

Edition 3 | September 2018

HELLER

The Magazine



***“Let him that would move
the world first move himself.”***

Socrates

Everything around us is in motion – including us as humans and us as a company. And that’s a good thing. If you don’t move, you will make no progress nor make any difference.

The main topic of this third issue of *HELLER the Magazine* is **mobility**.

Getting from A to B, being ‘mobile’, but also exchange, flexibility, change and being ready for it – mobility has many different facets. But read for yourself!



Dear customers, partners and colleagues

Everything is in motion. Everything in our universe is on the move and, of course, so are we. And we are moving things, too. For example, machines, vehicles, data or knowledge – sometimes even our own limits by pushing them further.

Movement is more than going from 'A to B' or touching your toes with the tips of your fingers. We have collected the stories behind all this and much more in relation to mobility as the **key** topic of our times.

As a global company, we cannot deny this megatrend. Therefore, we have made mobility the focus of the third issue of *HELLER the Magazine*. We want to show you that mobility is

more than what we all associate with the term at first glance. That's why we are shining a spotlight on the topic from different angles and not only from HELLER's perspective.

I hope you will enjoy reading and browsing through this issue and look forward to receiving any feedback you may have.

Klaus Winkler
CEO HELLER Group



28_

Cities without cars?!

Editorial

- 06_ Keep moving
- 10_ Mobility from the point of view of HELLER: change brings opportunities
- 16_ Did you know? Facts on mobility worldwide
- 18_ Ultramarathons
- 28_ Cities without cars?!

Technology

- 48_ Big Data turns into Smart Data
- 52_ HELLER4Use
- 54_ HELLER4Use tried and tested
- 56_ MAPAL: mobility in transition

Portrait

- 34_ Black on white
- 36_ Mobility through the ages
- 38_ New perspectives
- 42_ Focus on mobility: HELLER locations around the globe



38_

New perspectives



60_
Productive all along the line

Production

- 60_** Productive all along the line
- 64_** 13 stations ahead: new flow line at HELLER UK

Services

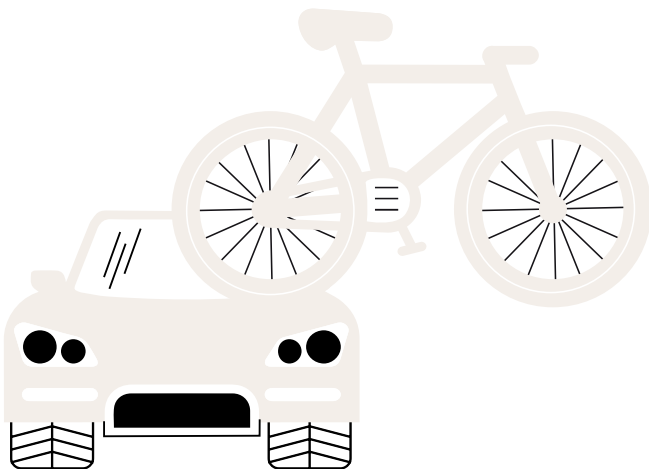
- 70_** HELLER Services: Lifetime Partnership
- 72_** HELLER service base concept / HELLER Protect Plus

Market

- 76_** Close-up: flexible manufacturing
- 80_** Knorr-Bremse Rail Systems UK: braking systems on the fast track
- 82_** GKN Aerospace: uplift for aircraft parts production
- 84_** Everything in motion: Mechanical Engineering as the driving force of mobility



102_
News & events



People

- 90_** HELLER Technology Center
- 94_** The new CEO of HELLER USA
- 96_** HELLER Italy
- 100_** Facets of mobility
- 102_** News & events



TEXT Franziska Hapke
PHOTOS tunart / Mauricio Mascaro / Ye Fung Tchen

Keep moving

Mobility begins in the mind: to create something new, you have to question the old. It takes courage to leave your comfort zone, daring to push your own boundaries. However, it can be worthwhile and even a very rewarding experience, helping you to mature as a person or even enhancing your life.

Similar to the adage "If you don't ask, you'll never know", you could also say: "If you don't move, you will make no progress."

Everything in motion

The planets are moving, just like the asteroids and everything else in our universe. On Earth, the sea level rises and falls with the tides and the tectonic plates are shifting in the course of time. We humans walk, run, drive, swim and fly. However, these known modes of locomotion are not enough for us: we are looking for more ways to 'move' – ideally upwards, climbing the career ladder or advancing our status in society. At work, however, what we want are flat hierarchies, although they may seem rigid at first. But the impression is deceiving: they are what it takes to make knowledge 'mobile' and what simplifies the exchange between managers and employees. Work time models are also becoming increasingly 'mobile': 'working 9 to 5' was yesterday. As so often, mobility also means flexibility in this context: home offices are the trend. Why should we have to drive from home to work? In today's knowledge society, only those wanting or having to engage in a personal exchange do that. After all, the conscious avoidance of geographic mobility helps to reduce idle travel time, costs and office space as well as the environmental impact.

The ubiquitous magic word: digitisation

We also want to – and must – 'move' data: collecting, filtering, preparing and making them available in the way they are needed at a particular moment. As a new technology, digitisation is a good 'excuse' to question the old and to create something new, when we would normally not dare to do so. Digitisation will resolve previous [movement] habits anyway. Whether it really will be the solution to reduce traffic and congestions, as many are assuming, cannot be answered so easily at this point. However, what seems to be clear is that rigid – immobile – systems need to be broken up by and by and to be replaced by different ones.

'M' for 'more'

The term 'mobility' is often used synonymously with 'traffic', but obviously, mobility is more than that. In a general sense, mobility is manoeuvrability; however, mobility also means exchange, flexibility, change and also being prepared for all this. Mobility is more than going 'from A to B', more than the 'e' in 'electric' and driverless cars, more than networking and mobile data, more than the stellar rise from rags to riches. Mobility provides the foundation of our life and work.

Productive, dynamic, flexible

Ever since its foundation more than 120 years ago, HELLER has seen itself as an innovative and solution-oriented partner to its customers and will remain so in the years to come. In order to meet the challenges posed by the future, we have adopted a forwarding-thinking approach. With a broad and flexible range of products providing great versatility, with application and service know-how, an extensive global customer base from the most diverse industries as well as a global network, comprising production, sales and service locations around the world, we have the capabilities to provide solutions for today's and tomorrow's manufacturing tasks.

"Mobility, and also the machine tool industry, will definitely see changes, but will continue to play a significant role in the future," HELLER COO Manfred Maier is convinced.

+

Mo|bil|i|ty

[məʊ'bi:lɪtɪ]

Word meaning/definition

1. the ability to move physically

Examples:

- _ A knee operation has restricted his mobility.
- _ Mobility is part of physical education.

2. movement within or between classes and occupations [of individuals or social groups]

Use: sociology

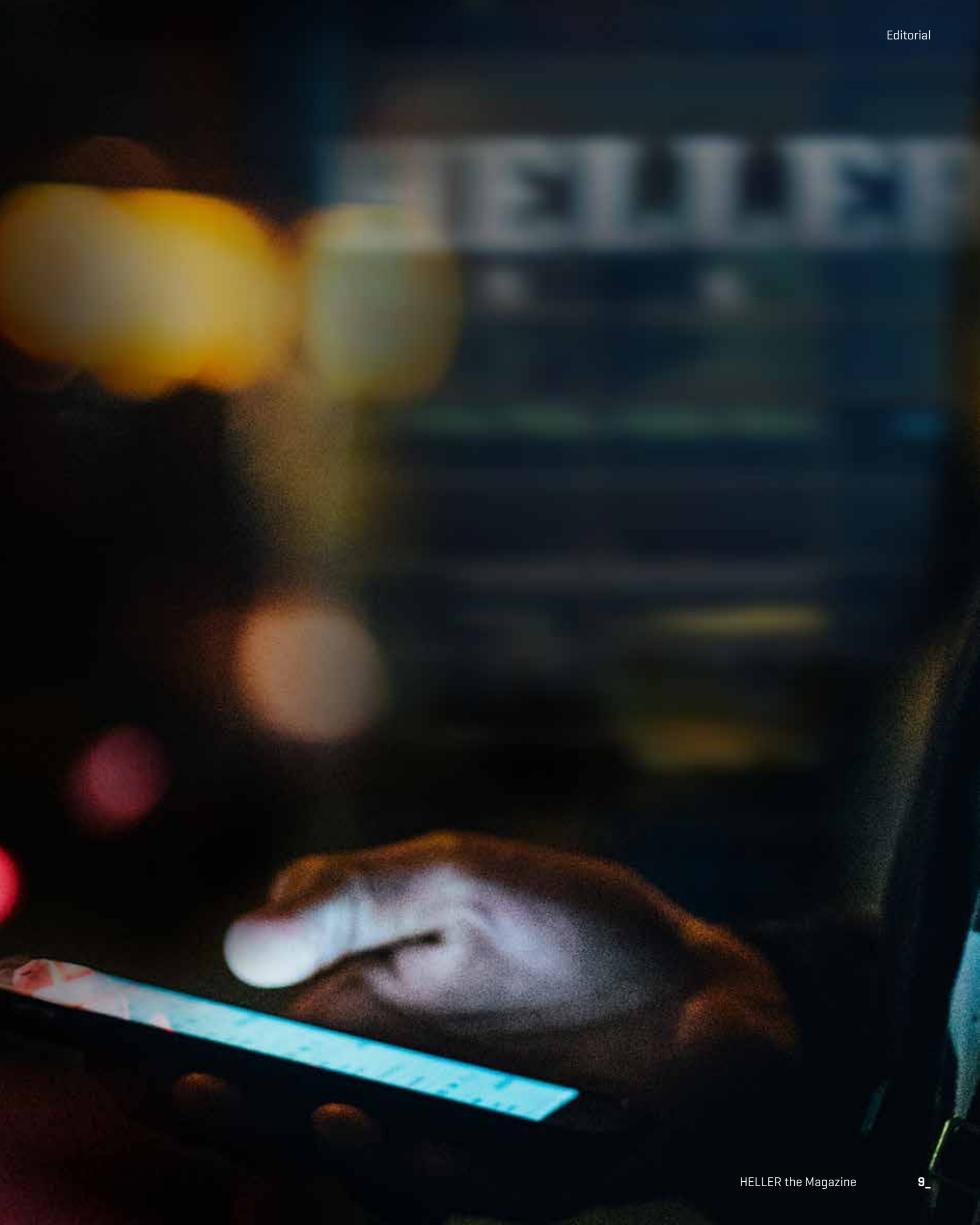
Example:

- _ In times of economic recession, there is less social mobility.

Origin

Latin *mobilitas*

Source: Collins Dictionary



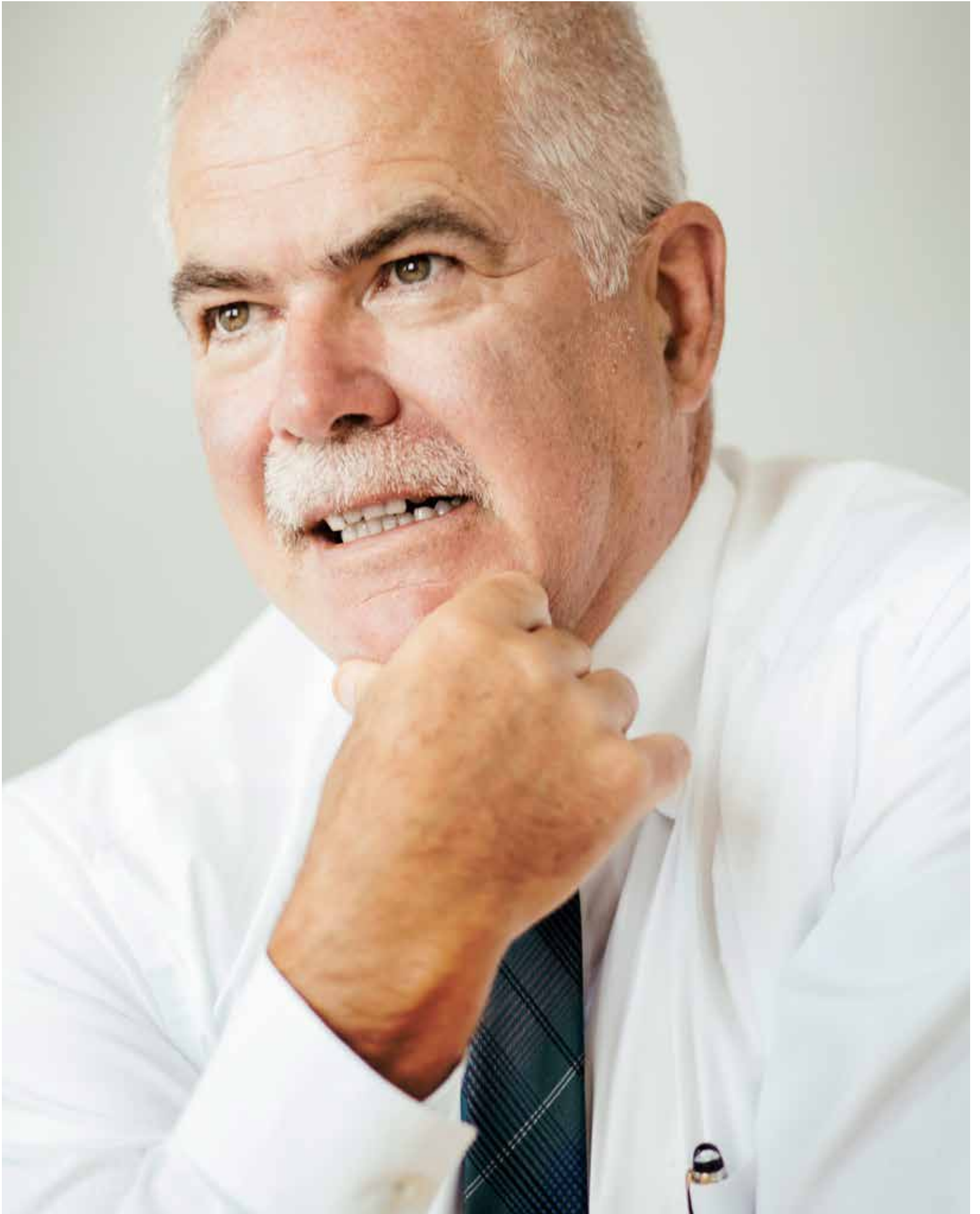
**IN
TER
VIEW**

Mobility from the point of view of HELLER

Change *brings* opportunities

Companies serving the automotive industry as a core market such as HELLER are facing enormous challenges given current developments like for instance electromobility. Manfred Maier, COO of the HELLER Group, confirms this. And yet, he believes that the company is already headed in the right direction and, instead of a risk, rather considers the forthcoming change a real opportunity for further growth.

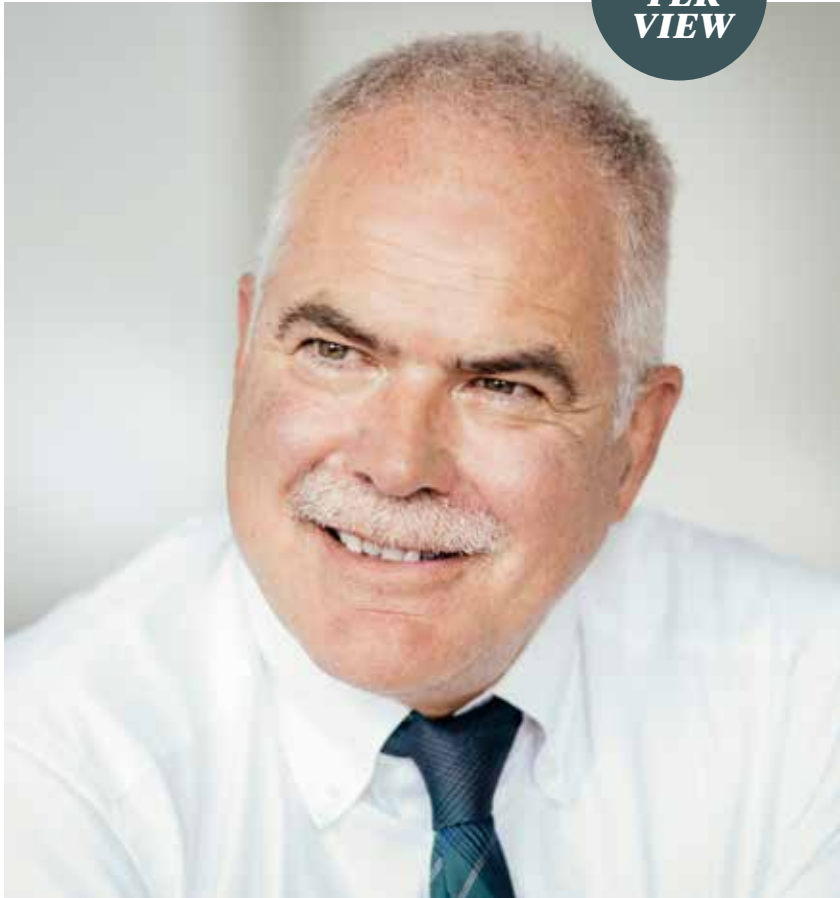
TEXT Helmut Angeli
PHOTOS Tina Trumpp



Should the news from the automotive industry in recent years not trigger a constant ringing of alarm bells with equipment providers like the HELLER Group? One could imagine that the progress made with electrically driven vehicles, for instance, could give companies closely connected to the automotive industry like HELLER sleepless nights. Do you sleep well?

Absolutely, and I will gladly tell you why. The primary objective of the presently unfolding technology change is to achieve a reduction in CO₂ emissions. Electric drives are only one aspect of it. Another factor is the development and enhancement of the existing combustion engines. In our view, the combustion engine is far from dead. Rather, we believe that in the near future, the mobility concept will comprise a combination of downsized combustion engines and electric drives. There are strong indications that the policy goals regarding the share of fully electric cars will not be reached overnight but rather as part of a long-term process via many intermediate stages. For example, it will take years, or rather decades, to establish an appropriate infrastructure. At the moment, all relevant studies agree that the global number of passenger cars will increase by another 30 million vehicles in the next ten years. This includes a share of purely electric vehicles of hardly more than ten percent.

**IN
TER
VIEW**



“In our view, the combustion engine is far from dead. Rather, we believe that in the near future, the mobility concept will comprise a combination of downsized combustion engines and electric drives.”

Manfred Maier,
COO of HELLER Group

In the next ten, twenty or more years, combustion engines will remain the main drive concept. For us as HELLER this means that in the medium term, the machining volume will rather increase and not see a significant decrease – if any at all – in the further process. That is why our goal is to remain a sought-after partner for potential customers in the years to come based on our core competency in machining.

Does that mean that HELLER is not affected at all by the discussions around electromobility?

No, don't get me wrong. Of course we need to meet these challenges and we are already headed in the right direction, adapting our product lines and business models to the changing conditions. Nevertheless, we expect the change to take place progressively so that we will have to adapt to intermediate targets time and again. Together with our customers we will have to respond to a wide range of requirements and challenges in the process, and there is no reason why we shouldn't be doing this successfully.

You just mentioned that HELLER was already headed in the right direction. What exactly do you mean by that?

In recent years, we have succeeded in significantly increasing the share of machine sales outside of our powertrain core competency. In terms of units sold, we currently deliver more than 30 percent of our machines to other sectors. That is more than ever before and has opened an entirely new clientele to us. After all, our CBC coating technology also contributes to the reduction of CO₂ emissions.



How well established is CBC in the market today?

The twin-wire technology has turned out to be the only method providing the necessary process dependability for use in high-volume production. Manufacturers opting for coated cylinder bores eliminate the need for cylinder liners and can build smaller and lighter engines to achieve a significantly better coefficient of friction, whilst delivering the same power output and considerable fuel savings. Less fuel also means fewer emissions.

Has the technology fully matured by now from its development stages?

CBC is a very complex system and of course there is always a certain potential for improvement with such an innovative process. And yet, I think that our customers can be more than satisfied with the results achieved so far. HELLER has generated more than ten percent of its sales volume with this technology and that surely speaks for itself.

What does that mean expressed in numbers?

In the past financial year, we reported sales of approx. EUR 60m from our coating technology.

Which customers are currently using the HELLER CBC systems?

Mainly Daimler, Renault and Nissan. At the moment, these companies operate 65 systems worldwide for the coating

of more than eight million engines in production. This year, CBC will be applied in the production of more than one million 4- and 6-cylinder engines at the Daimler plant in Untertürkheim alone. At the same time, we are in the process of conducting test coatings here at our CBC Technology Center in Nürtingen. Clearly no customer will opt for this technology without putting some coated blocks or trial engines to the test first. It's all a process that takes time. Therefore we expect a continual increase in sales in the coming years.

Apart from CBC, is HELLER taking any other steps to develop new fields of business, for example, in terms of additive systems?

Of course we have this area on our radar. However, we will only become involved in a field of business when HELLER has a direct relation to the customer or to the technology.

For example?

The experts in our Development New Business & Technology department are currently working on a process that allows applying large amounts of material, similar to laser deposition welding, with a subsequent machining operation. Moreover, our affiliate company August Wenzler Maschinenbau GmbH in Spaichingen has made a name for itself with machine tools for the series machining of lightweight components and structural parts. At the moment, they are investigating the idea of producing larger and complex parts in segments which are then welded together instead of casting them in one piece.

“Traditionally, our company works in close co-operation with colleges of higher education and universities in order to foster new engineering talent. One example is the ‘Reutlinger Modell’, a combined apprenticeship and study programme.”

Manfred Maier,
COO of HELLER Group



This approach makes sense for applications where the casting technology reaches its limits. If the joining and the finish machining operations are performed on a single machine, this will provide a very useful and cost-effective solution, also for series production.

Let's come back to Wenzler. What synergies have resulted from having Wenzler within the HELLER Group?

As a relatively small company, Wenzler can neither guarantee global sales nor global service. This is where HELLER is able to provide support. Moreover, Wenzler offers HELLER access to an additional market segment, one that should gain in importance with the proliferation of electric drives. The different drive technologies combined in hybrid vehicles, for instance, add weight to the car. Manufacturers of high-grade cars are trying to compensate this by saving weight in other places. To achieve this, lightweight construction and the use of structural parts becomes almost unavoidable. Last but not least, Wenzler is able to provide us with additional production or assembly capacities, if needed.

Let me summarise what you just said: in your view, the HELLER Group is well set up in terms of technology in order to meet future challenges successfully. Technology, however, is only one aspect of it all. Unfavourable influences like the skills shortage, for example, could become a problem. What is HELLER doing in this regard?

That, indeed, is an area that we are paying special attention to. Education and training are ways to safeguard our future both in terms of skilled workers and also as far as engineers are concerned. Every year, we train about 35 industrial apprentices and students in Nürtingen and have done so for many years. Additionally, we make an effort to keep these skilled employees in our company – with great success, by the way. Due to the competition from major industries in the Stuttgart region this is not something to be taken for

granted. Traditionally, our company works in close co-operation with colleges of higher education and universities in order to foster new engineering talent. One example is the ‘Reutlinger Modell’, a combined apprenticeship and study programme. Following a two-year skilled worker qualification and their graduation from Reutlingen University, the participants commit to work for HELLER for three years. In return, we provide them with financial support throughout the whole education. We have concluded a similar agreement for Mechatronics with Esslingen University and intend to expand the scheme with a programme in Mechanical Engineering. And what is more: in China and in the US we have started recruiting young talent for Assembly, Service and Application by offering a two-year training programme in cooperation with a college. Moreover, the further education and qualification of our staff is another and very important aspect of our training strategy. With the HELLER Academy we have created an instrument to familiarise our employees with new technologies and developments.

In recent months, new obstacles emerged in the form of trade restrictions and punitive tariffs from the US. Does that make life harder for HELLER?

