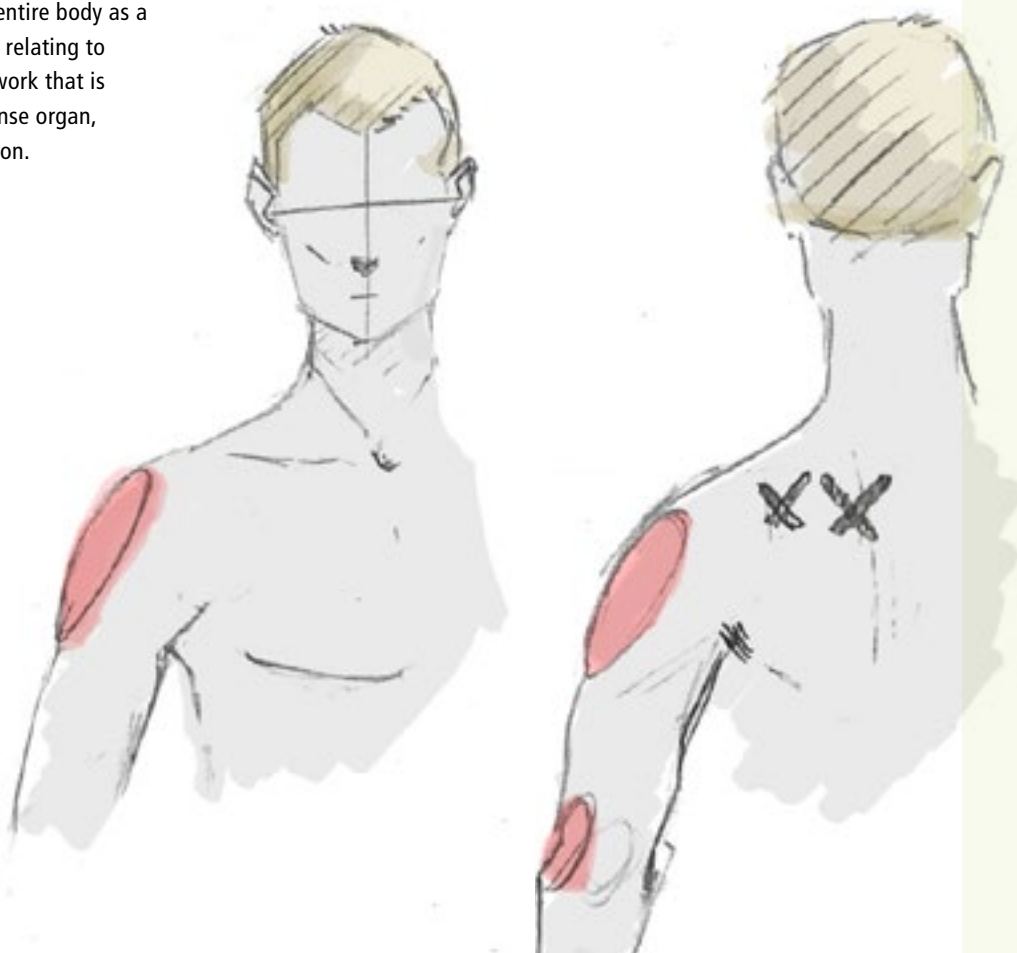
What are fascias and trigger points? Fascias are soft tissue components of the connective tissue that span the entire body as a connecting network. In case of injuries and damage relating to physical overload, it is not muscle but the fiber network that is concerned. Fascias represent our most important sense organ, which is the basis of our coordinative body perception.

Trigger points are hardened muscles and tendon insertions. They respond to pressure and can lead to painful strain in other body regions. Trigger points result from poor posture, lack of exercise, sports injuries, arthrosis and one-sided strain as well as from mental problems. Experts concur that approx. 80 % of pain in the musculoskeletal system is caused by trigger points.

Now it's your turn!

You can treat your trigger points yourself by means of precise self-massage. You will need a pencil, a marker or a felt-tip. A pen is not suitable.

The following exercises can be incorporated into your day-to-day work: focus on the most painful spot of a sensitive point within the muscle. Massage this point, but do not intensify the pain. On a pain scale from 1 to 10 you should move between 4 and 7. The red areas show the adjoining parts of the body which the pain can radiate into.