There should be no mistaking that free world trade would be a better solution. However, with our factory in the US we are better able to compensate for these restrictions than some of our competitors. We even consider the United States a potential growth market and expect to have good opportunities to increase our business there. Especially when we operate as more than just a mere machine supplier, but rather as a solution-oriented partner as we do in Europe. Following the decline of the North American manufacturers, the German machine tool industry unfortunately left the non-automotive market to the Japanese competitors. This is where we see opportunities in selected applications. We have the right products and are in the process of significantly strengthening our Sales and Application Engineering in the US. The same

applies to China, by the way. Basically, my thoughts are more directed towards the internationalisation of our business activities than towards the hype around electric drives. If, for instance, we succeeded in increasing our market share in China in the industrial machinery sector to half of our share in Europe, we would be able to almost double our sales in this area.

Looking at the German machine tool business as a whole, would you agree that the sentiment in the industry is relatively positive at the moment?

Yes, absolutely. This is mainly due to the fact that for quite some time now, the domestic manufacturers have seen

themselves not only as machine manufacturers but over time have gained a high level of expertise as far as the integration of machines in superordinate systems is concerned. At the moment, there is a clear global trend towards automated machines and systems the German industry is benefiting from. Therefore it is indispensable for us to generate a sufficient sales volume with our standard machine business, too, because we will not be able to survive on our solution competence alone. And the German enterprises – including HELLER – have been able to manage this balancing act in a very positive way so far.



Did you know?

01

All sealed and unsealed roads worldwide together have an added length of just under 31.7 million kilometres. The USA has the longest road network: it is 6.5 million kilometres long.



02



The Aldi branch in Potsdam provides a boat landing stage for its customers.



03

The Dutch are the most enthusiastic cyclists in the world. According to statistics, 99.1 percent of all Dutch people own a bicycle (how many of these are 'Dutch bicycles' is unknown). Denmark takes second place in the ranking with 80.1 percent, whilst Germany only comes in third position with 75.8 percent.

04

A honey bee has an average flying speed of 20km/h. When laden with pollen, it can even reach 24km/h, whilst beating its wings approx. 200 times. When the wind force is greater than 4, bees stop flying, because the wind speed then exceeds their maximum flying speed. During flight, a bee burns 10mg of glucose per hour, which equals 12mg to 13mg of honey. Its honey sac has a capacity of 35mg to 50mg – enough for three to four hours of flight.

05

The world's shortest escalator is 83 centimetres long and only has five steps. It is installed in Kawasaki/Japan.

Facts on mobility worldwide

TEXT **Claudia Ziegler**
PHOTO **Jon Tyson**



06

On many US highways there are so-called carpool lanes. They are restricted to high occupancy vehicles which are also allowed to travel at higher speeds than other cars.

36 hours

The first electrified road was installed in Sweden in 2018. The eRoadArlanda stretches along two kilometres of the E16 and is equipped with an overhead power line. A movable arm is used to transfer the required power from the overhead lines to the electric vehicles. If the pilot for electric lorries is successful, it is planned to expand the project to electric cars.

07 Today, the travel time from London to almost any destination in the world amounts to max. 1.5 days. In 1881, a journey from London to Berlin took approx. 10 days.

08



A blue whale swims approx. 5 000 kilometres per year. Reaching an average age of 85 years, it travels 425 000 kilometres throughout its lifetime, which corresponds to 16 circumnavigations of the earth.

HOLLYWOOD

09



10

Los Angeles has more cars than inhabitants. On average, every household in the West Coast city has 1.8 cars. Regional rail traffic is underdeveloped. Only 360 000 of the city's twelve million inhabitants use this alternative to the car. As a result, the Angelenos spend 81 hours in traffic congestions every year. Compared to this, the people of Stuttgart are downright fast, spending only 46 hours in traffic jams every year.



TEXT Franziska Hapke

PHOTOS Alexis Berg / Erik Sampers / Daniel Petty /
Priyanka Oberoi / UPslope Productions / Ian Corless

350 kilometres through the desert or: the beginnings

In 1984, Patrick Bauer – then aged 28 – decided to set out for an epic walk of 350 kilometres, crossing an uninhabited stretch of the Sahara desert – on foot, alone and without any sign of a village, an oasis or a source of water nearby. All he carried was a 35kg backpack, filled with food and drink, enough to last his journey that would eventually take 12 days. It was the starting point of what today is called the Marathon des Sables.

Survival training included

The Marathon des Sables in the Moroccan part of the Sahara desert comprises six day's stages covering a total distance of approx. 250 kilometres. Participants are self-sufficient and have to organise their own equipment and provisions. A typical desert environment, the conditions are physically challenging with temperature fluctuations between 40 degrees centigrade during the day and 5 degrees at night. Therefore, all participants need to provide a medical certificate, stating that their physical condition allows them to take part in the marathon. Unfortunately, there are always some that have to retire for temperature-related reasons. In 2013, the previous year's winner had severely overheated during four days of the race and had to be flown to a special hospital at 500 kilometres distance. What can also pose a fatal danger to the participants on the world's highest dunes are sandstorms. They are most dangerous when they come at night, blowing away the track markings. One year, a runner lost his way, only to be found nine days later in another country.

And still: every year, more than 1 000 runners participate in the Marathon des Sables. Many have to wait for months, or even years, to get a chance to participate. Nearly half of the participants are regulars who have run the race more than once before. The finishing rate of 95 percent speaks for the rigorous and thorough preparation of the runners.

Top story

In 2009, the Marathon des Sables was disrupted by floods in Morocco. As a result, the first and sixth stage could not go ahead as planned. New stages had to be improvised from one day to the next to avoid the flooded areas. The third stage of that marathon will go down in history: stretching across 92 kilometres of sand, loose rubble and rock, it was the longest since the run was established. At the prize giving ceremony, the winners admitted that it was their hardest Marathon des Sables to date, although it was also the shortest one with only 202 kilometres distance.



MARATHONS

Marathon des Sables	
Genre Ultramarathon	Frequency Annually
Location Moroccan Sahara desert	Established in 1986
Distance Varies from year to year; shortest distance: 202km (2009), longest distance: 257km (2016)	
Time limit 6 stages over 7 days	



Grand to Grand Ultra	
Genre Self-supported stage race	Frequency Annually
Location Arizona and Utah, USA	Established in 2012
Distance 273km	Total elevation 5 499m
Time limit 6 stages over 7 days	



Blood, sand and cheers

The Grand to Grand Ultra is the first and only self-supported run in North America. Participants need to carry their own food and drink, sleeping bags and other equipment with them all the time. For the night, desert camps are erected. The race covers a distance of approx. 273 kilometres, from the rim of the Grand Canyon to the 2 600 metre summit of the Grand Staircase, a US National Monument. The challenges: elevation, extreme temperature differences and cross-country trails over varied terrain, including climbing and abseiling passages and river crossings. The benefits: nature at its most beautiful in the remotest place in America, a chance to experience it as the earliest settlers did and the opportunity to become part of a very special community. Former participants continue to enthuse about the feeling of sharing the highs and lows with like-minded people and confirm the great atmosphere on the track and in the camp. Within a short time, the Grand to Grand creates friendships for life. Surely this is one of the reasons why the race has seen an average finishing rate of approx. 76 percent during the past six years.



Hardrock 100 Mile Endurance Run	
Genre Ultramarathon	Frequency Annually
Location Silverton, Colorado, USA	Established in 1992
Distance 161.7km	Total elevation 10 000m across an average elevation of more than 3 400m
Time limit 48 hours	



A slightly different endurance run

The endurance run aptly called the Hardrock 100 is considered the toughest 100-mile race in the US. It is one of the highlights of the North American trail-running season and attracts world-class athletes from all over the world. The race across off-road tracks and trails is dedicated to the miners who originally settled and worked in the area. The race loops approx. 100 miles, crossing 13 passes at heights between 3 700 and 4 000 metres. The highest point of the track is the 4 300 metre summit of Handies Peak. Each year’s race is run in the opposite direction of the previous year’s. At the end of the race, the runners do not cross a finish line, but are required to kiss the ‘Hardrock’, a picture of a ram’s head painted on a large block of stone mining debris.

At slightly over 41 hours, the average finishing time of the successful runners is longer than usually across 160 kilometres. The reason for this is primarily the altitude, which can cause mountain sickness or oedema. Moreover, the race covers an extremely rugged terrain with rubble trails,

snow, rivers and rocks. Although the Hardrock 100 is a running event by name, many participants use equipment usually found in hiking or climbing such as trekking poles or crampons. Furthermore, the weather in the San Juan Mountains can be quite extreme. At night, temperatures can drop to below -18°C. Moreover, the mountains can be hit by sudden thunderstorms, bringing severe rain, hail, strong winds and lightning. Therefore, most runners carry additional clothing in their backpacks and sufficient food and drink to ensure that they will be able to survive up to eight hours without help in critical situations. For safety reasons, first-time participants must prove their mountaineering experience. Despite this, there has never been a race with all runners successfully completing the Hardrock 100.

Top story

In 2017, Kilian Jornet from Spain won the Hardrock for the fourth consecutive time – despite tripping at kilometre 23 dislocating his arm. He popped his own shoulder back into place and ran the remaining 87 miles with a makeshift sling.

Life lessons on winning from losing

TEXT Dr. Rajat Chauhan, race director of La Ultra 333

Whoever told you what truly matters is where you get to in life, lied. The only thing we can be sure of is that we will die. That is why I often tell myself: How you live before you die matters. Where you die does not. When looked at from that perspective, the journey is more important than the destination. When I look around, it pains me. Everybody is too focused on the destination, on those sheets of paper, pieces of metal, hollow designations and the concrete boxes we live in.

You've got one life. Make it count. Live for yourself, on your terms.

Those who matter are the ones who questioned status quo. They push the limits set by society and experts in it. And I have a lot of stories to tell of such people. To begin with, allow me to share this note I received from Mark Wooley, one of the most celebrated ultra marathon runners in Spain after the latest edition of La Ultra, the cruellest run on earth – an event I thought up.

Dear Rajat,

You really have created the world's finest masterpiece of ultra running, a canvas 72 hours long and 333km wide in the Indian Himalayas. Upon this canvas are the runners – the artists who paint their art as they make their way over the most beautiful of majestic mountains. But I have a problem. I spilt the paint, I was clumsy and the art I left behind on your perfect canvas is flawed. The paint ran over the edges and that just won't do.

Art is meant to be perfect and anything less just isn't art.

It is a mess. I will have to start this painting again.

Your good friend, Mark

He missed the 72-hour cut-off time by 54 minutes. He finished 222km at La Ultra in 2012 and then came back to attempt 333km in 2014 and 2015. Last year, he was leading until 318km. Then he suddenly collapsed. He couldn't move. He just had to cover 15km in four hours. Think of this man as a gladiator who has been beaten not once, but twice. He wasn't furious. Instead, the gladiator re-looks the opponent with respect, and says he's going to come back and give it a shot when he is better prepared. Our system calls such people losers. I think of them as high performers.

A 22-year-old wild-card entry into the event, Parvez Malik, a rag-picker, comes to mind. He had not run ever till six months before this gruelling event. He took to it when he was part of the crew at the Garhwal Runs where he was practically thrown out of the car to walk along with the last participant. What started as a walk morphed into a run until he did 51km because it was a lot of fun. I offered to prepare him for 111km at the La Ultra. One day, he could be on cloud nine for having run 93km and the next day, I'd ground him because he couldn't manage 90 minutes. This happened because I'd increase the pace to levels he couldn't manage for too long. This was important in training for a run like La Ultra. Lows follow, much like in life, soon after the highs. He had to learn how to prepare for them. Eventually, he not only finished running 111km, but blew away seasoned runners with a good finish time.

True champions and leaders can come from practically any background.

To get back to my original point, the journey is more important than the destination alone. Sean Maley from the UK, who eventually came first at La Ultra, followed a simple strategy. He had plans A, B and C, but knew that he couldn't plan for too far ahead. He was just prepared to dig deep and take it as it came. As Mike Tyson once put it: "Everyone has a plan till they get punched in the mouth." For the same reason, Maley took the course one bit at a time and relooked at it when he was close to what he had in mind or breached the limit in his head or reached there. He eventually broke the 333km barrier by making it a series of challenges.

Darek (Dariusz) Zwyciezca from Poland, another veteran runner, met with an accident at age 8 and was in a coma for two months. He had to relearn how to talk, walk, read and write. Experts didn't think he would ever walk again. Today, he runs the most difficult of ultra marathons in the world – not to win, but simply to finish, because society gave him no chance of even walking again. For him, it's about pushing his boundaries further.

High achievers set their own goals when there is nowhere else to get to. The 52-year-old Hungarian Szónyi Ferenc struggled to get past the 333km mark. But even before the pain evaporated, he suggested we plan a 555km run the next time around. That's exactly what champions are made of. They keep pushing their limits.

Let's be very clear, an event like La Ultra attracts personalities who happen to be very grounded as well. They are simply amazing human beings. To play a long innings as high performers in life, these qualities are very important. Any less, you either never get there or don't last long enough.



Rajat Chauhan likes to call himself a 'student of pain and running'. He has been running for 28 years and in his spare time is a doctor specializing in Medical-Osteopathy, Musculo-Skeletal Medicine [London College of Osteopathic Medicine] and Sports-Exercise Medicine [Queen's Medical Centre, Nottingham]. He also is the founder and race director of La Ultra – The High, the world's highest and maybe cruellest ultra marathon. His special interest is in helping all, sedentary to sportspeople, to perform at their optimum levels, whether it be dealing with a disease, pain, or in sports. For more information about Dr. Rajat Chauhan and further insight into his work, visit www.drrajatchauhan.com.



La Ultra 333	
Genre Ultramarathon	Frequency Annually
Location Leh-Ladakh, India	Established in 2010
Distance 333km	Gesamtanstieg Approx. 6 000m at a continuous height of 3 300m
Time limit 72 hours	

Possibly the most gruelling ultramarathon in the world

Imagine having to run 333 kilometres in under 72 hours – crossing three 5 000 metre passes and with only 40 to 50 percent of the oxygen available to you at sea level. The La Ultra 333 ultramarathon aptly named ‘The High’ is so cruel that organisers warn participants of any rivalries. No other race in the world provides such extreme temperature fluctuations as the cold high-altitude Leh-Ladakh desert where temperatures can drop from 40 to -12°C in a matter of six hours. In the short description of La Ultra 333 provided on the website, the conditions of the race are described as redefining the limits of human endurance, mentally and physically. Only few runners from the ultra-scene take on this challenge.

Top story

In 2014, Mark Woolley was in leading position when he suddenly collapsed less than 20 kilometres before reaching the finish line, unable to go any further. In 2015, Woolley gave it another try, this time attempting the 333 kilometres distance. He finished the race but missed the cut-off time by 54 minutes. Yet, Woolley came back a third time. In 2016, he finished the race in 68 hours, 57 minutes and 27 seconds. His résumé of La Ultra 333: “Simply brutal.”



Grand Raid de la Réunion

Genre
Ultramarathon

Frequency
Annually

Location
La Réunion

Established in
1986

Distance
162 km

Total elevation
9 643m

Time limit
64 hours

The Madmen's Diagonal, or: it's all in the name

The Grand Raid de la Réunion, also called La diagonale des fous ('The Madmen's Diagonal'), is a non-stop race over 164 kilometres distance on La Réunion in the Indian Ocean with an uphill gradient of 10 000 metres. The conditions: tropical climate, high temperatures with strong rain, dense fog and extreme heat as well as volcanic rock that makes the feet ache with pain. And what is more: if you are afraid of heights, this is not a race for you.

The epic ultramarathon in the heartland of the Parc National de La Réunion is very popular among the island's runners as well as participants from mainland France and abroad or the Indian Ocean region. It is well known throughout the world and belongs to the 15 most difficult races on earth. That is also why the Grand Raid became part of the Ultra Trail World Tour. Every year, runners from more than 30 different nations accept the challenge of 'The Madmen's Diagonal'. In 2017, the participants came from 53 different nationalities. The diagonal is much more than a race: on the official website it is described as "a challenge to push your own boundaries [...] on a crazy race criss-crossing the island from South to North".



Once upon a time...

Gary Cantrell heard the story about James Earl Ray's flight from the nearby Brushy Mountain State Penitentiary in 1977: after having been on the run for 55 hours, the man who assassinated Martin Luther King Jr. had only made it 13 kilometres from the prison. Cantrell was convinced that he would have run at least 100 miles in the same time. The idea for the Barkley Marathon was born. Cantrell named the race after his long-term neighbour and running partner Barry Barkley.

Of license plates and cigarettes

The Barkley Marathon is limited to 40 runners and the requirements for a successful application change from year to year. According to various sources, the secret application process requires candidates to write an essay about why they should be allowed to run in The Barkley and to pay an enrolment fee of USD 1.60. If the application is accepted, the participant is sent a letter of condolence. On arrival, first-time participants need to bring a license plate from their home state or home country. Runners who have participated before, need to bring a specific article of clothing every year. In the past these included a white T-shirt, socks or a flannel shirt. Veterans, who successfully completed the marathon and (still) want to participate again, only have to submit a pack of Camel cigarettes. The number 1 always goes to the runner least likely to finish a loop.

There are marathons and ultramarathons and there is the Barkley Marathon

Distance, course and differences in altitude of the marathon have changed frequently since the race first took place. Currently, one loop covers 20 miles (32 kilometres) without any support points along the way with the exception of two aid stations for water. The loop starts and ends at a yellow gate. On race day, the race starts sometime between midnight and afternoon. Race director Cantrell will blow a conch shell one hour before the race begins. The race starts when he lights his cigarette. The specified loops must be completed five times. Loops 3 and 4 are run counter-clockwise, loop 5 alternates between participants. Of course, navigation systems and other auxiliary equipment are not allowed. Apart from the running itself, the participants need to find nine to eleven books (the exact number varies from year to year) and tear out the page that corresponds to their number. At the beginning of each new loop, each runner is assigned a new number. When a runner retires, the 'Taps' bugle call sounds at the start/finish line, which is usually played during military funerals of the United States Armed Forces.

Approx. 55 percent of the previous Barkley races ended without any runners completing the loop five times in 60 hours. More than 30 starters did not even get to the first book.

Top story

In 2017, Gary Robbins reached the finish line six seconds past the 60-hour cut-off time. He had been close to becoming the 16th Barkley finisher. Shortly before the end, he had taken a wrong turn, unintentionally missing two miles of the trail.



Barkley Marathon	
Genre Trail run	Frequency Annually
Location Frozen Head State Park, Tennessee, USA	Established in 1986
Distance 160km	Total elevation 16 500m
Time limit 60h, 12h per loop	

Berghaus Dragon's Back Race®

Genre Mountain race	Frequency Biannually
Location Wales	Established in 1992
Distance 315km	Total elevation 15 500m
Time limit 5 days, max. 23h per day	



Running, climbing, taming the dragon

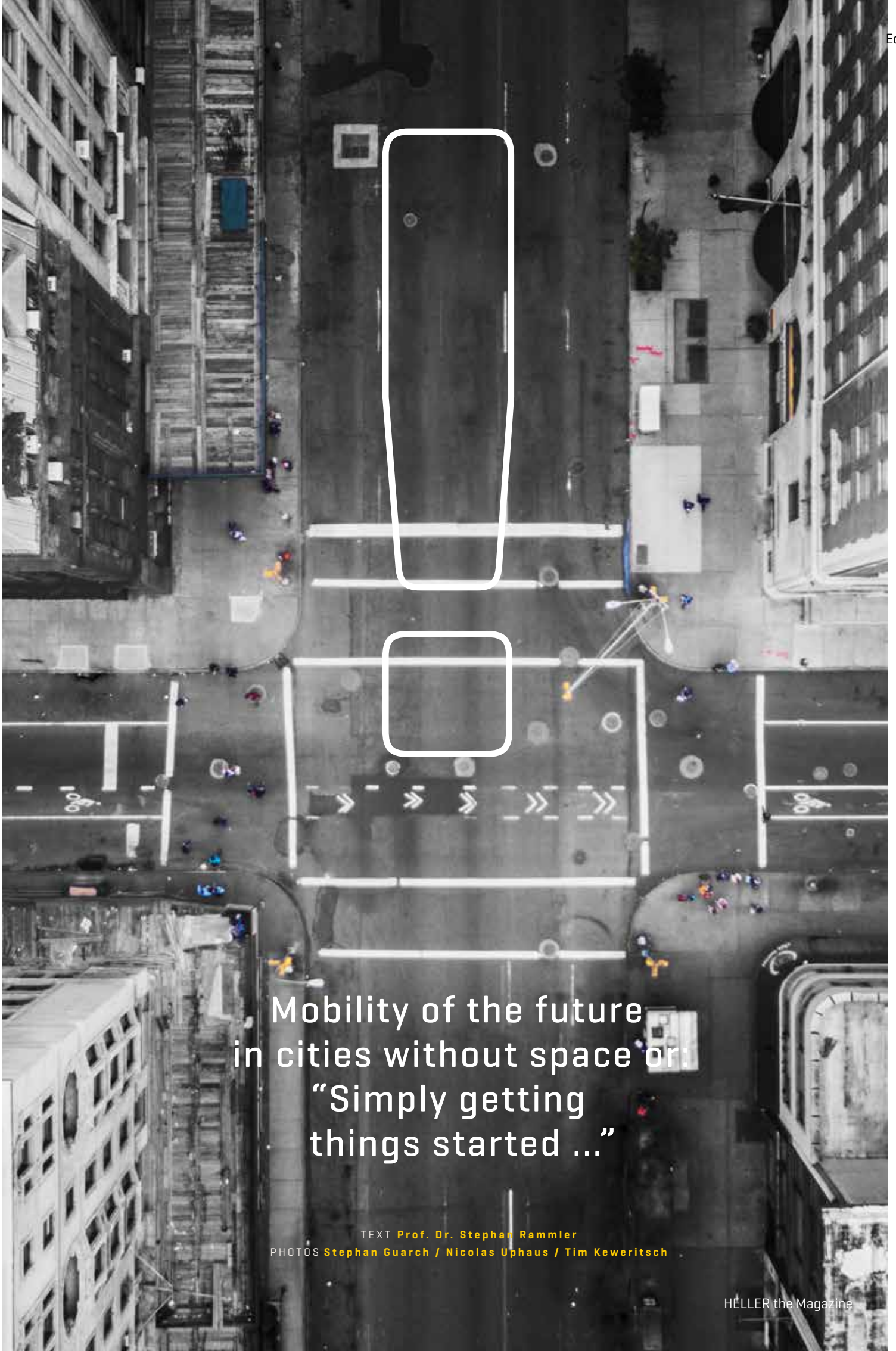
Although the Berghaus Dragon's Back Race® has only taken place four times (in 1992, 2012, 2015 and 2017), it enjoys a nearly mythical status in the adventure racing and ultra-runner community. It is known for being well-organised and its status as the toughest 5-day mountain running race in the world, which is also how the race is advertised by the organisers. Without any track markings and often poor visibility, the participants need to find their way through the toughest of terrains in Wales, self-navigating the more than 300-kilometre course whilst facing the cold and rain with hardly more than sheep and rock for company.

Never have all the starters managed to finish the race. The finishing rates of the 2012, 2015 and 2017 events illustrate the toughness of the event: in these years, an average of 46 percent of all runners successfully completed the race, with the rate increasing year by year. Interestingly, the event's website provides some explanations for this – to prevent that potential participants mistake the ultramarathon for an easy challenge. According to this, the reasons for the increasing number of finishers include the profound experience and expertise of the participants, the information provided to runners about the course and the way to approach it, an additional map plus GPS marking of the recommended route from 2017 onwards, and favourable weather conditions.



Cities without cars





Mobility of the future
in cities without space or:
“Simply getting
things started ...”

TEXT Prof. Dr. Stephan Rammler
PHOTOS Stephan Guarch / Nicolas Uphaus / Tim Keweritsch



**“The good news is that
we already know the most
important answers.”**

Prof. Dr. Stephan Rammler



We live in an urban civilisation. Therefore, the future of mobility will be decided in the city.

A large number of people living closely together will be the norm in the 21st century. The cities of the world are running out of space, not only because an increasing number of people are moving to the cities, but also because the related social and economic advancement causes them to develop lifestyles and forms of mobility requiring more resources but also more space. As a result, Germany finds itself at the beginning of intensive debates about space and the renegotiation of the access to urban livelihood opportunities. In the cities, entire industries are increasingly competing for space, which has become a scarce item: car manufacturers, the real estate industry, retail and commerce, tourism and municipal transport operators but above all urban logistics companies. They all need urban space for their products and services. Besides the traditional aspects such as traffic ecology and safety, basic

infrastructure and social balance, another criterion of transport system design has to be taken into consideration: efficient space utilisation.

The good news is that we already know the most important answers. Compared to private mobility, public transport is not only lower in emissions and safer but overall also provides a much more efficient use of space than private transport. In professional discourse it is understood that no sustainable urban traffic system of the future will be able to survive without public transport. After all, it could even see an unexpected renaissance due to the shortage of space. Public transport will have to be the backbone of any conceivable form of sustainable and economically successful mobility in cities. At the same time, the megatrend of digitisation provides varied opportunities to individualise public transport, making it more attractive by enhancing it intermodally through so-called fleet-based car components like car sharing and ride hailing – especially on the first and last mile. In the reverse conclusion, car traffic which has not been very space-efficient and sustainable but rather highly individual until now will see a massive increase in use efficiency due to digital mobility trends. Something that is long overdue from the economic and financial point of view considering the fact that the average German car is unused during 23 hours of the day. The prerequisite to achieve this is the customer's detachment from private car ownership in favour of using 'mobility as a service'.

Automated driving solutions, connectivity of systems and vehicles, traffic telematics and car traffic management using traffic telematics form the digital building blocks of a new collaborative traffic market that is beginning to take shape today between the classic regulative and organisational-infrastructure industry silos. Together with the electrification of drives for private and public vehicles and the active expansion of infrastructures for two-wheeled mobility, the picture of a transformed urban traffic is beginning to take shape. However,

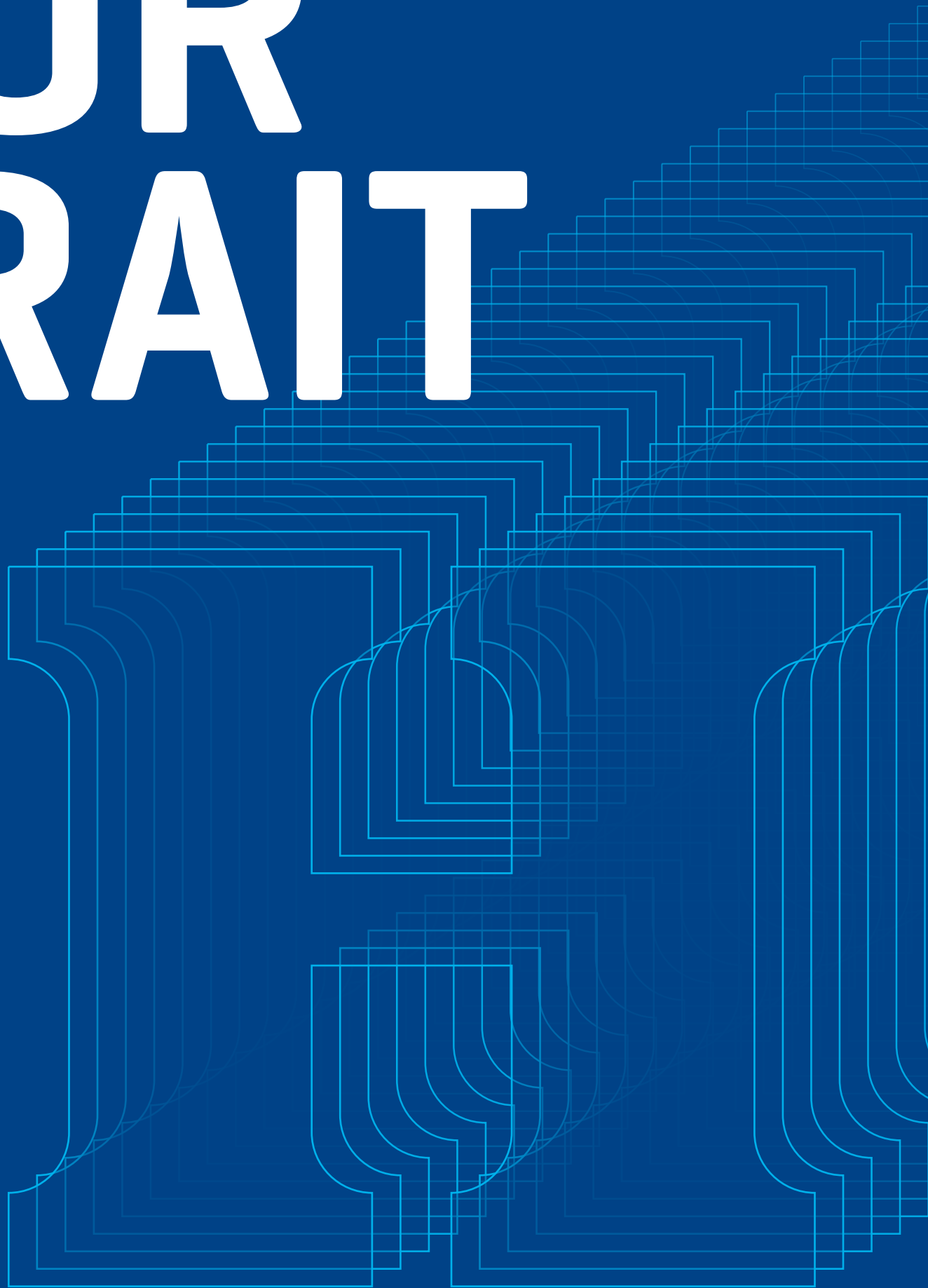
this development is no automatism. Considering today's total failure of national traffic policy, communities and municipal transport operators, together with the regional innovation leaders in business and science, regional commerce and civil society, may have to become the advocates of urban quality of life in the future. Openness to innovation, willingness to experiment and articulation of common interests towards the political decision-makers could make them the crucial transformative players for shaping the urban ways of life, where private businesses and providers are failing massively at the moment. Communities of the world, get started now!



Prof. Dr. Stephan Rammler, born in 1968, studied political sciences and economics in Marburg and Berlin.

He obtained a doctorate at the Berlin Social Science Center [WZB]. Since 2002, he has been a professor at Braunschweig University of Art and from 2007 to 2014 he was the founding director of the Institute for Transportation Design. From October this year onwards, Prof. Dr. Rammler will take up the post of Scientific Director at IZT – Institute for Futures Studies and Technology Assessment in Berlin. His focus areas are mobility and innovation research and futurology, traffic, energy and innovation policy and questions of cultural transformation and sustainable environmental and social policy. In 2016, he received the Sustainability Award of ZEIT WISSEN magazine. Recently, he made a name for himself with the publications *Volk ohne Wagen* [2017] and *Schubumkehr* [2015].

POR TRAIT





34_ Black on white

36_ Mobility through the ages

38_ New perspectives

42_ Focus on mobility:
HELLER locations around the globe

Black

Facts and figures of the first six months 2018

The past months of business have been positive for HELLER from the market perspective. With the acquisition of the largest project contract in its history, HELLER proves its high expertise in the traditional business with discerning automotive customers. At the same time, it again positions the new CBC high-tech coating technology prominently in the market. In addition to this reference contract, the company has been able to acquire further interesting projects in the currently intensely competitive environment. Nevertheless, it is important to closely follow current developments in terms of automobile drive technology.

In addition to project business, single-machine business – especially with customers from outside the automotive industry – is reassuring. The organisational and personnel changes implemented in the meantime in our European sales structure are taking effect. Based on our current order intake, we are also cautiously optimistic that it will be possible to overcome the weakness the Brazilian market has experienced for years. Finally, higher than anticipated aftersales volumes substantially contribute to a positive economic development.

Continuity on shareholder level and in terms of management

Heller GmbH

Supervisory Board:

Berndt Heller [Chairman]
Christian Hald
Harald Völker

Managing Directors:

Klaus Winkler [Chairman]
Manfred Maier

HELLER Support Germany

Managing Directors:

Manfred Maier [Chairman]
Dieter Drechsler
Patrick Rimlinger
Dr. Jürgen Walz
Peter Weber

HELLER Support UK

Managing Director:

Matthias Meyer

GSN [Germany]

Wenzler [Germany]

Paatz [Germany]

HELLER North America (NAFTA)

Managing Director:

Kenneth M. Goodin

_ HELLER Mexico

_ HELLER USA

HELLER South America (LATAM)

Managing Director:

Alfredo Griesinger

_ HELLER Brazil

HELLER Europe (EMEA)

Managing Directors:

Andreas Müßigmann
Peter Weber

_ HELLER France

_ HELLER Germany

_ HELLER Italy

_ HELLER Slovakia

_ HELLER Spain

_ HELLER UK [Sales & Services]

HELLER Asia (APAC)

Managing Director:

Andrew Parkin

_ HELLER China

_ HELLER India

_ HELLER Singapore

on white

Order intake

EUR 441.3m

Europe: 76%
North and South America: 14%
Asia: 10%

Turnover

EUR 264.1m

Performance

EUR 281.2m

Equity capital

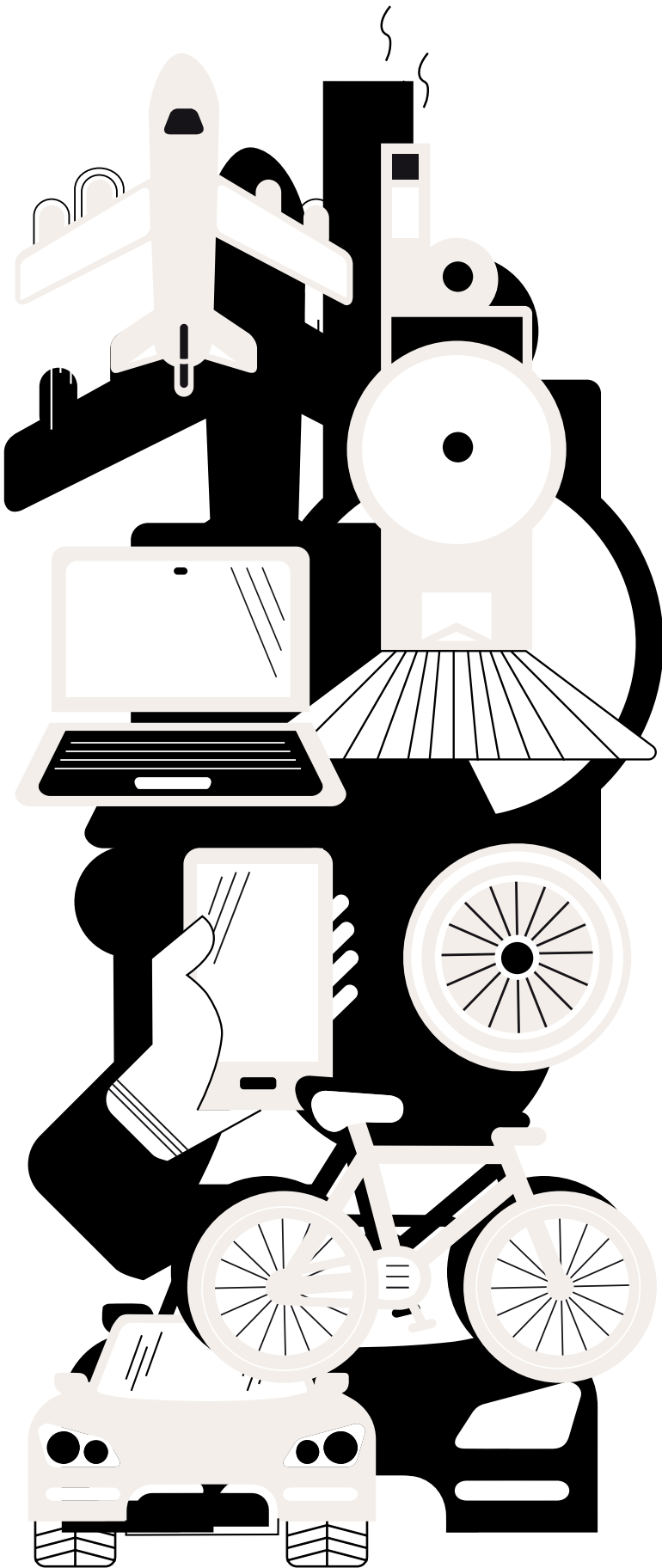
EUR 113m

Ratio: 32.7%

Employees

2 653

HELLER Group worldwide



Mobility through the ages

TEXT **Claudia Ziegler**

ILLUSTRATIONS **Julian Henschel**

The invention of the wheel lays the foundation for accelerated movement. It cannot be dated with certainty. However, it is considered an established fact that the wheel was invented in the **4th century BC**.

In **1707**, Denis Papin launches the first steam-powered boat.

In **1769**, James Watt files his patent for the steam engine – a first precursor of the machine was developed by Thomas Newcomen in **1712**.

Rail transport is also making progress: In **1804**, Richard Trevithick's steam locomotive makes its first journey. Britain's first rail line goes into operation in **1829** – in Germany it will take until **1835**. The first electric locomotive follows in **1870**, in **1881** the first electric tram – both were invented by Werner von Siemens.

In **1817**, Karl Freiherr von Drais develops the so-called running machine. In **1861**, Pierre Michaux conceives the first bicycle with pedals.

Between **1832** and **1839**, the first electric vehicle is developed in Aberdeen/Scotland by Robert Anderson. From **1888** onwards, the Flocken Elektrowagen is produced in Germany, manufactured by Maschinenfabrik A. Flocken in Coburg.

In **1857**, vertical transport is invented: Elisha Otis devises the first steam-operated elevator, followed by an electric elevator developed by Werner von Siemens in **1880**.

In **1876**, Nicolaus Otto develops a four-stroke compressed charge engine. It is based on an invention by Étienne Lenoir following the four-cycle principle. Until today, his invention provides the foundation for the design of combustion engines.

1885 sees the first automobile developed by Carl Friedrich Benz and the first motorcycle invented by Gottlieb Daimler and Wilhelm Maybach. In **1896**, Daimler develops the first truck.

Starting in **1891**, mankind takes to the air with the first aircraft developed by Otto Lilienthal. In **1952**, the world's first passenger jet takes off. In **1961**, Juri Gagarin from the Soviet Union becomes the first human to travel into space to orbit the earth.

Communication also goes mobile: Following Samuel Morse's invention of the telegraph system in **1844**, Alexander Graham Bell establishes the first telephone connection in **1876**. In **1973**, a Motorola development team headed by Martin Cooper files a patent for the first mobile telephone. In **2007**, Apple launches the iPhone, the world's first smartphone.

During the **1960s**, the first inductively controlled industrial truck system commences operation at the HELLER machine assembly shop in Nürtingen/Germany.

In **1961**, HELLER presents a horizontal turret-head drilling machine at the 7th European Machine Tool Exhibition in Brussels/Belgium.

Furthermore, HELLER develops special-purpose machines and transferlines to meet the growing demand for manufacturing capacities.

In the **1950s**, HELLER introduces an electro-hydraulic control using 24V control voltage against the general trend of the time.

The Schweizer Selbstfahrergenossenschaft (SEFAGE) established in **1948** in Zurich/Switzerland is the first recorded car sharing organisation: the concept of car sharing has its breakthrough from the mid-1980s onwards. The first German project is called 'stadt-Auto'. It is established as part of the dissertation of founder Markus Petersen at TU Berlin. In **1990**, it is renamed STATTAUTO, Germany's first car sharing company. That same year, further projects are launched in Aachen and Bremen.

In **1923**, the first HELLER machine is exported: to Denmark.

In **1900**, the company HELLER moves from the 'Steinerne Bau' to a new, modern factory building in Nürtingen's Neuffener Vorstadt.

In **1974**, HELLER opens production subsidiaries in Sorocaba/Brazil and in Redditch/UK.

In **1979**, the British industrial designer Bill Moggridge conceives the first laptop computer. The GRiD Compass 1100 goes on sale in **1982**. It has 340kB memory but is not IBM-compatible and therefore not a commercial success. In **1985**, Toshiba releases the T1100 equipped with a 4.77MHz Intel 80C88 CPU, a monochrome LCD with 80x25 text mode and 640x200 CGA graphics resolution. It goes on sale for USD 1,899.

Also in **1979**, HELLER introduces its own uni-Pro 80 machine tool control system.

Since the **1980s**, scientists have been working on autonomous vehicles. Carnegie Mellon University in Pittsburgh/USA was among the first to develop autonomous cars and other vehicles. The research was continued from the mid-1980s onwards with the Autonomous Land Vehicle project – sponsored by DARPA (Defense Advanced Research Projects Agency).

Meanwhile, at the HELLER location in Nürtingen/Germany, series assembly of machining centres is started.

In **2017**, HELLER installs a flow assembly for horizontal machining centres comprising 13 stations at the location in Redditch/UK.



NEW

HELLER's cooperation with the sheltered workshop Esslingen Nürtingen offers apprentices of the manufacturer an opportunity for a very special change of perspective to experience what it is like to work with people with disabilities. HELLER the Magazine provides insights.

TEXT *Tanja Liebmann-Décombe*
PHOTOS *Tina Trumpp*





perspectives



Portrait



“For us, the cooperation with WEK is of great significance. In addition to providing our apprentices with professional training, one of our central goals is also to strengthen their social skills.”

Michael Holl,
Head of
HELLER Training



The young man who has been busy working at a small machine only moments ago is thrilled: visitors! And so many of them! He approaches the approx. 20 young people in an open manner, one by one asking them for their names.

“What’s your name?” he wants to know, pointing his finger at the next HELLER apprentice as soon as he has received an answer. “And what is your name?” The apprentices who have come to the sheltered workshop Esslingen Kirchheim (WEK) for a ‘taster morning’ today are pleased to answer his questions. The young man is beaming, continues his questions and then changes the subject: “And where do you live?” Again, he points his finger from one visitor to the next. Thomas Moser smiles and interrupts the young man in a friendly manner. “Thank you for welcoming our guests, but it’s time to get back to work now,” says the Team Leader of ‘Arbeitsbereich 2’ at the sheltered workshop.

Various disabilities make it difficult for the people working at WEK to find employment in the regular labour market. The majority of them have learning disabilities, whilst others also have physical impairments. Thomas Moser and the other special needs assistants and supervisors help the employees of the workshop to discover their personal strengths and to explore and try out new things. Additionally, external organisations, e.g. HELLER, contribute fresh ideas. The company has been working with WEK for about 16 years now. The cooperation gives volunteers in their second year of apprenticeship – such as today’s group of visitors – an opportunity to spend a morning or even a whole fortnight at the sheltered workshop. Experience has shown that the taster days help to break down inhibitions and bring fresh impetus.

“During my traineeship, I got to know various processes at WEK and started to think of ways to simplify them,” remembers Samuel Kleinschmidt, who is completing an apprenticeship at HELLER to become a mechatronics engineer. The result of his considerations is a holding device he built with his co-trainee Sebastian Lorenz to facilitate the greasing of bolts and screws. “It makes work much easier for people with disabilities,” says Kleinschmidt, who finds it inspiring “with how much love and joy the people at the workshop pursue their daily work”. Apprentice Tim Klöppel, who is training to become an industrial mechanic at HELLER, also feels that working at WEK in Kirchheim was a valuable

experience. “It felt great to help the people working there, making life a little easier for them,” says the 20-year-old who also developed a holding device for WEK and independently implemented the project at HELLER. “Back at HELLER, I went from department to department and had the necessary parts punched and cut to size,” explains Klöppel, adding that the workshop employees in Kirchheim benefit from the holding device because “they no longer need the help of the assistants when they have an especially fiddly task at hand”.

The range of jobs the people with disabilities perform at WEK is immense, including more simple tasks like the packaging of cable ties in bags, but also carpentry, finishing, dispatch, storage and household tasks. The workshop also assembles angle grinders, power drills, cordless screwdrivers and bicycle gearing systems – for Metabo, Festool, Pinion and other companies based in the mid-Neckar region. “The criteria applied to us are the same as for all other suppliers and the quality requirements are high,” emphasises Mirko Theil, who manages the division at WEK. The employees can try out different fields of activity, but as in other companies, there are certain rules – for example regarding working hours, punctuality and application procedures for external work groups. “We consider ourselves a normal company and a springboard for the further development of people with disabilities,” says Theil, explaining that since 2011, “at least three employees have found jobs in the regular job market” every year – a fact that makes the company’s Authorised Signatory proud. He explains that WEK offers external workplaces at a number of companies. Additionally, the organisation has created external workplaces for up to ten employees throughout recent years. A great wish of Theil’s is for people with disabilities to be no longer perceived as having deficiencies. He believes that it is an excellent idea that HELLER provides its apprentices with an opportunity to work at a sheltered workshop for some time. He is also convinced that a ‘breath of fresh air’ from outside has a positive effect on WEK and that the new experience teaches the trainees a different way of dealing with people with disabilities. According to him, experiencing their openness and seeing how skilful they perform their tasks makes people focus less on their deficits but rather on what they really are: precious, amiable, capable and unique human beings.



WERKSTÄTTEN Esslingen Kirchheim or WEK ...

- was founded as a non-profit private limited company in 1984;
- is a recognised sheltered workshop for people with disabilities.
- employs approx. 100 people and assistants – from the areas of work education, curative education and social therapy, social education, ergotherapy, physiotherapy and psychology.
- supports and employs more an 380 people with disabilities.
- has three locations: Esslingen-Zell (main workshop) Kirchheim/Teck [subsidiary workshop] and Ostfildern-Nellingen (branch)
- offers several external work groups and individual external workplaces.
- operates various facilities, including a supermarket, a ‘Maultaschen’ shop selling filled pasta squares and several cafés, e.g. in Esslingen and Plochingen.
- is based on three pillars or founding organisations:
 - Lebenshilfe für Menschen mit Behinderung, Esslingen und Umgebung e. V.
 - Lebenshilfe für Menschen mit Behinderung, Kirchheim und Umgebung e. V.
 - Verein für Körperbehinderte Esslingen e. V.
- took over ARBEG in Wernau, supporting people with mental illnesses, as an affiliated company in 2017.



Focus on mobility

HELLER locations around the globe

Travelling from A to B in a vast country with insufficient transportation infrastructure, a city providing mobility on multiple levels, HELLER as a dynamic company with a global network, mobility as an indispensable factor for working in partnership: the following pages give you an overview of the various perspectives of the HELLER subsidiaries in Brazil, China, Germany and the US on mobility, our main topic, - with the focus topics being as diverse as our locations themselves.

TEXT **Franziska Hapke**
PHOTOS **HELLER**



HELLER USA

Why mobility is still indispensable

Considering today's technical possibilities, one could assume that the majority of information and knowledge exchange no longer required face-to-face meetings. After all, there is e-mail, WebEx, video conferencing, e-learning, remote diagnosis etc. HELLER USA, however, has identified areas where these possibilities reach their limitations.

For example, working together with Mexican colleagues and customers, there are often language and cultural barriers to overcome. In the experience of staff, face-to-face meetings are often the only way to avoid miscommunication.

In terms of Sales, relationships are the foundation for any machine tool sale. Buying a machine tool means entering a partnership which lasts over the duration of the life of a machine. Building a relationship requires spending time together to build trust. HELLER USA has realized this and has made partnership a key focus of the sales strategy.

In terms of project management, project execution requires a very close working relationship between customer and supplier. At HELLER USA, executive review meetings with face-to-face management participation are part of all large projects. This has proven to be a very effective tool for building trust and developing customer relationships into partnerships.