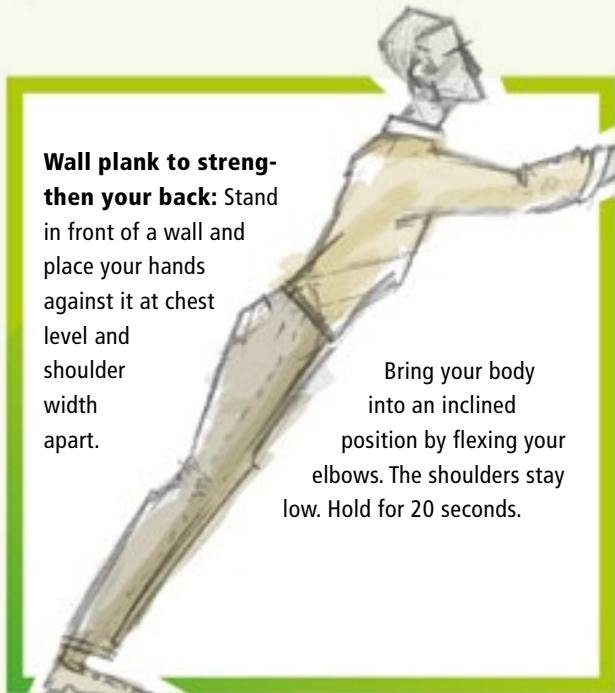
Ergonomics at work

650 muscles and 206 bones support us day by day. In doing so, they withstand strains which often exceed the body weight many times over. A healthy and strong musculoskeletal system is thus a prerequisite for everyday life without restrictions and pain. Regular exercise by active and varied movement trains our muscles and ensures stable bones. People who integrate exercise into their daily life and who strengthen their muscles every day are getting themselves fit – for work, for the family, and for life.

Ways to make your day-to-day work more active:

Get up from your chair frequently: create opportunities to get up and walk around, e.g. by talking to colleagues, by placing work equipment far away from your desk, by making phone calls whilst standing etc. Do not lift or carry anything that you could pull or push, as well. Always lift loads from a squatting position with legs spread and a straight back. Always carry large or bulky loads with the help of another person.

Exemplary exercises you can perform at your workplace



Wall plank to strengthen your back: Stand in front of a wall and place your hands against it at chest level and shoulder width apart.

Bring your body into an inclined position by flexing your elbows. The shoulders stay low. Hold for 20 seconds.

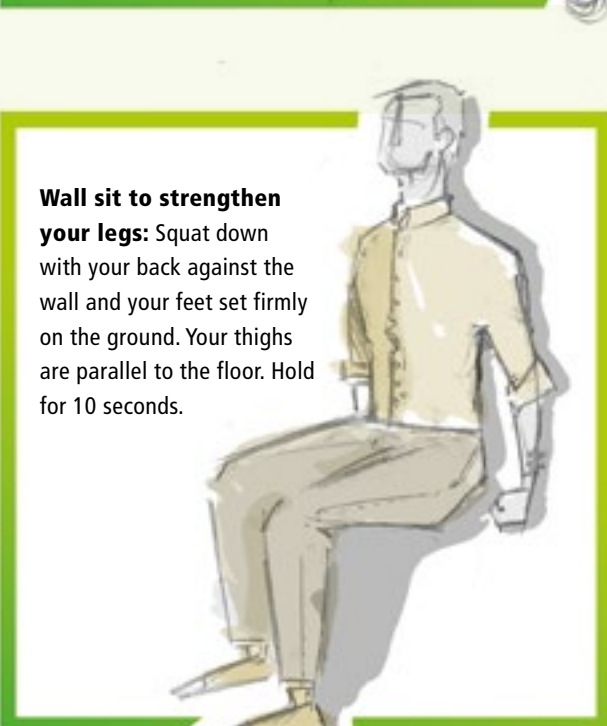


Squats to strengthen your torso, buttocks and legs:

Stand with legs hip width apart and distribute your weight evenly on the whole foot. Push your buttocks backwards while raising your arms until they are in line with your spine. Your back is slightly tilted forward. Hold this position briefly before getting back up.



Back mobilisation: Tilt your upper body forward and place your arms on your thighs. Round your back while breathing out, and straighten up while breathing in.



Wall sit to strengthen your legs: Squat down with your back against the wall and your feet set firmly on the ground. Your thighs are parallel to the floor. Hold for 10 seconds.

Healthy and motivated employees through healthy leadership

In 2017, the module "Leading healthily" with the topics stress management, mental activation and mental relaxation will again take place within the scope of the management seminar series. HELLER offers possibilities to deal with mental strains. Our company doctor is available for a confidential conversation and further information if required.



Moving break

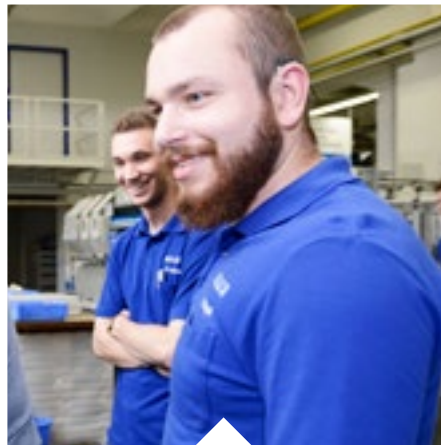
Whether office, assembly or production workplace – most people are familiar with muscular tensions and poor posture. Individual exercises for mobilization, strengthening, stretching and relaxing will help. And this is exactly what our Moving break is made for: a short and effective exercise of 15 minutes right at the workplace which promotes our employees' health and allows them to zone out.

When? Various dates in 2017. Duration: 15 minutes

Where? Directly at the workplace

Direction: Lead Skilled trainers and sports therapists

Our Health Management program 2017: an extract



Apprentice health

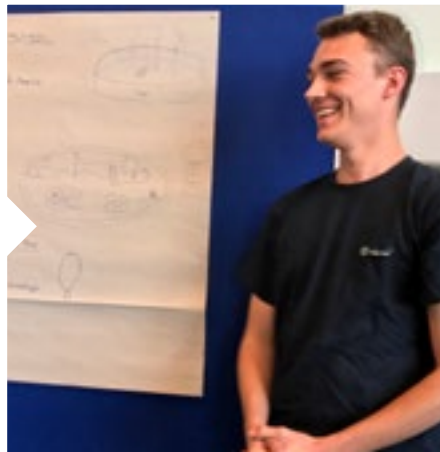
Our apprentice health concept offers events with information, tips and practical exercises relating to exercise, nutrition and stress (prevention).

- Module 1: Work & health (October)
- Module 2: Smoking & addiction (February)
- Module 3: Exercise & physiology (October)
- Module 4: Nutrition (May)
- Module 5: Ergonomics at work (February)
- Module 6: Stress, strains & exams (October)

When? February / May and October / November 2017

Where? Lehrwerkstatt HELLER, Nürtingen

Duration: ½ day



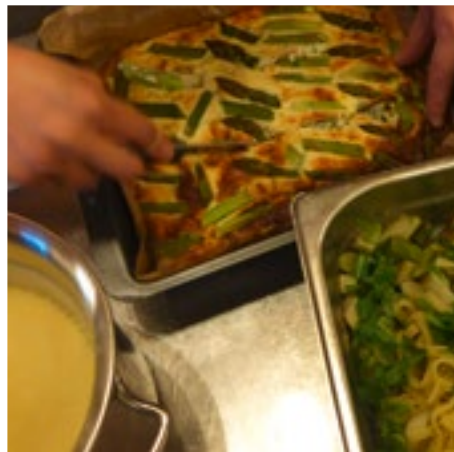
Cooking classes

On a variety of topics, starters, salads, main courses and desserts are prepared and afterwards eaten together.

When? Various dates in 2017, 18.00 – 21.00

Where? HELLER canteen

Who? Speaker: Daniela Merkle, dietician





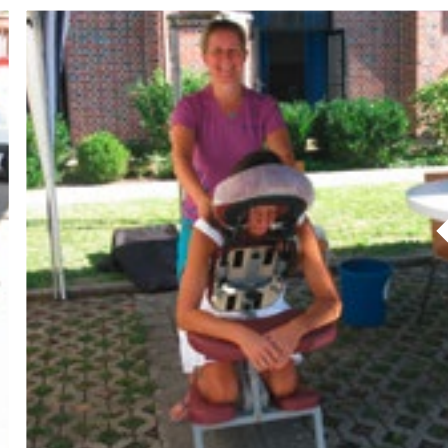
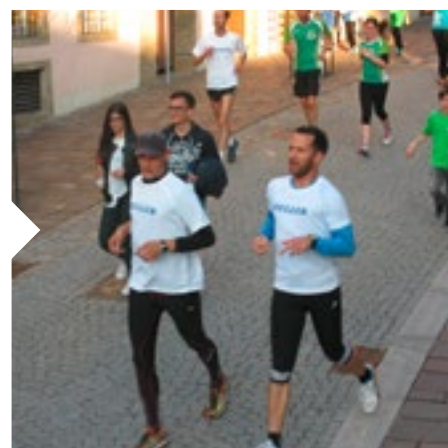
Health Day Nürtingen

The 6th Health day took place on the 5 July. Under the motto Time for your Health, each employee was given 1.5 hours by HELLER to get information about health-related topics and to make use of various offers.