Successful collaboration in engineering highly depends on assessing the ability of individuals and teams correctly. Getting to know each other well has been an important element of effective and successful cooperation. Therefore, the engineering team at HELLER US is part of the global HELLER engineering community. The HELLER production sites in the US, Germany, England, Brazil and China are using a qualification matrix. Personnel skills are entered into the matrix, which in turn allows HELLER to leverage skills, talents and competencies when and where they are most needed. This creates a flexible, multi-functional workforce that can respond to the flows in our individual markets.

As far as training is concerned, interaction between trainer and trainee is the backbone of effective training. There are many examples of this at HELLER USA where this effectiveness would not have been achieved without having trainer and trainee together in the same room.

HELLER USA is trying to be mindful of the limitations of the internet as a communication tool and strives to find the right balance between meeting in person and use of electronic communication.



Brasília



Lisbon

HELLER Brazil

Urban mobility as a major challenge

Different factors have an influence on urban mobility in Brazil, among them geography and cultural education. As a country with continental dimensions and too few serviceable and efficient means of transportation, Brazil faces an exponential growth in the number of passenger cars, utility vehicles, buses and trucks. It would seem logical if the country's vast territorial dimensions resulted in investments in rail and river transportation. However, since growth in Brazil was always focused on specific cities mainly located on the coast, road traffic saw the strongest increase. Today, more than two thirds of cargo is transported on highways of varying conditions across the country. The best-developed road network can be found in the major cities and the most industrialised regions of the country. Sorocaba, where the HELLER subsidiary is located, has an exemplary cycle track network. It stretches over more than 100 kilometres, connecting the whole city. There is even a free-of-charge rental system making it simple and easy to use. That is also why the system has since been copied by other towns within the region.

A local law illustrates the great significance of urban mobility in daily working life in Brazil: it rules that companies

must provide their employees with transportation or reimburse their travel expenses when their corporate locations are difficult to reach or out of reach of public transportation. That is why HELLER Brazil subsidises a microbus and van transport system with 5 different lines for its employees. Ícaro de Melo who has worked for HELLER for 20 years says that the system provides financial benefits despite the long distance and having to get up early. He believes that the missing railway system is a major disadvantage of Brazil's infrastructure. The excessive number of cars on the streets leads to pollution and congestions. Valdir Junior also believes that the chartered transport provides an optimal cost-benefit ratio. For private journeys, he uses his car because it is practical and convenient. On his travels abroad, he noticed that the USA has a well-developed highway system but is facing problems as far as the availability of public transport is concerned, whereas in Germany, he found it easy to get around, whether by car, bus, train or bike. João Marcio Munerati, who participated in an employee exchange with Germany, agrees: during his stay he used various means of transportation, the only difference being the level of comfort and convenience they offer.





London



Berlin



Moscow



HELLER Germany

Successful team play around the globe

Our global locations are growing closer together. We benefit from the fact that our global value-creation network is operating in a highly coordinated manner. A project with Ford in America illustrates this. The obvious solution for the automobile manufacturer would have been to place the order with HELLER USA. However, not the complete scope of the contract was in US dollars; a large portion of it was bought in Euros and partly ordered from HELLER Germany.

The project covered a total of 62 HELLER machines model MC 20 plus application, automation and third-party machinery. Usually, HELLER USA focuses on the application and only assembles a part of the related machinery whilst HELLER Germany has a high utilisation producing the MC 20 machines. Therefore, HELLER wanted to handle the project directly in America, including assembly at the local facilities, merging the global value added chains in the country.

As with many other HELLER projects, all departments, divisions and managers at the various locations involved invested a lot of energy and effort in the careful planning and implementation of the project. According to Patrick Rimlinger, Managing Director of Operations and head of the HELLER production network, the project demonstrates "how well the HELLER production facilities around the globe are

coordinated and bringing everything together." According to him, it was remarkable how closely linked the individual locations cooperated to turn this large contract into a success.

The manufacturing of the MC 20 is also exemplary for the efficient global logistics of HELLER. Finish-machined machine beds and columns are supplied from the factory in Brazil, whilst ready-assembled spindle units, tool magazines, rotary tables and control cabinets are delivered from Nürtingen. The application components are also supplied from Germany. Safety guards and other sheet-metal parts and welded components are sourced locally from suppliers in the US and Canada.

The head of the production network refers to the Ford project as the ideal model for future logistics and project processes and adds that it is planned to use the logistics process as a standard for the supply to the HELLER Group's production facilities. According to Rimlinger, it is not without reason that team play of the individual locations and divisions worked so well: "In recent years, we have set the course with a diverse range of measures in order to achieve a significantly improved capacity utilisation across the HELLER Group." The global value-creation network has demonstrated its efficiency in a complex environment and an important project.



Astana



Beijing



Canberra

HELLER China

A location offering a high degree of mobility

The HELLER factory in China is located in a high-tech industrial zone in Changzhou City in the heart of the Yangtze River delta. The city of Shanghai is within one hour's distance by high-speed rail. Changzhou Port and International Airport are only 30 minutes away. The first subway in Changzhou has been under construction since 2014 and is scheduled to be put into operation in 2019. The subway network of the city is planned to comprise six lines with a total length of approx. 208 kilometres by 2030. The subway station of line 1 will be at approx. 1.5km distance from the HELLER location.

Changzhou belongs to one of the first model cities for energy-saving electric vehicles and new-energy

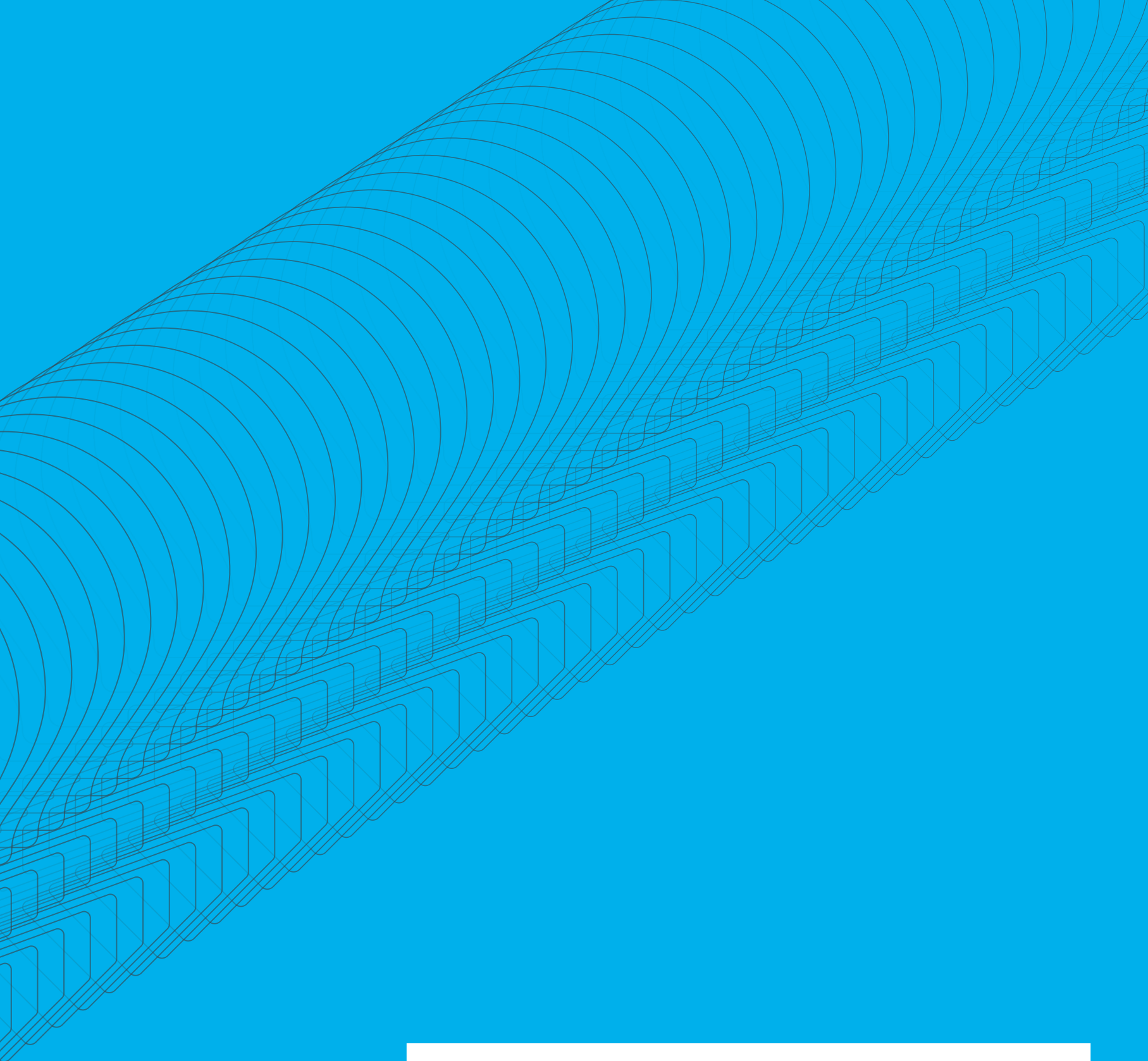
vehicles in China. It has seen a rapid increase in the number of these vehicles in the last two years. Currently, there are nearly 2 300 new-energy vehicles on the streets of Changzhou. Today, the charging of electric cars is fast and convenient: a quick DC charging pole can charge 80 percent of the electricity in half an hour and 100 percent in an hour. By 2020, the city plans to install a total of 28 000 charging poles, including 13 public charging stations, 10 bus stations and a number of special and combined charging poles. Changzhou will continue to increase the number of charging poles to simplify the use of e-cars.

HELLER China in Changzhou offers an electric shuttle bus service. It picks up staff at home in the morning and takes them back in the evening.



TECH NOL OGY





48_ Big Data turns into Smart Data

52_ HELLER4Use

54_ HELLER4Use tried and tested

56_ MAPAL: mobility in transition



Whether it is variant manufacturing or series production: to guarantee optimal results in the long term, you need an intelligent zero-defect strategy capable of identifying disturbance variables in the process and actively contributing to their elimination. The evaluation of process data is the key to the adherence to manufacturing tolerances and the trend-based prognosis of deviations from them. It can help to predict the reasons for machine failures as well as the achievable quality. The ambitious goal of HELLER is to provide maximum machine availability whilst ensuring full process control.

TEXT Martin Ricchiuti PHOTOS Max Zalevsky / GarryKilian / Siemens

The concepts aimed to achieve advantages in metal-cutting manufacturing by means of digitisation are all based on production data, i.e. information modules that not only have a temporal reference but also a specific number value and which are generated as part of the process. The data are pooled in the CNC control which sets the pace for the ongoing manufacturing operation by processing the NC blocks of the program in its PLC cycles. Process data are generated non-stop and already used today for important monitoring functions such as HELLER tool overload and tool breakage monitoring. The triggering of the emergency stop, protecting the machine and the workpiece against damage in case of a tool breakage, prevents the worst, but the subsequent interruption of production is inevitable. "What if it were possible to anticipate failures, so they would not have a negative impact on the manufacturing process?," Bernd Zapf, Head of Development New Business & Technology, formulates the question that is on the very top of the wish lists of production managers, machine owners and manufacturers. "The next step would be to enable machine owners to prevent these kinds of failures," Zapf continues. The comparison that comes to mind is piloted driving where subsystems continually synchronise waypoints with driving and map data and other sensor information in order to intervene when needed. "Industry 4.0 gives us the means to gain deeper insights into the process correlations in machine tools or more specifically their electronic and electrotechnical

systems, making it possible to derive practical advantages, providing considerable added value in everyday production."

In practical application, this means giving the machines the capability to network and organising data traffic in a meaningful and secure way. Not every parameter needs to be read out and transferred, not every piece of information is worth saving in the cloud. In cooperation with Siemens, HELLER has developed an edge computer housed in a small grey box called SINUMERIK-Edge that performs a number of tasks. "The edge computer currently offers the most secure solution to provide machine tools with network capabilities. Both in terms of the physical design – since the input and output signals in the box are technically separated from each other – and in terms of the encryption and identification management which often exceeds the security standards of regular corporate networks," explains Bernd Zapf. The relevant data is extracted with SINUMERIK-Edge, marked with a time stamp and pre-processed for further use.

The user decides whether he only wants to integrate the machine tool into the corporate network on control station level or if he wants to connect it to the cloud environment, the so-called Mindsphere. HELLER uses the cloud to provide various cycles, resulting in improved adaptation of the machine tool's machining parameters according to a given situation. These include parameter blocks for rough machining of cast-iron workpieces with special monitoring of tool overload, machine compensation in case of environmental temperature fluctuations, re-assignment of the tool magazine according to tool usage frequency, increased dynamics of the feed axes depending on the actual workpiece weight or the imaging method presented at EMO 2017 enabling the three-dimensional representation of workpiece tolerances. In case a specific quality level needs to be guaranteed across a number of different manufacturing locations, cooperating comparisons are possible. As a result, processes on partner machines or even entire manufacturing lines can be monitored and in case of deviations from predefined tolerance zones, it is possible to take countermeasures early on before costly rejects are produced. Series manufacturers who usually verify adherence to quality rules by means of sampling are able to check and document the dimensional accuracy of every single part produced on a continual basis. As part of the cascaded networking solution, either using the corporate network (private cloud) or an internet-based connection to Mindsphere, the edge computer, as the key component, gives companies with different requirements access to HELLER's value-added services.



The transformation of the data into information offering high added value to the customer is guaranteed through combining them with HELLER's industry knowledge. Due to the knowledge about the machine and its functions gained over many years, no one knows the correlations inside the machine tool better than the manufacturer. The data collected by SINUMERIK-Edge are pre-processed by a model stored in the computer which translates them into diagrammed trend curves, workpiece images or easy-to-interpret user instructions. The models stored on the edge computer enable separate monitoring and analysis of process influences and machine influences. Whilst the CNC control processes one PLC block after the other, the transformation of pre-compressed data on the edge computer and subsequent transfer to the cloud environment allow storage for an unlimited period of time. Moreover, the full capacities of the machine control are available for the machining process and are not restricted by the data processing. Observing the data collected this way over a long period of time – which due to the high computing capacity and varied algorithms can be achieved in a more comprehensive manner in the cloud than in the machine's CNC control – leads to a significant increase in availability. As part of the error and monitoring diagnostics, this allows to compare current events with previously recorded data, significantly improving the predictability of failures or maintenance intervals (predictive maintenance). The learning of instructions for the operator and the detection of correlations,

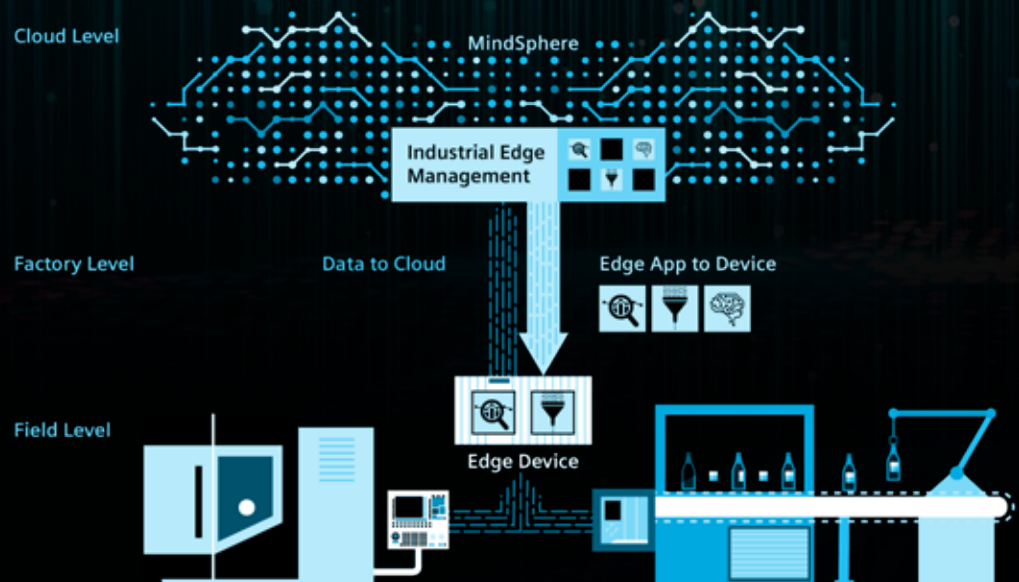
for example how temperature and friction situations influence the machining result, is only possible using the cloud as an 'external storage and computing station' due to the lack of long-term storage inside the machine. Imminent monitoring events can be predicted precisely and thus effectively prevent a machine failure. The same applies to the operator instructions which can be given prior to a failure contrary to error messages which actually provide the information too late only after an event has occurred. "Unscheduled machine downtimes must be prevented under any circumstances," Bernd Zapf emphasises. "With the solutions presented at AMB, we will have moved another major step closer to this goal," explains the head of development and gives further details: "With 'Collision Avoidance' we will be presenting a recent development mainly consisting of two components: a calculation algorithm which examines potential collisions even before the machine performs any motions and prevents the machine from traversing to the respective positions. The function can be expanded by video camera-based monitoring of the work area to check if workpiece, clamping and the tool are correct. It ensures that the machine is equipped with the correct workpiece and the correct tool, preventing damage

resulting from incorrect place assignment of a tool in the magazine. This package provides comprehensive protection, ensuring a collision-free work area." As a result, the risk of a costly crash between the spindle and the workpiece definitely belongs to the past. Users working under high time and cost pressure no longer have to fear one of the most common causes for serious damage to the workpiece and the machine.

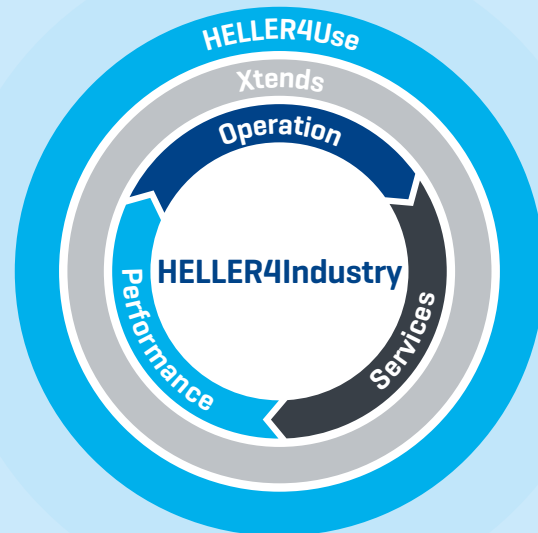
With HELLER4Industry, the machine tool manufacturer paves the way into Industry 4.0. The combination of highly precise machine engineering and powerful IT tools opens potentials to users in any situation and their use will demonstrably result in safer processes and high production rates. The communication skills the machine tool gains through the integration of SINUMERIK-Edge is the key to intelligent optimisation measures that are situational, needs-based, up-to-date and above all – safe.

Bernd Zapf, Head of Development
New Business & Technology:

"Industry 4.0 gives us the means to gain deeper insights into the process correlations [...], making it possible to derive practical advantages, providing considerable added value in everyday production."



HELLER4Use



The usage model providing a new level of flexibility

TEXT [Franziska Hapke / Manfred Lerch](#) PHOTOS [Jens Gelowicz](#)

The economy is booming. Many companies are having trouble to produce the required volumes with their existing manufacturing capacities. Moreover, shorter innovation cycles, the growing material and component variety and complexity as well as the constant cost pressure are posing significant challenges to enterprises aiming to remain competitive. Time to buy new machines? And, if so, how can a system planned today be able to produce whatever parts will be in demand in the years to come? The HELLER4Use usage model perfectly responds to this situation and the challenges it brings. As a HELLER customer, it enables you to use your machines according to your current requirements at attractive and variable costs. You are able to produce the necessary volumes whilst costs incur when the machine is producing and you are making money, giving you maximum flexibility. The required machine

data are collected, evaluated and provided to a digital billing system in an efficient manner, using the existing HELLER4Industry functionality. Additionally, visualisation of specific information allows to determine the wear status and to take all preventative measures necessary to avoid unscheduled downtimes. As part of HELLER4Use, you benefit from extremely capable machines configured to your needs and wishes without any capital commitment and with the right to return the machine or to switch to another HELLER model, enabling you to adapt your HELLER machine to changing production requirements. Of course, you can count on personalised advice and drafting of the contract to your individual requirements as well as quick and hassle-free processing. For this issue of *HELLER the Magazine* we asked two companies about their experience with the usage model in practical application.

Neueder Maschinenbau GmbH & Co. Betriebs KG has been one of the first HELLER4Use customers. Managing Director Andreas Neueder has not regretted the decision to opt for the model ever since.



TRIED
AND
TESTED

HELLER4Use

User-oriented and proven in practice

With the introduction of HELLER4Use, HELLER aims to ensure the productivity and availability of the machine. In addition to this added value, users also state numerous other benefits that the new usage model provides compared to traditional financing and leasing offers. The companies KMF based in Kempten and Neueder in Landsberg, for example, like the fact that it does not involve high ongoing costs and so enables them to respond flexibly to the economic situation.

Both Managing Directors have experience with financing and leasing solutions. To Jürgen Fleckenstein, Production Manager at KMF Kemptener Maschinenfabrik GmbH, and Andreas Neueder, Managing Director of Neueder Maschinenbau GmbH & Co. Betriebs KG, HELLER4Use was a completely new concept. Despite having been HELLER customers for many years, both were sceptical at first. For them, different criteria were in the foreground.

Andreas Neueder closely looked at the offered model from the commercial point of view: "We now produce on four HELLER machining centres and based on our experience have great confidence in the company. That was one of the prerequisites for me. Nevertheless, I made some calculations to evaluate the HELLER4Use model. The result: leasing or financing solutions result in permanent fixed costs, even if we were to reduce our manufacturing volume to a single

shift. With HELLER4Use, there are no such high ongoing costs, because only the effective machine usage is charged in addition to the basic cost. In total, the machine hour rate over a year is much lower than with conventional financing models. That is why we opted for HELLER4Use with the new horizontal machining centre model H 5000 at the beginning of the year." He also says that the usage model is extremely user-oriented in terms of machine utilisation.



“Eight years ago, we already chose HELLER as our milling partner and it has been a consistently positive experience.”

Jürgen Fleckenstein,
Production Manager at KMF
Kemptener Maschinenfabrik GmbH

According to him, it helps to minimise the risk during the ramp-up phase of new projects: when batch sizes increase only slowly, there are no costs except for the monthly basic fee, including the 150 spindle hours. For Andreas Neueder, the icing on the cake is that the HELLER4Use model comprises a full service contract and preventative maintenance. For this purpose, machine data are acquired and evaluated online, enabling to identify early on if wear parts need to be replaced. However, maintenance always means that the machine is down. Therefore, Andreas Neueder is not necessarily a fan of full service agreements – he prefers to see the machines in operation throughout three shifts. However, since the machine is predominantly used for grey cast machining under tough conditions, the preventative service and maintenance measures provide peace of mind – and speak in favour of HELLER4Use.

For Jürgen Fleckenstein, the manufacturing aspects were the key points when opting for the new HELLER machining centre model H 2000 in combination with HELLER4Use. KMF in Kempten predominantly machines forged components in batches between 500 and 600 parts. For the Production Manager, HELLER4Use came more or less by coincidence. That is why he did not analyse and evaluate the model in detail. However, he was convinced that everything would

work just fine with HELLER. “Eight years ago, we already chose HELLER as our milling partner and it has been a consistently positive experience. However, at the beginning of the year we needed to invest in a new machining centre at relatively short notice. We did not have any experience with the new HELLER usage model at the time. Yet, to offer this type of model, you must have confidence in the quality of your machines. What was really important, however, was that availability is a top priority to us. Therefore, I find it very convenient that service and preventative maintenance are included in HELLER4Use. We also employ six staff for maintenance. They now have time to look after the other machines.” The company based in Kempten plans to purchase the H 2000 after the 72-month usage period. However, should technology have advanced so far in six years’ time to allow for a further reduction in cycle times, it would be no problem according to Fleckenstein since KMF has the option to either keep the machining centre or to return it to HELLER. Therefore it is hardly surprising that HELLER4Use provides an extremely appealing option to the company in Kempten for future machining centres.



Neueder Maschinenbau GmbH & Co. Betriebs KG

In the third generation, the family business, employing around 80 people, is synonymous with efficient CNC machining in the areas turning, milling and grinding as well as the assembly and testing of complete sub-assemblies. The company is a supplier to customers from the automotive and commercial vehicles industry and mechanical engineering companies. Currently, it uses five HELLER machining centres: one H 2000, two H 5000 and one H 6000.

Andreas Neueder, Managing Director: “For the first time, HELLER4Use was presented to me at EMO 2017. So we were probably one of the first customers to opt for this model. One major advantage, I believe, is the flexibility it provides including service. With a financing or a leasing contract, these services would have to be added to the costs.”

KMF Kemptener Maschinenfabrik GmbH

For more than 60 years, KMF Kemptener Maschinenfabrik, which is part of the Hydraulik Nord Group and employs 180 people, has been a supplier of top-quality hydraulic components. It predominantly machines forged components with long cycle times. For many decades, the cylinders manufactured in-house have been setting standards in agricultural engineering, construction machinery, commercial vehicles and stationary hydraulics, such as lifting platforms. The company currently owns three HELLER machining centres.

Jürgen Fleckenstein, Production Manager: “Leasing or financing contracts cannot be compared with HELLER4Use, because maintenance is included in the HELLER model. Yet, even without HELLER4Use we would have invested in the H 2000 machining centre.”



Mobility in transition

Opportunity and risk for the metal-cutting industry

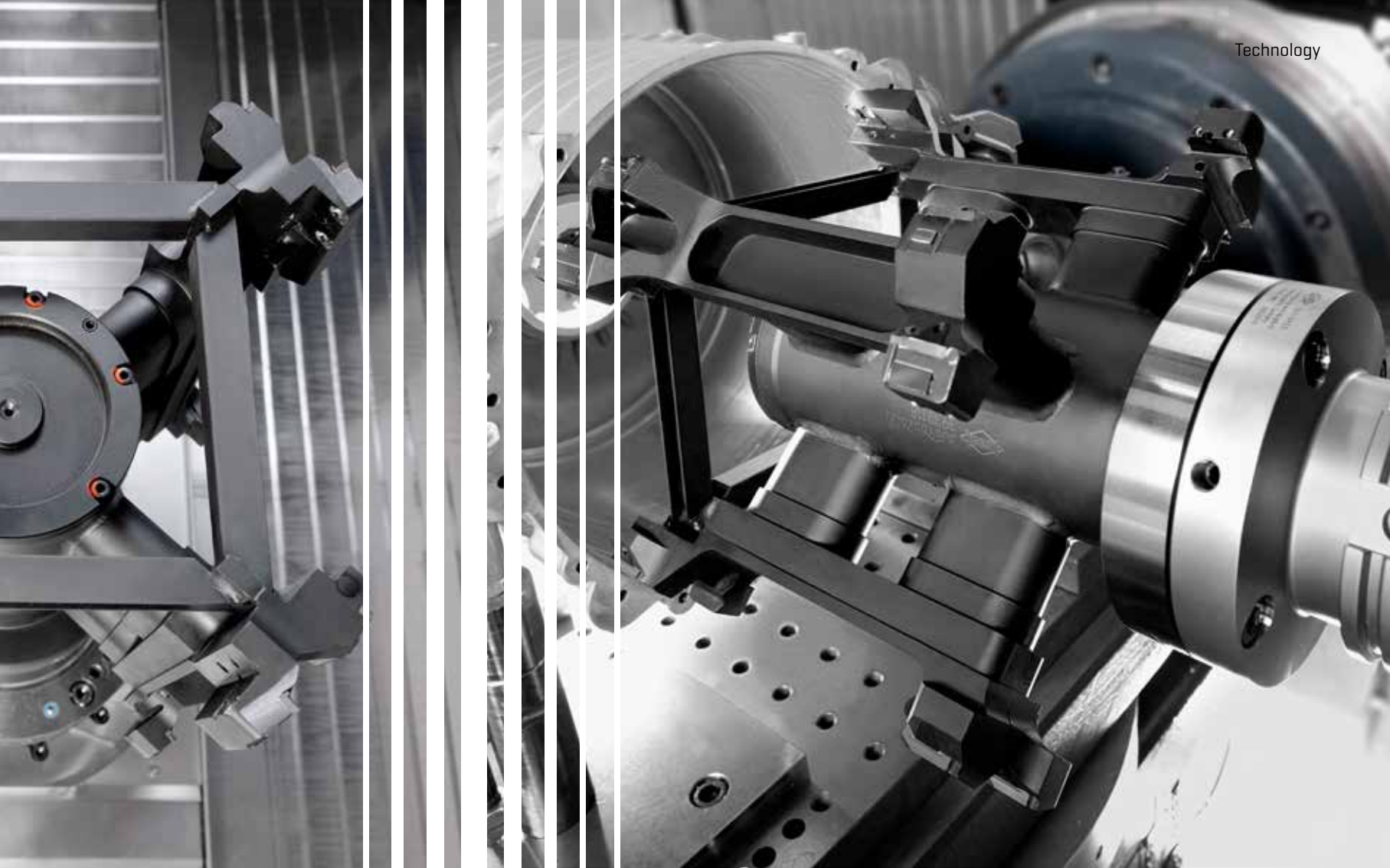
Mobility is changing. For the automotive industry this means that it has to develop alternative drive concepts. One approach is to move away from the combustion engine towards electric drives. Sooner or later, the majority of vehicles on the streets are planned to be electrically powered. As a cutting tool supplier to the automotive industry, MAPAL made this topic part of its strategic orientation from an early stage, transferring its expertise in the machining of conventional drivetrains to the machined components of electrically powered vehicles. This expertise is very much in demand considering, for example, the challenge posed by the exacting requirements in the manufacture of a newly designed stator housing.



TEXT Patricia Hubert [MAPAL] PHOTOS Jens Gelowicz



MAPAL is one of the leading international suppliers of precision tools for the machining of nearly all materials. With its innovations, the family-owned business founded in 1950 is setting new trends and standards in manufacturing and metal-cutting technology. MAPAL sees itself as a technology partner supporting its customers in the development of efficient and resource-saving machining processes based on customised tool concepts. The company is represented in 44 countries with production, sales and service locations. In 2017, the MAPAL Group employed 5 250 people.



In 2017, MAPAL mastered such a challenge in cooperation with HELLER. The machine manufacturer received an enquiry to design and offer the complete machining process for a newly designed stator housing – including the machines, tooling, process, clamping fixtures and all related data – within a narrow time frame set by the customer. The requirements on the component were very high and the specified tolerances very tight. Already during the preparation of the quotation, HELLER involved MAPAL as the tool supplier. Together, HELLER and MAPAL designed the complete process for the machining of the new component. One advantage was that, having worked together for decades, the two companies were able to tackle the task as a well-coordinated team. Together, they specified the appropriate tools. First prototypes had to be delivered within a short time. The challenges the thin-walled stator housing posed in terms of the machining process were solved in a joint effort.

Stator bore as the greatest challenge

The machining of the main bore of the stator housing – the stator bore – was the greatest challenge in the entire process. The process-capable and cost-effective finish-machining of deep bores with large diameters is one of MAPAL's key competitive differentiators. The tool manufacturer with strong ties to the automotive industry gained this expertise through many years of experience in the machining of transmission housings. Now it has transferred this expertise to the requirements of the stator bore.

For the joint project with HELLER, MAPAL opted for lightweight and yet extremely robust tools in welded design that are ideally suited for the machining of the thin-walled housing. Despite the high projection length and large diameter of more than 250mm, the tool delivers a high degree of precision. A tubular design provides the base body for the weldment. The tools only have half the weight of a conventional boring bar. The carriers

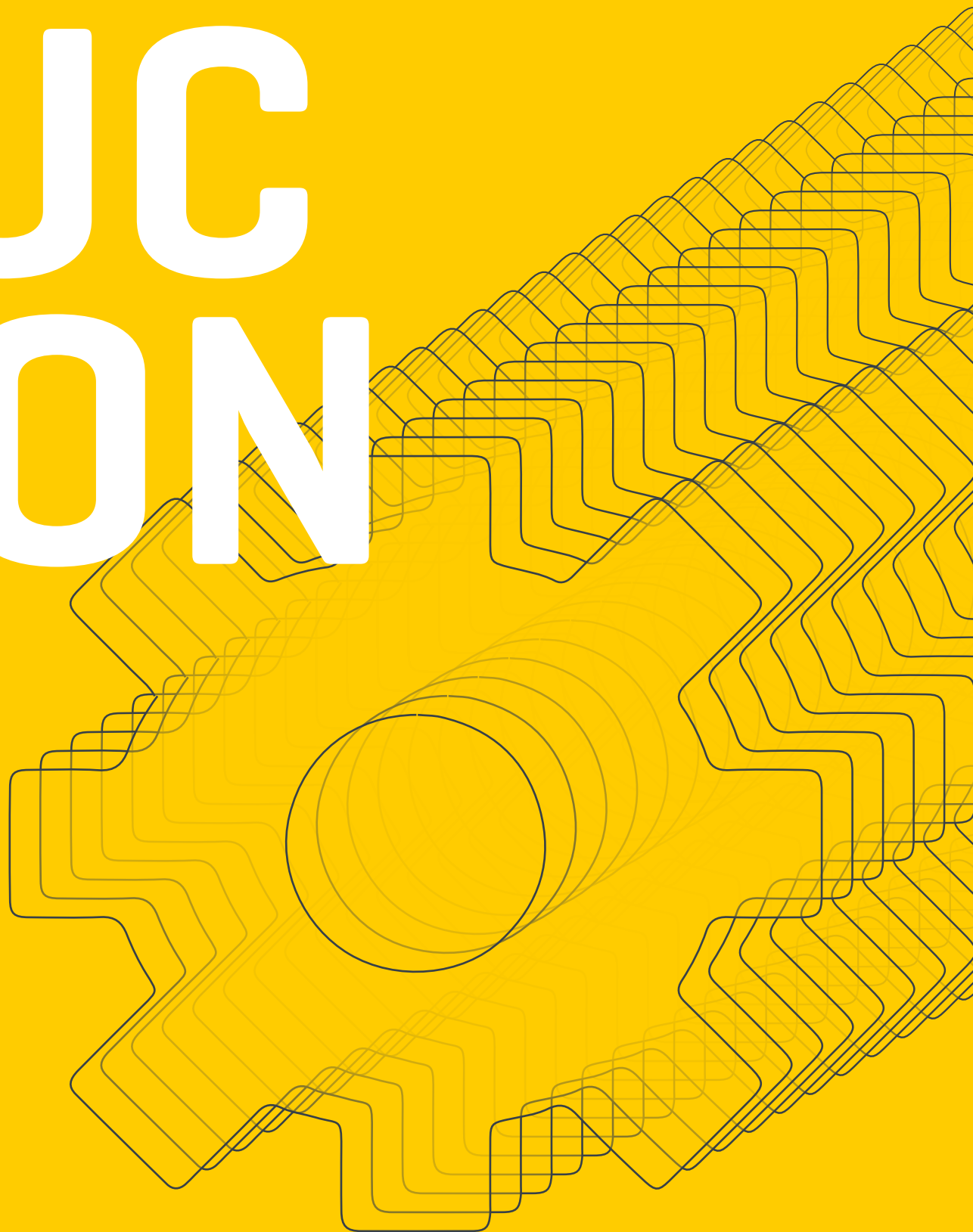
for the cutting inserts and the guide pads are welded on and support each other by means of connecting ribs. This minimises the risk of chatter. Additionally, they ensure support during interrupted cuts. The tubular design and the stabilising ribs provide a very high resistance to bending.

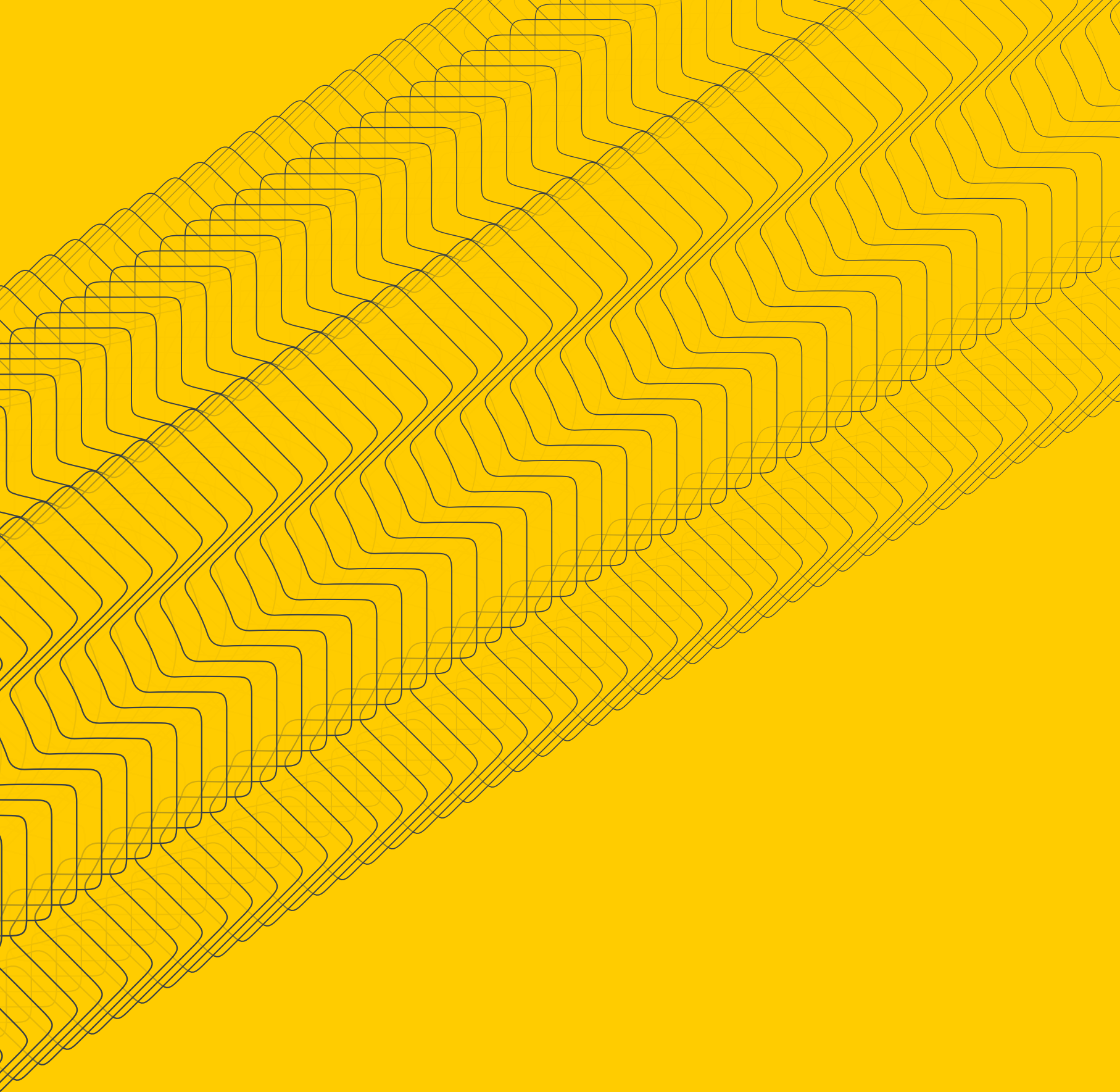
The machining of the main bore was divided into three operations – pre-machining, semi-finish machining and finish machining. The main bore is machined with high precision in the final step to within a few microns, using the fine-boring tool in welded design. For this purpose, the PCD-tipped inserts can be finely adjusted. Guide pads support the tool inside the bore.

Successful implementation in series production

As for the stator bore, the machine and the tool manufacturers' experts found appropriate solutions for all other machining operations. Apart from proving that the complete machining of the workpiece could be done within the specified tolerances, the partners were able to demonstrate that their joint solution enables process-capable manufacturing within the predefined cycle times. Both HELLER and MAPAL gained sustainable know-how during the joint project, resulting in entirely new tool solutions, including self-aligning tools, allowing to achieve the required positional tolerances resulting from the necessary flip-over machining of the component. As a result, both companies succeeded in designing the perfect production process in the first expansion stage. Today, the customer manufactures a 5-digit production volume of the stator housing.

PRO DUC TION





60_ Productive all along the line

64_ 13 stations ahead:
new flow line at HELLER UK

Productive all along the line



HELLER
Germany

From the raw part to the
finished spindle assembly



Currently, Mechanical Manufacturing at HELLER is pulling out all the stops to introduce a new spindle line. Spindle production in the heavy-machine shop is planned to be up and running by the end of this year. In a second step, synchronised flow assembly of spindles is to follow in 2019. As a result, the HELLER spindle assemblies will provide an even higher degree of precision than they already do. "With the new spindle line, we will be able to achieve a significant increase in the quality of the finished products," explains Christian Kurtenbach, The Head of Mechanical Manufacturing. He also expects a "dramatic reduction in cycle times" and "enormous cost savings".

TEXT *Tanja Liebmans-Greuter*
PHOTOS *Jana Schmitz*



**The manager of the new spindle line:
Heinrich Schweinfurt**

Spindle shafts and spindle assemblies are considered the heart of a machine at HELLER. With the introduction of the spindle line in Mechanical Manufacturing, the machine tool manufacturer based in Nürtingen underscores the significance of the quality of this vital component. Therefore, it comes as no surprise that the company decided to place the management of the new spindle line into the hands of a highly qualified man: as of 1 October 2018, Heinrich Schweinfurt will lead and manage the 20-strong spindle line team. Until now, the 35-year-old was the Assistant to the Manufacturing Division Manager and played an important role in the planning of the spindle line. When asked about his major goal he said: "Together with HELLER, I want to achieve optimal results."

**A lot is going on and
in a state of flux at
the moment,
especially at
HELLER's
Mechanical
Manufacturing.**

As reported in the last issue of *HELLER the Magazine*, the German production location has undergone numerous changes, including the interlinkage of several systems. At the Brazilian location in Sorocaba, the reorganisation is also in full swing. The objective is to leverage the advantages of the integrated network.

"Our goal is to create optimal manufacturing conditions having series production character," says Christian Kurtenbach, proudly describing the latest optimisation in the heavy-machine shop in Nürtingen: the installation of a spindle production line by the end of this year. It is planned to expand it by a spindle assembly line in the coming year in order to create "optimal prerequisites for the future".

Already in the summer of 2017, a team led by the Head of Mechanical Manufacturing had started to investigate the possibility of installing a spindle line in the heavy-machine shop. The result was a long list of advantages the modification would bring, and so the management approved a six million Euro investment for the project in November 2017. Kurtenbach: "The new spindle line brings benefits to all – to HELLER, to our customers and also to our employees."



Advantages of the new spindle line

01

Increased quality

Precision is of paramount importance with spindle shafts. It is indispensable in order to comply with highest quality requirements. The reliable and trouble-free use of spindle shafts and spindle assemblies must be guaranteed at all times regardless of the high stresses placed on them. To ensure this, HELLER will integrate a high-precision measuring machine into the spindle line. According to Kurtenbach, it will be "the most precise measuring machine within the entire HELLER Group". As part of a standardised measuring process, this will allow to acquire process-capable measured values, using the production data acquisition system (PDA), which are then stored in the central corporate management system ERP. As a result, each spindle provided with a serial number will have an analysable measured value, thus contributing to increasing the precision of the finished product – the spindle shaft assembly – in synchronised flow assembly. Due to the exacting requirements on precision, minimal temperature variations can already lead to significant deviations. That is why the HELLER spindle line is installed in an almost dust-free environment maintained at a constant temperature. A new ventilation and air conditioning system was installed to ensure these conditions.

02

Cycle time reduction

Until now, it took three to four months to complete a spindle package. In the future, it is planned to produce the finished spindle assembly from the raw part within two weeks. Long transport and idle times will be eliminated. The motto is 'short distances' and indeed, manufacturing will have a new layout soon: the spindle production line is installed as an extension of the measuring and fine-machining room and is linked to the subsequent synchronised spindle flow assembly by a manual conveyor. Additionally, the tool setting room is now optimally located in the centre of the hall. Moreover, the synchronised flow assembly line will be provided with a central high-bay warehouse for storage of the individual parts of the spindle assembly. The high-bay storage has been named the 'parts supermarket'. The reduced cycle times also result from 'product specialisation'. Highly qualified staff will be working at the new spindle line. They will accompany the raw part all the way through to the finished spindle assembly, contributing their comprehensive know-how about every single step of the process. In other words, a single contact will be available for the entire manufacturing process. To achieve this product specialisation, Mechanical Manufacturing initiated the 'ABC Machines' subproject in 2016. The name refers to the classification of the entire machining equipment into the categories 'A', 'B' and 'C', with 'C' referring to less significant machines. The key question of the analysis was: which 'C' category machines can be eliminated? Finally, twelve 'C' machines were replaced by six new machines, including a new mill/turning centre, a new internal grinding centre and a new external grinding centre. The complete high-precision machining equipment forms part of a single line and focuses on the manufacture of specific products, i.e. spindle shafts and spindle shaft assemblies.

03

Cost savings

Kurtenbach assumes that the new spindle line will enable cost savings of approx. 30 percent. The savings potential is due to the short distances, the product specialisation within the context of complete machining and the reduction of the machining operations, using more productive machines. Moreover, less effort is required for preliminary planning and control, with production based on the actual demand.

04

Paperless production

Another goal is to eliminate the need to print out drawings and operation layouts at the modern assembly workstations. Access to the data will be accomplished exclusively via the centralised corporate management system using large flatscreen monitors.

05

Increased customer satisfaction

Customers will not only benefit from the precision and high quality of the HELLER products, shorter cycle times in the spindle line also enable a faster response to customer demands. Quick delivery will no longer be a problem, even in case of short-term requests.

06

Increased staff satisfaction

Staff is already looking forward to the new spindle line. Apart from advanced assembly workstations within a fully air-conditioned environment, they will also benefit from the latest tool technology and sophisticated measuring methods. Additionally, the staff room in the hall will be refurbished. The new spindle line will also give staff an opportunity to advance their careers, gaining multiple qualifications. Staff working at the spindle line will also have to meet highest standards. They need to be flexible and prepared to master all process steps in the spindle line. As a reward, these all-rounders will have the sense of accomplishment of holding the finished product of their work in their hands and not just the raw part.



The Worcestershire factory started operating in 1995, 21 years after the HELLER UK subsidiary was formed. As part of the latest initiatives, activities in Redditch have expanded into assembly of 5-axis machines in addition to 4-axis models for the world markets. The site is also a competence centre for high quality, high precision turnkey projects and innovative manufacturing solutions.

HELLER
United Kingdom

13 stations ahead

New flow line for the
final assembly of
machining centres

In the last issue of *HELLER the Magazine* we already reported that the HELLER production facilities in Redditch, UK are in the process of a step-by-step expansion. The administrative and Application Engineering departments underwent a comprehensive makeover and a new customer area for machine demonstrations was created. Additionally, a new logistics system and a 13-station assembly flow line for horizontal machining centres were installed. As a result, the local production capacity of HELLER has been significantly increased and both Matthias Meyer, Managing Director of HELLER UK, and Operations Manager David Evans are enthusiastic about the expansion.

TEXT Chris Wright / Franziska Hapke
PHOTOS Chris Wright



A majority of the pre-assembled groups of components, including the machine column, the pallet changer and the energy unit powering the hydraulics and pneumatics, are added at the first station.