23rd Charity City Run of Nürtingen

On the 5 May, HELLER joined the traditional Charity Run in Nürtingen for the 13th time in a row. Companies from Nürtingen made a donation for each completed round, no matter if the participants were jogging, walking or strolling the distance.



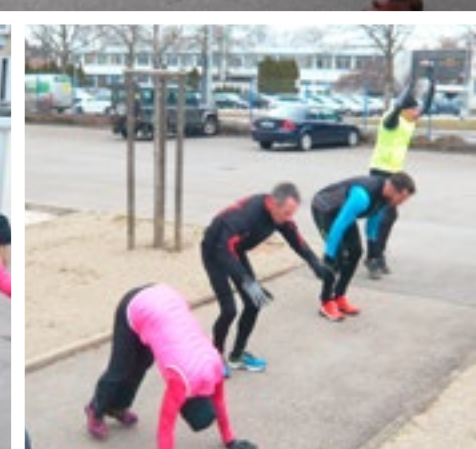
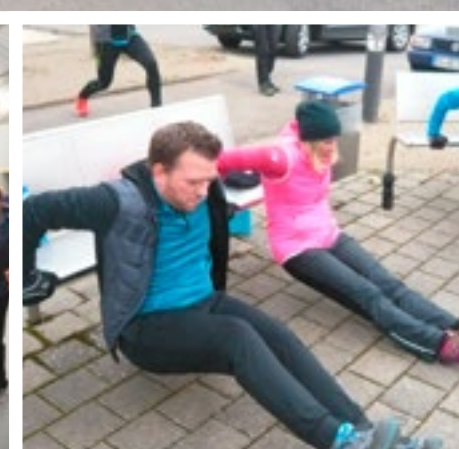
Weekly sports classes

- Rückenfit
- Fit Trio (stamina, strength training, relaxation)
- Cross Fit
- Pilates
- Taiji
- Full-body strength training



Health Management Action Weeks

In October, the Health Management Action Weeks with many health-related highlights will again take place. A range of health offers regarding exercise, stress and nutrition, lectures about various health related topics, highlights in the canteen and special offers with Dr. Lechner



Dear employees

More information on our Health Management on available in the HELLER Intranet and of course in our Health Management booklet. If you have any questions or suggestions, please contact

Catherine Ziegler
Sports scientist M.A.
Phone: +49 7022 77-5089
E-mail: Catherine.Ziegler@heller.biz



IMPRINT:

Publisher:
Gebr. Heller Maschinenfabrik GmbH

Project leader:
Marcus Kurringer

Conception and design:
Helge P. Ulrich, Thomas Steigerwald / echolot.GROUP

Editing/text:
Franziska Hapke / echolot.GROUP
Tanja Liebmann-Décombe
Manfred Lerch
Martin Ricchiuti / Carl Hanser Verlag

Photography:
Jens Gelowicz
Jürgen Altmann

Printed in Germany:
Druckerei Mack

On the occasion of our in-house exhibition HELLER WerkTage 2018 in Nürtingen
we will present you the second edition of our magazine.

HELLER online



www.facebook.com/HELLERMachineTools



www.xing.com/companies/gebr.hellermaschinenfabrikgmbh



<https://de.linkedin.com/company/heller-maschinenfabrik-gmbh>



www.youtube.com/HELLERMachineTools

Gebr. Heller Maschinenfabrik GmbH

Gebrüder-Heller-Straße 15
72622 Nürtingen
Germany
Phone +49 7022 77-0
Fax +49 7022 77-5000
info@heller.biz
www.heller.biz/en

A background image showing two men in a conversation. On the left, the back of a man's head and shoulder are visible; he has dark hair and a beard and is wearing a light blue sweater. On the right, a man with dark hair, a beard, and black-rimmed glasses is looking towards the first man. He is wearing a white shirt and has his hands raised in a gesturing motion. The background is a plain, light-colored wall.

HELLER

**Is HELLER familiar
with the challenges of
today's production?**

**We draw on more than
120 years of experience
to offer you the
solutions you need.
Let's talk about it.**

HELLO_

HELLER solutions: Knowing how it's done.