The last part of the process is to machine a standard NAS test piece, which is inspected by an independent team of metrology staff to give the customer a guarantee of the machine's accuracy.

Electrical commissioning takes two, three or even four days, depending on the range of options selected for that machine and so occupies the next one or two stations.



New system results in a 20 percent reduction of assembly time

Mechanical assembly of horizontal machining centres is completed over the first four stations in the line. All bed assembly is carried out off-line and the casting is delivered to the first carriage with the linear guideways already fitted. A majority of the pre-assembled groups of components, including the machine column, the pallet changer and the energy unit powering the hydraulics and pneumatics, are added at the first station. The Strothmann carriage is raised pneumatically and pushed along rails set in the floor to the next station location, where air pressure is released to allow the carriage to lower to the floor. The main part of the work here is to attach the electrical cabinet, which is craned across from another part of the factory. Some of the ancillary equipment including cables and pipework are also fitted. At the third station, two further major groups are added, namely the tool magazine and changer assembly and the machine guarding. Station four, which completes the mechanical assembly phase, sees all of the pipework and cabling routed from where it originates to where it needs to be connected. At each

station, the amount of work is balanced so that it fits into the current two-day cycle time. Electrical commissioning takes two, three or even four days, depending on the range of options selected for that machine and so occupies the next one or two stations. Later stations in the line are deployed similarly flexibly according to the amount of work needed. It includes geometrical alignment, laser calibration of the axes to ensure repeatability of the machine and an alignment test carried out by a dedicated team in the HELLER factory. The last part of the process is to machine a standard NAS [National Aerospace Standard] test piece, which is inspected by an independent team of metrology staff to give the customer a guarantee of the machine's accuracy. Once each horizontal machining centre reaches the end of the line and is removed for despatch, the Strothmann carriage is lifted by crane and carried back down the gangway to the start of the line to begin the process again two days later. At every stage of the manufacturing process, work carried out on the machine is documented by the individuals concerned, providing full traceability as required in order to comply with the factory's ISO 9001 accreditation.


When they first moved from block assembly of machines in one location to the old flow line, there was an immediate 20 percent increase in productivity. The new Strothmann system has resulted in a further reduction of at least 20 percent in overall assembly time.

Considerable added value for customers in the UK and Ireland

Matthias Meyer: "The fact that we manufacture in this market gives our customers in the UK and Ireland considerable added value. Not only does our staff have a level of product knowledge that is much deeper than it would be otherwise, but we can also call on shop floor operatives, all of whom are apprentice-trained, to help out with installation, commissioning and service if required. Another benefit is that customers are welcome to visit us and see their machining centre actually being built, if it happens to be a model that we produce. Whatever machine they are buying, they can see the quality of engineering input, which is standard across all of our factories."

SER VICES





70_ HELLER Services:
Lifetime Partnership

72_ HELLER service base concept /
HELLER Protect Plus

HELLER Services: Lifetime Partnership

Maximum performance and productivity for your production

Partnership-based support, outstanding expertise, short response times and customer proximity: that is what HELLER Services stand for, offering a comprehensive range of transparent and clearly structured services. Speed is one of our strengths – from spare parts orders, repair requests, technical queries through to machine faults. Our machines and services complement each other perfectly. More than 500 staff working at 30 service locations worldwide are here for you plus more than 40 000 spare parts available from stock.

TEXT **Franziska Hapke / Manfred Lerch**
PHOTOS **Jens Gelowicz**



Our services at a glance

- _ **Hotline:** the right contact person for any requirement
- _ **Spare Parts:** original spare parts immediately available
- _ **Customer Service:** services covering every aspect of your machine
- _ **Retrofit Packages:** develop yourself!
- _ **Financing:** financing solutions tailored to your individual needs and requirements
- _ **Insurances:** insurance coverage just in case
- _ **Service Agreements:** opt for constant productivity
- _ **Trainings:** transform your staff into experts!
- _ **Rebuilds:** expect more than the standard!
- _ **Component Repair:** count on performance made to measure!
- _ **Retrofit:** keep up with the best!
- _ **Used Machines:** a safe choice in any case

For more information go to:
www.heller.biz/en/services



The HELLER service base concept



Short distances and excellent on-site service

The development of HELLER's decentralised service bases arose from the desire to be close to the production locations of our major customers. It all began about 30 years ago with a service subsidiary in Hattingen. Today, HELLER customers benefit from six German service bases with 150 employees, supporting a total of approx. 1 000 customers and 5 000 machines. The service bases provide structures and services that are continually enhanced and developed in accordance with the customers' requirements.

When investing in machine tools, what is important apart from the product portfolio is a consistently high availability and the service provided by the machine manufacturer. Therefore, the primary intention behind the decentralised structure is to assure machine availability during the entire usage period through fast response times. The advantages of decentralisation are based on the short distances to the customers. Other benefits are a better understanding of the local conditions and the ability to react

independently and to make decisions in a non-bureaucratic way. In addition to these regional benefits, numerous other aspects influence the quality level of a well-functioning service network. First of all, a differentiation has to be made between a loss of production, gradual changes and preventative measures. In case of a loss of production, short response and arrival times are what counts. The commitments made must be adhered to and the availability of spare parts including logistics must be ensured. In addition to the implementation of organisational strategies, HELLER also ensures appropriate personnel training, e.g. staff behaviour towards customers and a professional appearance with the relevant equipment. After all, excellent service also distinguishes itself from poor service through staff that truly embodies customer service. It is a prerequisite for solving a problem on site with the required expertise. That is why the HELLER Academy meanwhile also focusses on staff training: 15 years ago, it mainly provided training for customer staff, whilst today, the ratio is 60 percent customers and 40 percent in-house staff. A special three-month training programme, for example, was introduced for the new HF series.

Preventative maintenance assures availability and peace of mind

Maintenance at regular intervals is indispensable in order to avoid losses in productivity, availability or precision. In the age of digitisation, networking and the possibility of Condition Dependent Services (CDS), HELLER has long since begun to establish services focusing on preventative maintenance. After all, preventative maintenance helps to achieve a significant increase in the availability of machine tools, providing peace of mind in production. With HELLER Total Productive Services (TPS), we defined standard packages for service agreements, creating the perfect transition from preventative maintenance to manufacturer inspection through to maintenance measures. In the future, the service engineers will be able to electronically transfer test values recorded during the status assessment on site to the HELLER Services Center in Nürtingen. The data are centrally recorded and evaluated immediately. When thresholds are reached, this process enables to document the history and to illustrate the development of the machine to the customer in a transparent way. Additionally, HELLER offers customers within the German speaking region TPS packages, guaranteeing extended hours of availability and shorter response times. This includes an initial response within two hours and spare parts delivery and service calls on the following working day. These short-term actions are only possible with this decentralised service. Mike Starzmann, Maintenance Technician at Uhlmann Pac-Systeme GmbH & Co. KG in Laupheim, confirms this: "HELLER is quick and keeps 100 percent of its commitments. Even spare parts are delivered the following day, sometimes even the same day. We are extremely satisfied with the co-operation, not only because of the short response times but also on account of the friendly, competent and responsible-minded service staff."



HELLER is systematically expanding its service network within the DACH region. The service department in Austria, for example, has been bundled and is now coordinated by a single contact. With access to satellite engineers for planned calls, customers in Austria are able to benefit from the advantages of the decentralised structure.



A plus that keeps you on the safe side

HELLER Protect Plus

In addition to a comprehensive range of transparent and clearly structured services, HELLER offers insurance coverage for HELLER machines beyond the usual market standards. Whilst HELLER4Use assures productivity and reliability during the usage period, HELLER Protect covers defects on the machine. And what is more, with HELLER Protect Plus you can also cover the downtime costs.

HELLER offers full service solutions for maximum machine availability. For the machines from the H and HF range, the company has developed a model where HELLER provides the machine and guarantees its availability: with HELLER4Use, only the spindle hours are billed, making it a true pay-per-use model. Instead of a down payment when buying a machine, only the costs for the installation and commissioning and for the first 150 spindle hours are billed to the customer on conclusion of contract. To guarantee the availability of the machine, the machine condition is constantly monitored. The key elements of HELLER4Use are Integrated Process Monitoring (IPM) for collision monitoring, a load evaluation, a maintenance manager keeping a maintenance log as well as the media monitoring function for maintenance diagnostics. All this ensures that preventative service and maintenance actions are performed whenever necessary, preventing unscheduled production downtimes. The model is available for a period of up to 72 months at extremely attractive and variable costs. Customers have access to usage and condition data of the machine at any time via the HELLER Services Interface.

Reliable protection independent of the cause of damage

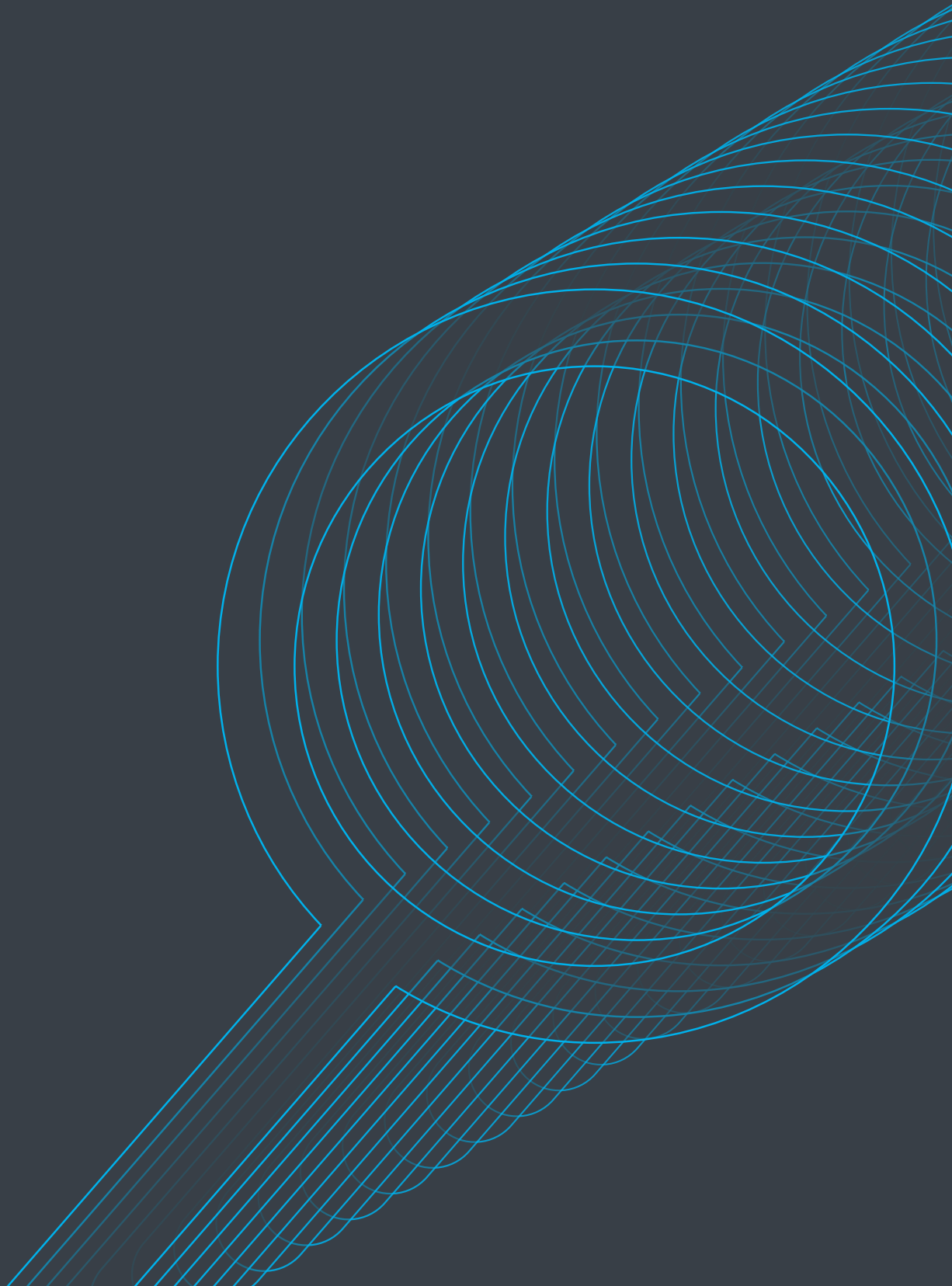
There are many reasons for machine downtimes – from failures due to material defects, design faults or technical faults such as short circuits or excess voltage through to forces of nature like storms or frost. HELLER Protect provides coverage even when the customer is at fault, e.g. in the event of operating errors, negligence or malevolence. In most cases, liability needs to be established before a damage is rectified and the claim settled by the insurance company. The time required to do this can put a company's existence at risk. In cooperation with a leading German insurance company, HELLER has found a solution to this problem. HELLER Protect can be concluded for HELLER machines in combination with a Total Productive Services (TPS) Maintenance Package. In the event of damage, the customer will only have to pay a deductible of EUR 1,000. A major advantage is that up to an estimated damage amount of EUR 50,000, repairs can be started immediately in order to minimise the machine downtime.

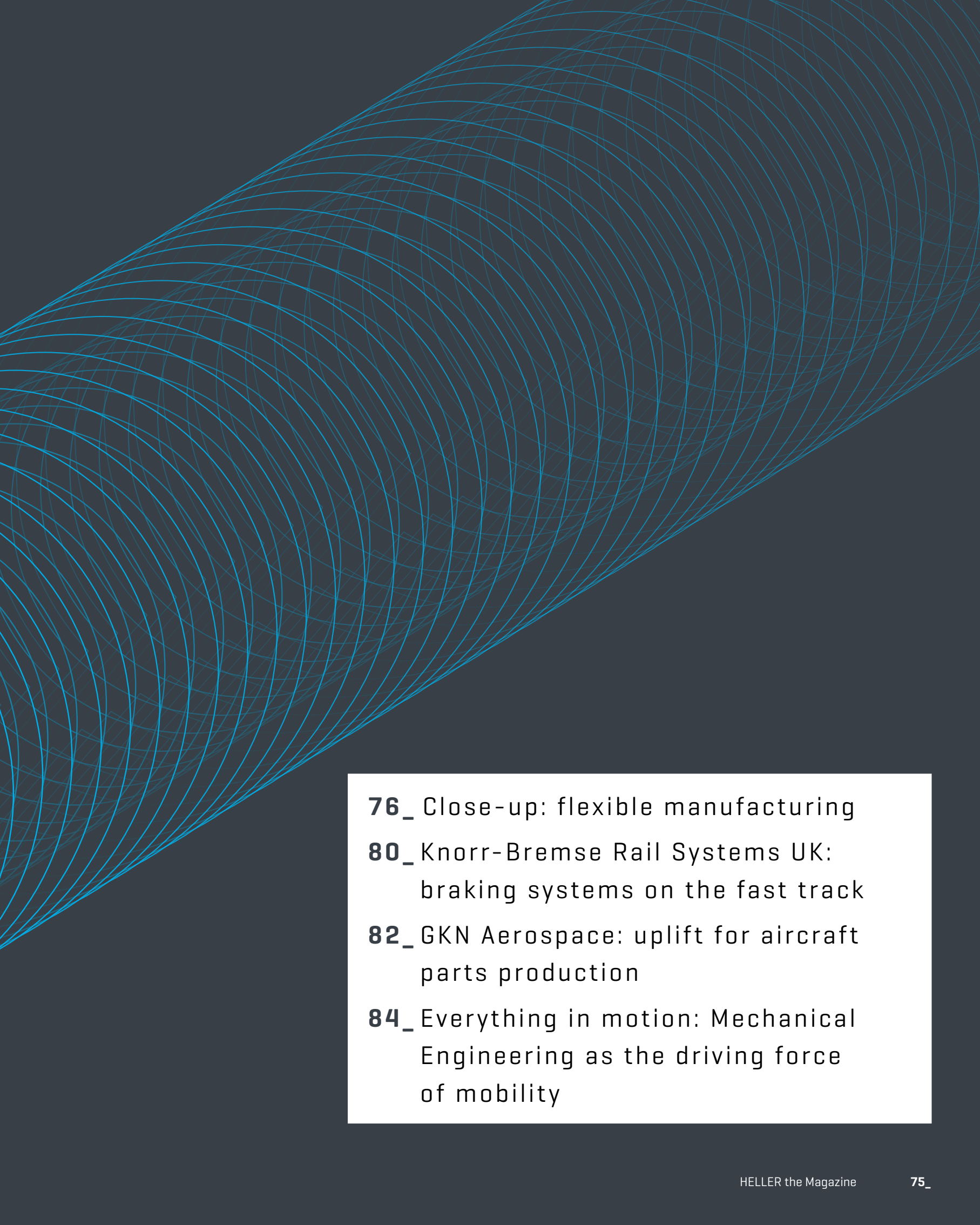
In addition to HELLER Protect, machine downtime costs can be covered with HELLER Protect Plus. In the event of damage, HELLER Protect Plus becomes effective, covering machine downtime costs on the basis of the insured machine's hour rate up to EUR 100,000 and up to a maximum of three months downtime.

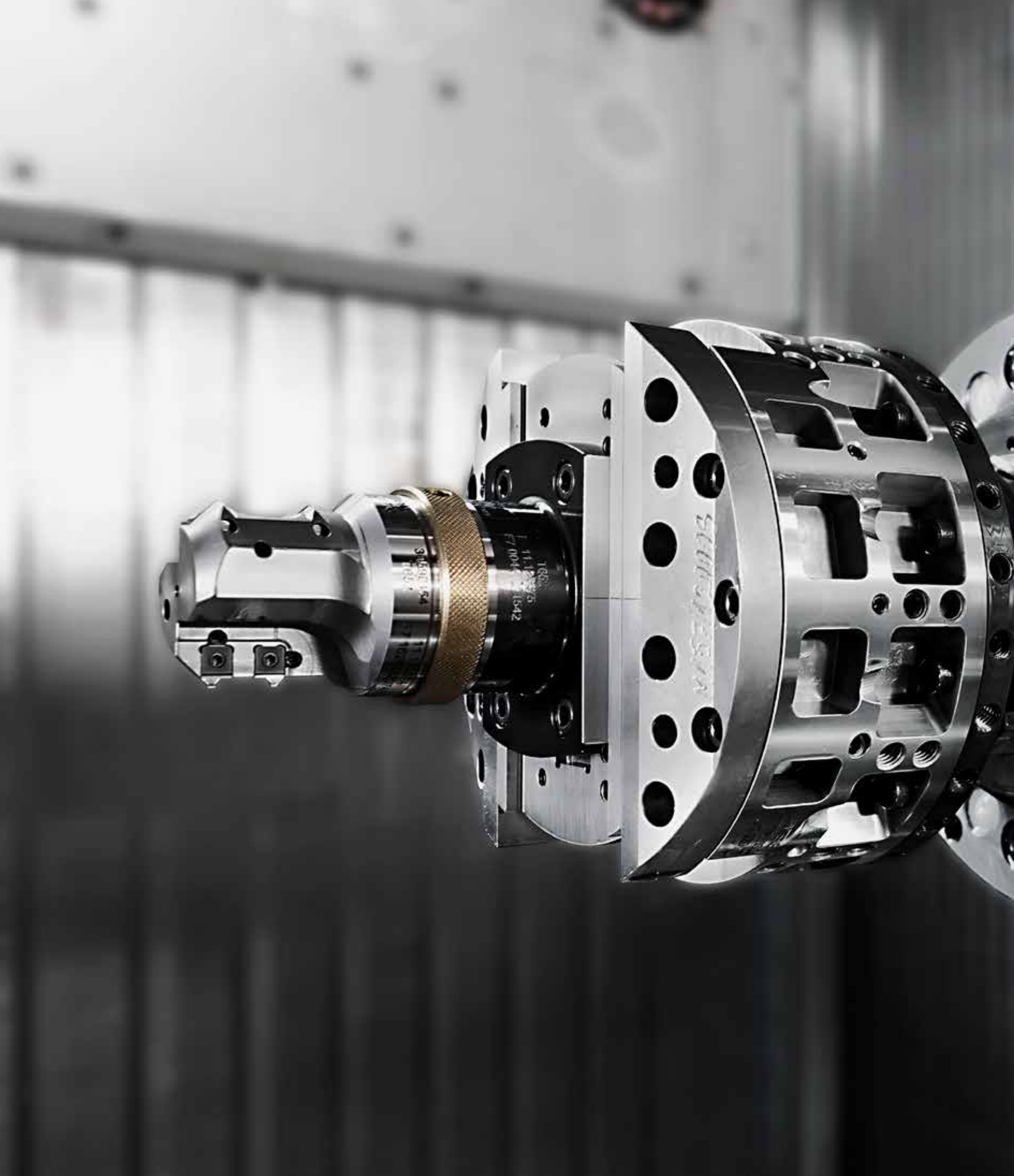


HELLER Protect is available for machines in Germany. The insurance fee is independent of shift operation. At 2.52% p.a. plus insurance tax for new machines, it is also extremely attractive. Per claim, a deductible of EUR 1,000 is payable. HELLER4Use comprises HELLER Protect. With HELLER Protect Plus, the compensation is paid on the basis of the hour rate for the insured machine.

MARKET



- 
- 76_** Close-up: flexible manufacturing
 - 80_** Knorr-Bremse Rail Systems UK:
braking systems on the fast track
 - 82_** GKN Aerospace: uplift for aircraft
parts production
 - 84_** Everything in motion: Mechanical
Engineering as the driving force
of mobility





Close-up Flexible manufacturing

Core competency
combined with
complementary technologies

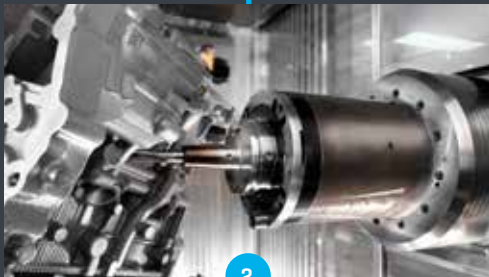
The automotive industry increasingly uses flexible manufacturing systems. The goal is to be able to respond quickly and flexibly to changing customer requirements. Current project examples from practical application are the systems supplied to a renowned OEM for the manufacturing of crankshafts. Additionally, HELLER was awarded the contract for the delivery of three flexible manufacturing lines for a range of different workpiece types to be installed in a new engine factory. In addition to the manufacturing lines including machining centres and automation, the contract comprised manufacturing equipment for the honing, washing and brushing operations as well as assembly cells and measuring and testing technology. An essential part of the line is the new HELLER CBC (CylinderBoreCoating) process technology for the coating of the cylinder bores of crankshafts. The following pages show you the key process steps of the manufacturing line.

TEXT **Manfred Lerch**
PHOTOS **Jens Gelowicz**



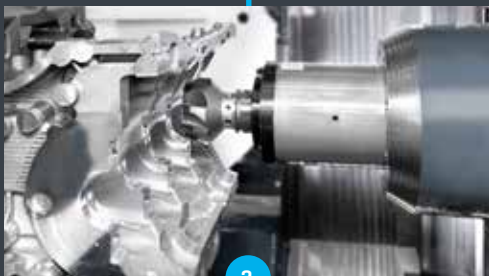
1

Complete overview of 'Loop 1' of the crankcase manufacturing system. Production started in 2018 with a volume of 250 000 units per year. The line is designed for 4- and 6-cylinder engines.



2

The surface for the crankshaft bearing caps in the bearing channel is milled using PCD diamond tools.



3

Prior to the assembly of the crankshaft, the mounting surface of the bearing caps is machined.



4

Different workpiece variants were to be produced on a flexible manufacturing line. Loading of the individual components takes place in 'Loop 1', comprising a total of eight HELLER machining centres for OP 50 equipped with loader bars.



5

The crankshaft masks are installed to cover the crankshaft area before the subsequent coating procedure, protecting it from contamination by flying sparks. Dirt particles are also suctioned off in a purposeful manner through the machine.



6

The grippers move into the housing. The challenge from the mechanical engineering point of view are the very small clearances. The level of precision achieved is comparable to an assembly machine and almost unique for an automation system.



7

Blister handling. The carriers for the masks are placed into stations. The fully automated system picks up the required number of masks from the carriers and places them into the crankcase.



8

The layout of the blister units. In the background are the OP 100 machines for the roughening of the components. Aside from the loading of the carriers into the automation, no other steps are required since the automation performs the complete handling operation from unloading to coating through to disposal.



9

The cell in which the pre-heating takes place. The robot in the foreground provides the covers for the cylinder head face. The robot in the background is responsible for component handling. It grips the raw part, transfers it to the rotation oven and picks up the pre-heated component and positions it for the coating machine.



10

The characteristics of the surface structure are determined using a white-light measuring machine [surface roughness tester]. When all the requirements are met, the component is transferred to the coating station.



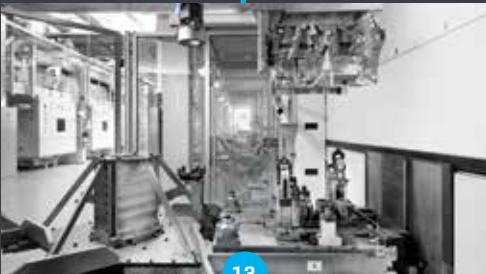
11

The roughening procedure has to be performed using pressurised air. This means that the machining process is completely dry. For this purpose, a HELLER vertical machining centre model MC 20 V is used, which is based on the horizontal version of the MC 20.



12

Following each operation, a measuring system inspects the cutting edge of the tool, since wear or breakage could impair the required quality of the roughened structure.



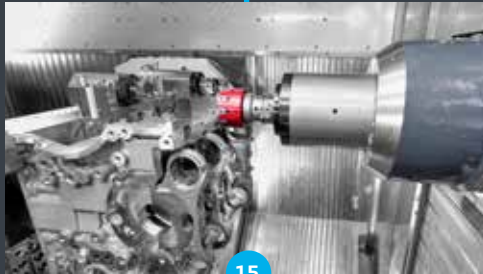
13

The loading station of the CBC 200. For the coating process, the component is placed onto an adapter. The mask with the mask holder for the cylinder head joint face and the component are swivelled into the work area as a unit where the coating process takes place.



14

The thermal spraying technology uses twin-arc spraying for the coating of cylinder bores of aluminium lightweight crankcases for automobile engines.



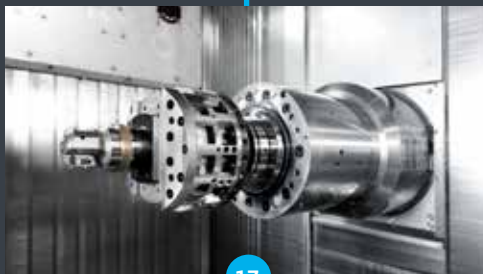
15

The milling of the lower oil pan joint face with the mounted bearing caps is a very sensitive and precise operation: if the PCD diamond milling cutter touches the contours of the bearing cap, the cutting edge will be damaged.



16

The machining of the crankshaft bore (line boring) is performed on a special-purpose machine on the basis of the MC 20. It is equipped with a modified tool magazine and pick-up station for depositing the tool and an additional fixture with counter bearing to ensure that the tool is firmly guided inside the bore.



17

A chamfer is turned at the cylinder bores using a draw bar. The swing diameter of the tool is variable. The draw bar in the spindle of the MC 20 performs the actuating movements.



18

The angular milling head is mounted with a torque bracket to ensure firm fixation of the housing. Milling operations can be performed at a 90° angle to the normal machining direction, and also spot-facing is possible.



19

This section of the conveyor automation is representative of all operations. In 'Loop 2', the components are handled throughout the system with the bolted-on HELLER adapters. The HELLER adapters with identical clamping points and reference planes provide the basis for high precision.



20

The seven machining centres for OP 190 in 'Loop 2'. In total, the manufacturing line for the machining of the 4- and 6-cylinder crankcases for petrol and diesel engines comprises 48 HELLER machines.

Knorr-Bremse Rail Systems
United Kingdom

Braking systems on the fast track

TEXT **Chris Wright**
PHOTO **Jann Averwesser**



Knorr-Bremse Rail Systems


The Knorr-Bremse Group based in Munich is the world's leading manufacturer of braking systems and supplier of additional sub-systems for rail and commercial vehicles. The Rail Vehicle Systems division of this long-established company equips mass transit vehicles such as metro cars and light rail vehicles as well as freight trains, locomotives, mainline passenger trains and high-speed trains with highly advanced products. Along with braking systems, these include intelligent entrance systems, auxiliary power supply systems, control components, driver assistance systems, electrical traction equipment and control technology. In addition, Knorr-Bremse offers driving simulators and e-learning systems for optimum train crew training. In 2017, Knorr-Bremse Rail Vehicle Systems reported sales of EUR 3.33 billion and employed 16 051 people. The division is represented in 25 countries worldwide with production, sales and service locations.

Knorr-Bremse Rail Systems UK specialises in the manufacturing of braking systems for rail vehicles.

The company's patented Distributed Brake Control System EP2002 is considered the best worldwide and is installed as standard equipment in virtually all new metro cars, for example the metros in the cities of London, Bangkok, Dubai and Manila as well as metro systems all over China. It is manufactured at the company's development and production location in Melksham in the UK. Highest quality requirements apply to its production with dimensional tolerances within a range of 25μ and a surface finish of 0.2 CLA in the valve bores. The products comprise eight prismatic main components in total. They are machined from solid aluminium at the adjacent manufacturing site of Knorr-Bremse in Corsham on six HELLER horizontal machining centres equipped with pallet changer. The most recent of these machines was installed in July 2017. Paul Ranford, Improvements Manager in Corsham, explains: "Our EP2002 Distributed Brake Control System was launched in 2004. Until the end of 2015, we steadily increased the production volume. Not least because the system has meanwhile become the standard on railcar bogies. "According to the Improvements Manager, the system's success is due to the fact that the brake force is applied to the entire train. "As a result, the brake force is optimised, taking the different weights of the cars and the condition of the tracks into account." The precision with which the valves are manufactured is another strong argument in favour of the system as it guarantees a long service life, efficient brake performance as well as energy savings. According to Ranford, the company requires manufacturing systems that are able to guarantee a very high level of quality. Due to the increased production volume, Knorr-Bremse had to re-think its production strategies. An increase in production figures had already been taken into account. So in 2015, the company has expanded the HELLER Flexible Manufacturing System consisting of three HELLER machines by a second horizontal machining centre model H 2000. When the company decided to acquire a sixth H 2000, it was equipped with a 4-position pallet magazine in order to maximise the benefits of unmanned production during the night

shift. Together with this investment, a major program optimisation was conducted from July to September 2017 to achieve a further increase in production volume. As a result, cycles times in production were cut by 20 percent. The HELLER machining centres provide a high degree of flexibility so that Knorr-Bremse is able to convert them for the machining of all eight types of prismatic valve components for the Smart, Rio and Gateway versions of the EP2002 system. The pallet magazine has been designed for the manufacturing of six different workpiece types. Two assembly kits with parts for the individual products from the EP2002 range are delivered to the production line at the Melksham factory for assembly.

Paul Ranford explains why the company opted for a HELLER machining centre: "With the takeover of the supplier in Corsham, Knorr-Bremse Rail Systems UK practically 'inherited' four of the HELLER machines. When we purchased an additional stand-alone machine in 2015, we also considered various other suppliers of horizontal machining centres whose machines are used in the Knorr-Bremse Group's production plant in Budapest. Eventually, however, we saw no reason to opt for another supplier, especially considering the fact that Heller UK in Redditch is only two hours away from us. Since the location there also comprises production facilities, HELLER can offer a higher degree of technical expertise and a more comprehensive range of services within the country than other providers." The decision in favour of HELLER clearly has paid off: According to Paul Ranford, the stand-alone machine as well as the recently added pallet magazine were already producing in 24/7 operation three weeks after having been delivered. Ranford also praises the precise understanding that the HELLER team has of the manufacturing operations at Knorr-Bremse Rail Systems UK. According to him, cooperation with the supplier and service support have been first rate. This is reflected in the minimal spindle downtimes at the factory and the high availability which is extremely important in view of the high production volume.



GKN Aerospace

Uplift for aircraft parts production

The largest producer of horizontal machining centres [HMCs] in the UK, Heller Machine Tools, has supplied a large, heavy-duty machine to GKN Aerospace Filton, near Bristol, to rough titanium aircraft components. It was installed on budget and ahead of schedule during the latter part of 2017. This year, it started producing a family of five structural components from titanium forgings, 24 hours a day, seven days a week.

TEXT **Chris Wright**
PHOTO **Inspirationfeed**

Six years ago, there was a possibility of the Integrated Machining Facility (IMF) at Filton also being contracted to finish-machine the components. This work has not materialised, but it meant that a large, 5-axis machining centre (from a different supplier) had to be installed at the outset to allow for both roughing and finishing operations to be completed. During 2017, the customer doubled the lot sizes to be manufactured, mirroring a similar increase in 2016. A second machining centre was therefore needed to cope with demand, but as the contract remains for roughing only, leaving a 3mm stock allowance $\pm 0.127\text{mm}$ over the entire surface of each part, a more cost effective 4-axis CNC machine was deemed sufficient for the task. Six potential HMC suppliers were considered. John Hendry, Project Improvement Engineer, and Mike Davis, Engineering Group Leader, opted for a Heller H 16000 with a high-torque spindle, due in part to its robust construction and well-proven technology. Additionally, despite the machine's size and rigidity, its installed weight at less than 50 tonnes allowed it to be positioned in the Filton facility, where there is a solid, 300mm thick floor, without the need for any special foundations. Hendry commented: "The HELLER machine was the best value solution for us at the quality end of the market. We were also reassured that the German-owned company has a manufacturing presence in the UK, at Redditch, where they produce the smaller versions of these 4-axis machines. It means that there is a strong engineering capability nearby, if it is ever needed. Support has certainly been readily available so far, both from the UK and also from the German factory."

Mark Edwards, Operations Group Leader of the Hard Metal Cell within the IMF, took advantage of the H 16000's arrival to re-engineer all five titanium aircraft parts. None requires simultaneous milling in more than three CNC axes and he was able to find significant cycle time savings on the 4-axis machine compared with the 5-axis process routes. New strategies include taking lighter, faster cuts with solid carbide mills and reducing the number of inserted tools. This has the benefits of assisting penetration of 60-bar coolant to the point of cutting, increasing metal removal rate, improving surface finish by reducing the chatter from interrupted cutting and prolonging tool life.

For the largest of the five structural components, which measures 2 400mm long by 200mm wide by 170mm high, the cycle time was cut from 70 hours across two operations to 52 hours, a saving of more than a quarter. Similar reductions have been achieved on all of the parts, the smallest of which still involves 14 hours of machining. As an indication of the amount of metal removal involved, a mid-size component measuring 1.1 metres long is machined from a 176 kilogram titanium forging, which is reduced to 60 percent less at 67 kilogram after machining.

The specification of the H 16000 at Filton includes axis travels of 2 400 x 1 600 x 1 600mm and a high torque, HSK-A100 spindle rated at 2 292Nm/60kW/6 000rpm. An unusual feature of this H 16000 is that it is one of very few such models built by HELLER in an optional configuration without an automatic pallet changer (APC). The rationale is that if one had been integrated, the longest structural aircraft part, unless it were tilted, could not have been rotated in the 4th axis without interference with the guarding. Little time is lost during component changeover, however, as extensive use is made of zero-point clamping on the fixture plates. Extra advantages of a non-APC arrangement are a smaller footprint and a door that opens wider, providing easier access for loading and unloading parts. Davis added: "We already had experience of HELLER's equipment and service, as one of their HF 3500 trunnion-type 5-axis HMCs has been in use here since the end of 2016, machining titanium parts in our additive manufacturing R&D department. It is noteworthy that this machine was actually manufactured in Redditch, as it is one of the 5-axis models that they have been designated to produce, along with the larger HF 5500."



GKN Aerospace

GKN Aerospace is one of four divisions of GKN, a global engineering business which designs, manufactures and services systems and components for original equipment manufacturers around the world. GKN Aerospace is a leading global tier one supplier of airframe and engine structures, components, assemblies, electrical wiring interconnection systems and transparencies to a wide range of aircraft and engine prime contractors and other tier one suppliers. In 2017, GKN Aerospace reported sales of GBP 3.638 million and employed 17 700 people. The division is represented in 14 countries worldwide with 52 manufacturing locations.





Everything

in

Motion

Mechanical Engineering as the driving force of mobility



Mobility is changing: digitisation and electrification are driving the development of new drive concepts. The study 'Drives are Changing' ['Antrieb im Wandel'] investigates in what way and how dynamically the progress made is influencing the markets. Together with FEV Consulting, the German Mechanical Engineering Industry Association VDMA has analysed the potential transformation of mobility until the year 2030. The investigated applications included passenger cars, utility vehicles and mobile machines. The results of the study: as a key technology, Mechanical Engineering needs to recognise and leverage the opportunities provided by the change. Doing this successfully will enable the industry to tap into new value-adding channels or even to create completely new business models, making Mechanical Engineering the driving force behind advanced mobility concepts.

TEXT **Claudia Ziegler**

PHOTO AND DIAGRAMS **fuyu liu / E-MOTIVE / FEV Consulting**

Mechanical Engineering plays a pivotal role in mobility. As a supplier to the automotive industry with production resources, the industry is developing solutions that are both efficient and sustainable. These technology suppliers play a key role in competition. Moreover, machinery and plant engineering companies like HELLER also use mobile machinery in their own production. These machines are equipped with state-of-the-art drive technology. The VDMA commissioned FEV Consulting to conduct a study titled 'Drives are Changing' ['Antrieb im Wandel']. It illustrates the effects of vehicle drivetrain electrification on Mechanical Engineering. Based on the 'ZEV index', it provides an insight into the lead markets Europe, USA and China until the year 2030. Until then, approx. 20 million units of electric drives will be produced worldwide. They generate their energy almost exclusively from batteries. Alternative drives, such as fuel cells or so called e-fuels generated from renewable sources of electricity, will only begin to gain in importance after 2030. In addition to battery-driven electric vehicles, combustion engines and hybrid drives will dominate the market. In the baseline scenario, they will

reach a peak volume of 100 million units produced until 2030. Looking at the lead markets China, USA and Europe in the period mentioned, the forthcoming change becomes clearly evident. The number of combustion engines and hybrid drives sold in the passenger car sector will decrease by approx. ten percent by the year 2030. China intends to cover the annual 2.4 percent market growth until 2030 solely with electric drives. This corresponds to nine million units.

Charging electric vehicles: battery technologies and charging infrastructure

For users to consider electromobility as an adequate alternative to vehicles with conventional engines, batteries must be competitive in terms of range, charge capacity and costs. Battery cell production, in particular, provides a vast potential for value creation for the machinery and plant engineering sector, although it has not been considered in the VDMA study yet. According to forecasts, the capacity of lithium-ion batteries will see a 50 percent increase. Moreover, technological progress will be driven by new cell technologies like lithium-sulphur or solid-state batteries.

The ZEV index

The key analysis tool of the 'Drives are Changing' study is the Zero Emission Vehicle index [ZEV]. It measures the current and future competitiveness and appeal of vehicles with electric and conventional drives in the lead markets Europe, China and the USA. Together, these three markets will have a 58 percent share of the global market for passenger cars in 2030. The index considers 40 parameters in six different categories. They include regulation, technology, charging infrastructure, industry behaviour, economic factors and acceptance of electromobility. Fuel prices and prices for raw materials used in batteries such as lithium and cobalt are also taken into account as are the costs for battery cells and battery packs. An index of 100 means that an electric car is just as attractive as a car with a conventional drive.

E-MOTIVE expert forum 2018

The advancement and integration of new technologies has a crucial influence on the evolution of the drivetrain. As a dialogue platform for experts from the industry and science, the E-MOTIVE expert forum tackles these topics. It will take place at the Martitim Hotel in Stuttgart on 12 and 13 September 2018. Under the motto 'Shaping change – a dialogue between research and industry on electric vehicle drives', the speakers will present the latest results from current research projects from the E-Motive innovation network. Companies report about their experience from industrial practice. For more information go to: www.e-motive.net



E-MOTIVE



Until 2030, battery costs are expected to drop to less than 100 Euros per kilowatt hour. Cost parity between the production of electric and conventional vehicles would then be achieved. In combination with a well-developed network of (quick) charging stations, this will further increase the attractiveness of electromobility. China takes the lead: within the next two years, the country plans to increase the number of publicly accessible charging poles to 4.8 million units. With the goal to install 400 000 charging poles by the year 2020, Europe is less ambitious.

Market regulation as a booster

State regulation of the markets acts as a pace-maker in the proliferation of electrically powered vehicles. China and California, for example, have stipulated a sales quota for plug-in hybrids. The CO₂ emission limits are also strictly regulated. In Europe, a CO₂ emission limit of 118g/km has been in force since 2016. It is planned to reduce this value by 45 percent by 2030. The discussions about state regulation of emissions are in full swing. As far as legislation is concerned, all signs point towards change: a clear hint that Mechanical Engineering companies must start tackling the transformation now, preparing the ground for the future. Many manufacturers and suppliers are already doing this, establishing new business areas. Until 2021, manufacturers across the industry have announced a total of 450 new plug-in hybrid and electric car models.

Should legal specifications and technology mesh effectively, the ZEV index will reach a value of 100 in 2024 in Europe. China will reach this value two to three years earlier, whilst it will take the US until 2028.

Mobile machines as production assistants

Being able to produce efficiently, flexibly and at optimal costs, even with batch size 1, is also

important to Mechanical Engineering companies as users. Lean principles and Industry 4.0 approaches result in the implementation of fully networked value-added chains. Like stationary conveyor technology, mobile systems provide a high degree of safety in terms of processes, people and plants but are also highly flexible and scalable. Apart from conveying materials they also adopt assistant tasks, whilst humans control the processes.

Recommendations for action for Mechanical Engineering

Knowing and meeting the requirements provides the foundation for being competitive. The analysis and evaluation of business models, development and production resources and sales structures are important tasks. The strong growth in the component market for hybrid and electric vehicles provides a wide range of opportunities. Therefore, it is essential to identify individual opportunities in order to strengthen the competitive position. Improvements are also made to the drive technologies of combustion engines. Therefore, the manufacturing technologies need to be adapted accordingly. No matter what the technology, it will be important to strengthen core competencies and to add new capabilities. Time is a decisive factor. New production systems require a reasonable pre-development period. Speaking of 'tomorrow' is not enough to remain competitive. If the German machine building industry is to defend its market position and aims to profitably tap into potential new segments, it needs to act now. This is the only way to ensure its future economic success. "At this moment, the Mechanical Engineering sector is still able to shape the transformation of drives. What is taken away in terms of value creation by the transformation process, can be over-compensated by new business," says the Deputy Managing Director of VDMA, Hartmut Rauhen.

“If the German machine building industry is to defend its market position and aims to profitably tap into potential new segments, it needs to act now.”

Hartmut Rauhen,
Deputy Managing Director of VDMA

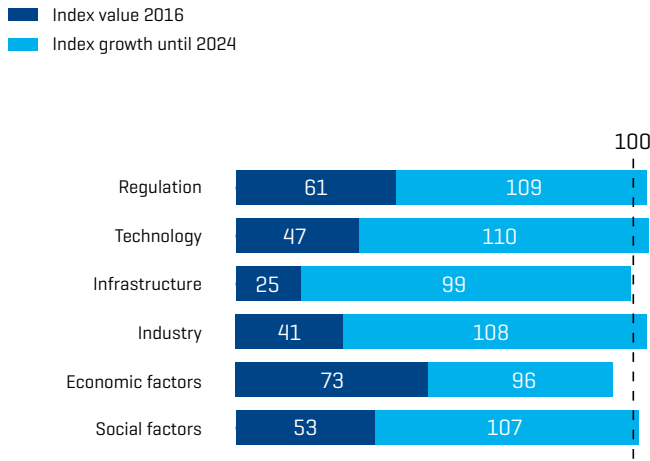


About VDMA

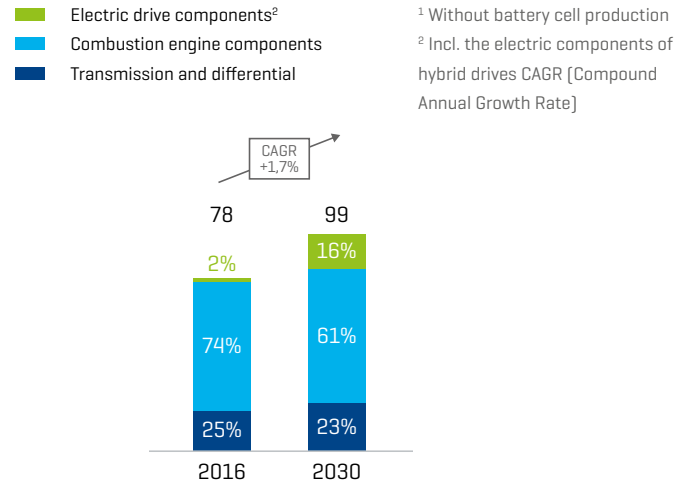
The VDMA represents more than 3 200 member companies in the SME-dominated mechanical systems engineering industry. With 1.35 million employees in Germany and EUR 226bn turnover (2017), the industry is Germany's largest industrial employer and one of the leading German branches of industry. The association was founded in 1892 and has its head office in Frankfurt am Main. It represents the interests of the mechanical and plant engineering sector in Germany and all over Europe. It successfully accompanies its members in global markets. Its technical expertise, industry knowledge and straightforward positioning make it a recognized and valued point of contact for companies as well as the general public, science, administration and policy makers.



A short version of the study can be downloaded free of charge in the Publications menu on the the VDMA's electromobility website: www.elektromobilitaet.vdma.org

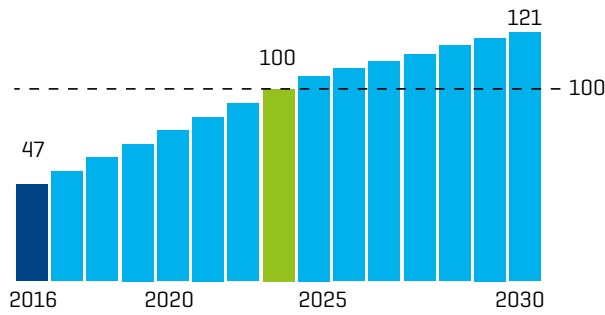


Division of dimensions¹ in 2024



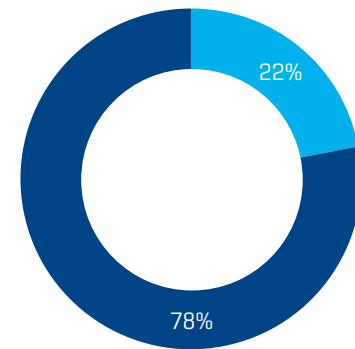
Value creation by production processes¹ for passenger car drives (EU, USA, China) in bn. EUR (basic scenario)

Index = 100 stands for comparability of the attractiveness of electric vehicles and conventional vehicles.

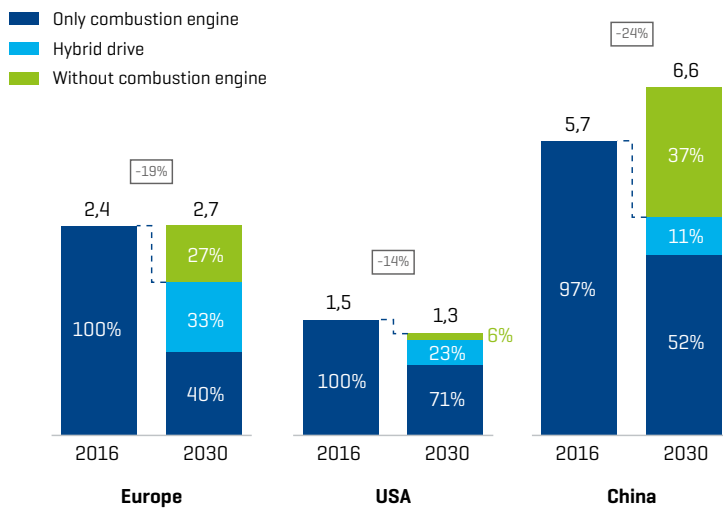


Development of the ZEV index for Europe (basic scenario)

Electric drives
Combustion engines and hybrids

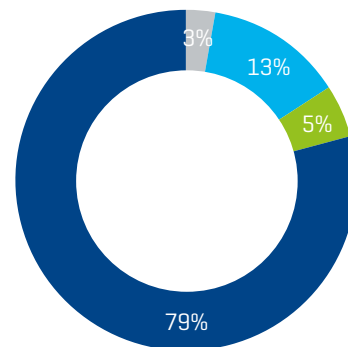


Forecast of passenger car sales in 2030 (basic scenario)



Forecast of utility vehicle drive types in million units (basic scenario)

Light-duty utility vehicles
Heavy-duty utility vehicles
Medium-duty utility vehicles
City buses



Utility vehicles sales in EU, USA and China in 2016

PEOPLE





90_ HELLER Technology Center

94_ The new CEO of HELLER USA

96_ HELLER Italy

100_ Facets of mobility

102_ News & events



“We regard ourselves as a service provider to our customers.”

Oliver Kull,
Head of Technology Center



HELLER Technology Center



Information has the power to create conviction. Knowing this, staff at the HELLER Technology Center are optimally set up for present and future requirements. According to the Head of Department, Oliver Kull, the team includes very experienced people with extensive technological know-how and the ability to adapt to constantly changing requirements. Kull is glad that he is able to rely on a team that is putting customer orientation first and also strongly identifies with HELLER.

TEXT **Tanja Liebmann-Décombe**
PHOTOS **Jens Gelowicz**

The best that can happen to anyone looking for information is meeting someone with experience and knowledge. As a result, information becomes mobile. The interested person asks questions and tries to find out what he or she wants to know. The knowledgeable person is available to answer questions, explains the fundamentals and background or why solution X is preferable to solution Y.

At HELLER, the mobility of information can be observed particularly well at the company's own Technology Center. Seven machines are available on site for demonstrating interested buyers the capabilities of HELLER, providing insights into the numerous configurations and accessories available from HELLER's modular range of options for standard machines. The live machining demonstrations speak for themselves. The various ways in which components are milled, drilled and machined are a truly impressive experience for visitors to the Technology Center. However, to achieve a deep and lasting impression, the experts standing next to the machines are just as crucial. In addition to Kull and his assistant, six technology experts work at the HELLER Technology Center. Their power to convince when they demonstrate the HELLER machines is based on two factors: their attitude and the knowledge that what they are presenting is of outstanding quality. 'Made by HELLER' is a quality seal of approval to them which embodies highest precision, efficiency and reliability. It is what motivates them every day to present the products in the very best light. But where does this inner conviction come from? What is it that makes staff at the Technology Center so sure that they are 'backing the right horse'? Kull has a clear answer to that: "They have worked at HELLER for a long time and simply know the outstanding qualities of our products and services." According to the Head of the Technology Center, his team draws from a vast wealth of knowledge and includes highly qualified "people with extensive know-how and process competence." Kull: "They know the HELLER machines inside out, they know the

HELLER world. All this combined is a major advantage." According to the department manager, there is another decisive factor: the strong customer orientation of his team. "We regard ourselves as a service provider to internal and external customers," says Kull, stressing that it was important to make the customer's requirements their number one priority. Not only demo parts prepared by HELLER are machined during the demonstrations at the Technology Center, showing the machines live in action. In most cases, the customers also deliver input, providing fixtures, tooling and NC programs. "We adapt the customer's machining process to the respective HELLER machine and demonstrate the machining of his workpiece," says Kull, referring to this approach as the 'easiest case'. Things can become much more complex when a customer only provides a drawing and HELLER then has to take on the complete engineering of the machining process as well as the procurement. "For these projects, we usually work with the staff from the HELLER Applications department," says Kull, adding that it was a "very close and effective cooperation".

The main objective of the Technology Center is to support Machine Sales throughout the quotation phase, in particular in terms of the retail market. When asked about the departments the Technology Center cooperates with, Kull lists Sales including the Backoffice and Field Sales as well as Marketing. "Requests coming from these departments definitely have priority," says Kull, adding that the Technology Center has belonged to the 'Sales & Service Europe' division since 2018. Another important factor is the cooperation with the Applications and R&D departments, using the Technology Center for testing of components and software whenever the machines are available. Together with R&D, the department also investigates process technology questions. This includes the analysis of fundamental milling trials on newly developed HELLER machines and the testing of new machining processes. The latter in particular will come more into focus in the future to ensure the company remains at the cutting edge of technology. The department also works closely with the HELLER Academy. "The Academy uses the Technology Center for internal and external training. Due to the wide variety of machines installed here, we are able to offer very hands-on training for standard machines," says Kull. In addition to customers and course participants, we also have groups of visitors coming to the department for guided tours around the Technology Center. These groups include students, specialising in various fields of Mechanical Engineering, who have the opportunity to gain an insight into the HELLER world.

Whenever visitors enter the Technology Center, they are impressed. Kull describes the special flair of the Center with the contrast of old and new: a brick building from the outside with advanced machines and technology inside.

A special feature is the old overhead gantry crane dating from 1938. "The atmosphere is very special," says the Head of Department, adding that the Technology Center provided an attractive combination of showroom and workshop. According to him, the balance between demonstration and work tasks poses a new challenge every day, especially in terms of cleanliness and order.

What is special for the staff of the Technology Center are the varied tasks they have. They are dealing with many different departments at HELLER and also with customers as well as fixture and tooling suppliers. They are also the ones present at important trade shows, demonstrating the technological possibilities of the HELLER machines and setting them up prior to the event. Moreover, there are always new components to machine, new customers and requirements to adapt to and the need to respond quickly and flexibly to new market requirements. "It is important to handle our customers' tasks as quickly as possible, in a purposeful manner and in the best possible quality," says Kull. That is also why staff of the Technology Center always need to be ready to expand their knowledge: "The team need to familiarise themselves with new subject matters time and again. We are constantly tackling new challenges," explains the Head of Department, who is more than proud of this team. If something important comes up that we need to fit in although the schedule is already full, we always find a solution together that works. Kull: "The people show outstanding commitment. I am glad to have such a motivated team."



The HELLER Technology Center

- _ employs eight people.
- _ provides seven machines – one H 2000, one H 4000, one H 6000, two HF 3500 (with and without pallet changer), one HF 5500 and one CP 6000.
- _ supports Sales staff with trial machining and technological know-how.
- _ convinces customers of the capabilities of the HELLER machines.
- _ is the place where often purchase decisions are made. In the end, the machining demonstration provides a mark of confidence.
- _ offers practice-oriented training, since the internal and external course participants have the opportunity to experience the wide range of HELLER machines hands-on.
- _ has the task of maintaining the knowledge of the long-term, experienced staff and passing it on to new additions to the team.

**A brick building
from the outside
with advanced
machines and
technology inside.**





Introducing:

The new CEO of HELLER USA

“To me, customer satisfaction is the
‘secret sauce’ for running a successful business.”

TEXT **Tanja Liebmann-Décombe** PHOTOS **David Arnesen**

“Perseverance is the heartbeat of the future.”

This could be described as the motto Kenneth M. Goodin has followed throughout his successful career. As the new CEO of HELLER USA he intends to remain faithful to this principle. Moreover, there are other items on his agenda that he feels are important. Customer satisfaction is the number one priority to him.

“To me, customer satisfaction is the ‘secret sauce’ to running a successful business,” said the 48-year-old who previously held various positions at Ingersoll CM Systems, including that of Service Manager, allowing him to gain a deeper insight into production manufacturing expectations and the importance of quality. He thinks that

“the focus on quality provides the foundation of success. After all, you can only satisfy the customer through quality.”

★★★★★

Our staff provides the basis for delivering high quality and customer satisfaction. It takes outstanding and highly qualified people to ensure that a company continues to steer a successful course. According to him, HELLER USA is very well set up in this respect. Goodin does not claim to have a silver bullet for running a successful business. Yet he believes that the combination of HELLER’s outstanding products and services and excellent teamwork are important guarantors for the company’s continued growth and success.

During his time at Ingersoll CM Systems, Goodin learned what is important in the machine tool industry and what it takes to make a company successful. When the Chinese Dalian Machine Tool Group [DMTG] took ownership of the company, he became Director of Operations and in 2006 was appointed a President of DMTG Ingersoll CM Systems. Already three years later, the then 36-year-old was named CEO of DMTG North American Operations, becoming the youngest executive in the company’s history.

Goodin joined HELLER USA as Vice President of Program Management in January 2018. On 1 July he officially succeeded Keith Vandenkieboom as CEO of HUS. In his new role, he intends to bring an intense focus on customer satisfaction. The committed staff of HELLER USA remains an important cornerstone for achieving this. According to Goodin, they drive innovation and innovation drives solutions. “Solutions drive sales, sales fuels the engine that keeps the company moving forward,” he is convinced. The executive does not consider difficult times a problem but a challenge. Goodin:

“I look forward to fight for a better tomorrow.”



Kenneth M. Goodin ...

_ was born in Royal Oak, Michigan on 24 August 1970.
 _ completed a Machine Tool Builder apprenticeship and served in various positions and as President at Ingersoll CM Systems, which was taken over by Dalian Machine Tool Group later.
 _ prior to joining HELLER, Goodin worked for Apex Tool Group as Director of Motor Vehicle Industry. There he was charged with developing and growing the MVI market for automated assembly systems for the NAFTA region.
 _ has been married to his wife April for 27 years. Together they have three children aged 22, 19 and 15.



HELLER USA continues to strengthen its team

Apart from Kenneth Goodin, there has been another new addition to the team of HELLER USA: Stephen Pegram joined the company as Vice President of Sales in North America. He will be based at the HELLER USA headquarters and manufacturing facility in Troy, Michigan. Pegram joins HELLER after a long and successful career in the engineering and machine tool industry which included engineering, sales and management positions within British Leyland, Mazak, SNK, Matsuura, DMG and Hyundai.

“My focus is to grow our business in the industrial application market segments such as oil & gas, defence, energy, and at the same time keeping and improving our traditional existing business in the heavy duty and light duty vehicles markets,” Pegram says. And what is more: “Total customer satisfaction is at the very top of my sales plan.”

Pegram was born in Liverpool, England and has lived in the USA since 2007. Pegram is married with one son and has several hobbies including sailing, playing and collecting guitars and also photography.



HELLER USA, Michigan, Troy





**The HELLER sales and service location
in San Pietro in Cariano**

Beginnings:

HELLER Italy has been operating in San Pietro in Cariano near Verona since 1990.

Tasks:

- _ sale of HELLER products and services
- _ development of the HELLER sales network
- _ technical support/service
- _ order and project management

Management:

Fabian Mattes

Building floorspace:

720m²

Office floorspace:

480m²

Building facilities:

- _ upper floor: management, sales and marketing
- _ ground floor: service and technical office

Number of employees:

18

Customers within the support area:

The clientele of HELLER Italy includes supplying companies to the automotive industry as well as metalworking, machine building, hydraulics and pump manufacturing companies.

Objectives:

- _ intensifying market cultivation and increasing brand awareness in the market
- _ growth of sales
- _ filling vacancies left by specialised staff retiring in the near future



HELLER Italy

There's more
to enjoy than
light summer wines

TEXT **Tanja Liebmann-Décombe** PHOTOS **Masterfile / Elena Mattes / Augenstern / pointbreak**

A regional market presence and proximity to its customers is paramount to HELLER at all its international locations. Within Europe, the company has been operating a subsidiary in San Pietro in Cariano for nearly 30 years. Its goal is to provide optimal sales consulting and excellent service to the customers nearby and throughout the whole of Italy. Recently, Fabian Mattes took over the leadership of the subsidiary situated in the well-known wine growing region. Having worked with HELLER in Nürtingen for three years, he was now delegated to Italy for three years together with his wife Elena, who also works for HELLER.



If you spend your holidays at lake Garda, you can pay a visit to the HELLER subsidiary in San Pietro in Cariano.

**In the vicinity, there are
many things
to see and to do.**



San Pietro in Cariano at a glance

- _ is located about 20km north-west of Verona, east of the Adige river and about 15km away from lake Garda
- _ lies in the Venetia region and the classic Valpolicella wine growing region
- _ area approx. 20.25km²
- _ population approx. 13 000





01 Verona

The city exudes a romantic charm and is inevitably associated with the famous couple Romeo and Juliet. Throughout the summer months, the Verona Arena, once a Roman amphitheatre, becomes the venue for open-air productions of opera classics. With 138 metres in length and 11.0 metres in width, the Arena is the second largest amphitheatre in Italy after the Colosseum. From the uppermost steps of the Arena, visitors enjoy a fantastic view of Verona.

02 Bike trip

An inside tip from Elena Mattes is the cycle path from Peschiera del Garda to Mantua: the wide cycle path is beautifully landscaped and runs along the river Mincio over flat terrain. It offers cyclists many grand views of the landscape. Various towns and villages are passed along the route. After approx. 11 kilometres, cyclists reach Borghetto, a picturesque part of Valeggio sul Mincio and the ideal spot for a break. From here, you can follow the route up the hill to the Valeggio sul Mincio castle at approx. one kilometre distance. From there, visitors have a breath-taking panoramic view. The villages of Monzambano, Pozzolo, Marengo, Marmirolo or Soave situated along the route to Mantua are also worth a visit.

Key data:

- _ route: 41.3km
- _ duration: 4:15h
- _ ascent: 70m
- _ descent: 120m



03 Gardaland

The amusement park is located almost directly on lake Garda in the community of Castelnuovo del Garda near Peschiera del Garda in the Venetia region. It was opened in 1975 and today welcomes nearly three million visitors every year, making it one of the largest theme parks in Italy. On an area of 46 000sqm it offers more than 40 attractions and four theme villages. In addition to the various rollercoasters, its highlights include water attractions and theme rides. Like many amusement parks, Gardaland has its own mascot – the dragon Prezzemolo (in English: parsley). It also has its own animated cartoon series known throughout Italy.

Facets of *mobility*

Mobility is not limited to cars, buses, trains or bicycles. Mankind has long conquered the skies and the world's highest summits. For moving around a city or region or crossing long distances, we have more options to choose from today than ever. The mobile society is almost spoiled for choice: the facets of mobility are increasing, resourcefulness seems endless. Today, mobility is more than getting from A to B for a specific purpose. Having fun and sharing experiences have moved into the foreground. The result is a mix of proven and sometimes even crazy ideas. Have you ever tried out one of the following?

TEXT Tanja Liebmann-Décombe / Claudia Ziegler

PHOTOS Olga Danylenko / Belish / Georgejmcilittle / GaudiLab



Hiking

The path of happiness

Hiking has become a major trend: whether you are exploring the lowlands, the coast, forests or mountains. All over the world, people love to hike because it gives them the chance to escape the hustle and bustle of everyday life. Hiking is an experience for all the senses, it costs practically nothing and can be enjoyed almost anywhere. The Camino de Santiago in Europe, the Shikoku Pilgrimage Trail in Japan or the trail to Adam's Peak on Sri Lanka attract pilgrims from all over the world. The internet provides numerous platforms with tour suggestions. One of the most interesting ones is the *localadventurer* blog with a bucket list of the world's 25 best hiking routes – a treasure trove for people plagued by wanderlust. Examples on the list include the Inca Trail in Peru, the Appalachian Trail in the USA and the Kungsleden Trail in Sweden.

For more information go to:

www.localadventurer.com/25-best-hikes-in-the-world-bucket-list | www.outdooractive.com
www.caminodesantiago.gal/en



Obstacle races

Over rough and smooth

If marathons bore you, one of the many obstacles races might be more to your taste. More and more sports enthusiasts around the world love them. A 'Tough Mudder', for example, stretches over a distance of up to 18 kilometres on which the contenders have to cross various obstacles such as mud pits, walls made from wooden planks, burning branches and water basins. 'Tough Mudder' events take place all over the world. The 'Strongman-Run', the 'Xletic Challenge' or the 'Muddy Angel Run', an event exclusively for women, offer similar challenges. The secret to the success of these competitions obviously is the camaraderie with participants helping each other even though they have never met before. Another factor is the fun experience and the great sense of achievement.

For more information go to:

www.active.com/obstacle | www.toughmudder.com | www.strongmanrun.com | www.xletic.com
www.muddyangelrun.com



Carsharing

My car, your car

More and more people take advantage of the possibility to share cars with other people. Just enter your location and the keyword 'car sharing' into your search engine and you will find what you are looking for. 'Zipcar' in Los Angeles, 'BlueSG' in Singapore and 'car2go' in Stuttgart are only three of the providers worldwide. The concept appeals to all who rarely travel by car, only use it occasionally or want to contribute to environmental protection. A shared car saves costs and helps to reduce emissions. Many providers already offer electric cars. The principle of car sharing is quite straightforward around the globe: all you need to do is download the app, register, get in the car and off you go!

For more information go to:

www.zipcar.com | www.bluesg.com.sg | www.car2go.com



Free Walking Tours

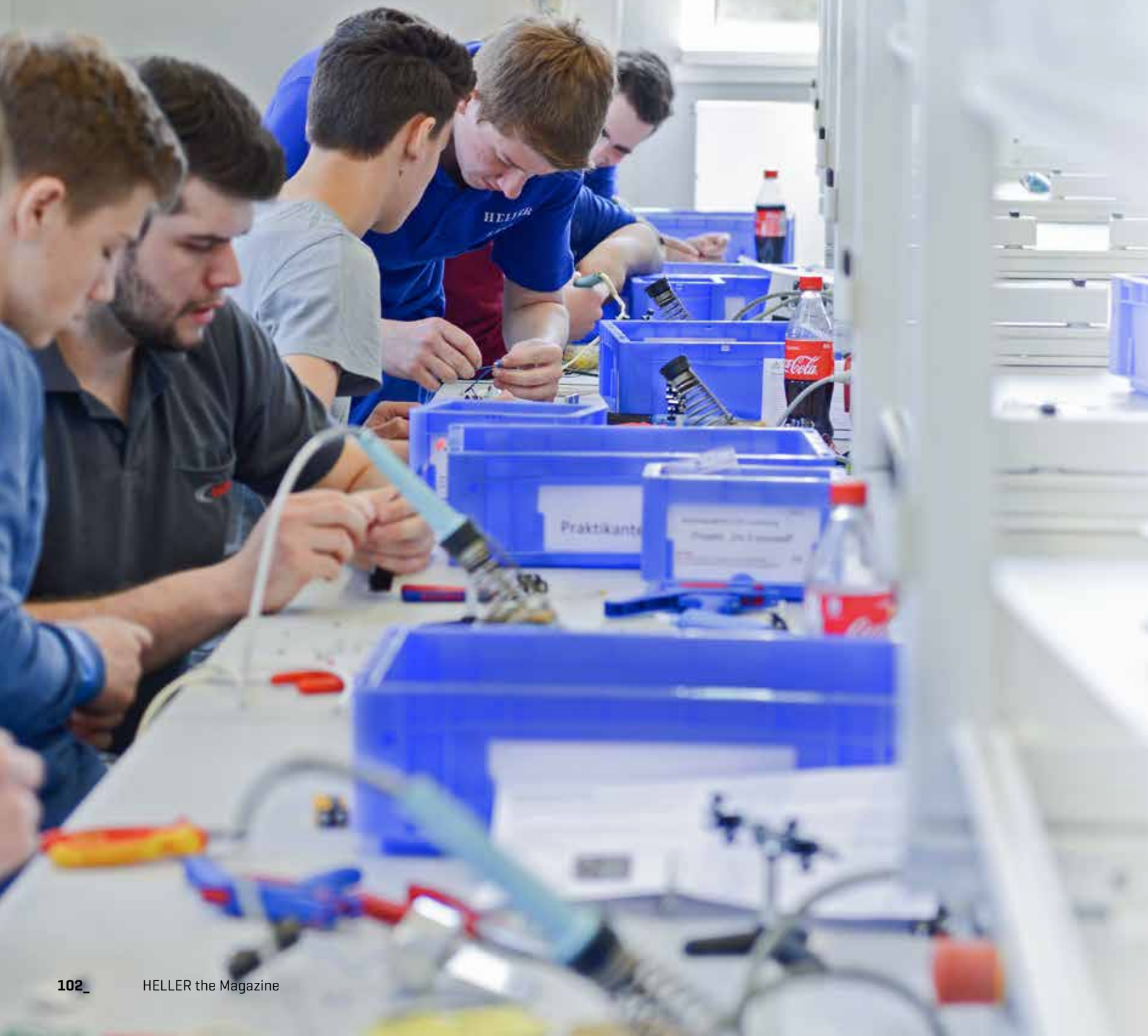
A different perspective

What do cities like Stuttgart, San Francisco, Sao Paulo, Seville, Shanghai and Stockholm have in common? They all start with the letter 'S' of course. But there is more they share: in these and many other major cities of the world, including Barcelona, Dublin, Paris and Rome, you can go on so-called Free Walking Tours. They are the perfect combination of a guided sightseeing tour and a foray on foot. The tours also have no fixed price. The meeting point is announced on the internet. The tours are mostly guided by students living in the city. The people participating in the tour can expect to gain insights into city life that the regular tourist is sure to miss when going on a conventional tour. Afterwards, the participants are free to decide how much money they want to pay their guide.

For more information go to:

www.freetour.com | www.freewalkingtour.com

News & events



TEXT **Tanja Liebmann-Décombe**

PHOTOS **Jens Gelowicz / General Motors / Günter E. Bergmann**

**BACK
STAGE @
HELLER**

Application Day in Nürtingen

There are many good reasons for an apprenticeship at HELLER. That was the message sent out to the attendees of the fifth Application Day held on 5 May 2018 under the motto 'Backstage @ HELLER Ausbildung'. The event targeted boys and girls who will be completing their school education in the coming year and are interested to learn more about their future prospects with a professional education at HELLER.

The Nürtingen-based machine tool manufacturer offered the young people multifaceted insights. In addition to a tour around the modern and well-equipped workshops and classrooms, the approximately 40 attendees had an opportunity to engage in discussions with the instructors. Moreover, they were invited to take part in a do-it-yourself workshop to build an illuminated HELLER 'H'. Additionally, they had the chance to find out more about the HELLER Health Management (HGM), the HELLER Apprentice Initiative (HAI) and HELLER's company health insurance BKK Voralb. A presentation focusing on tips for job applications provided attendees with an opportunity to obtain feedback on the structure and contents of their own application papers. Among the highlights of the event was the presentation of the HELLER ProfiTrainer PT 16, a fully functional, faithful model of a CNC-controlled machine tool for practice-oriented CNC training.

The participants also had an opportunity to speak to HELLER apprentices training to become industrial mechanics, mechatronics engineers, cutting machine operators, electronics engineers for automation technology, technical production designers and students specialising in mechatronics and mechanical engineering, illustrating that vocational training at HELLER is well worthwhile. The apprentices explained the numerous advantages of a professional education at HELLER, including the positive working atmosphere, a fair training allowance and a diversified range of tasks. Last but not least, the apprentice workshop enjoys an excellent reputation throughout the whole region and is known for the social commitment of the apprentices.



Young Talent Award for HELLER and the ProfiTrainer

In June 2018, HELLER was honoured by the 'Innovative Berufsbildung' association. Every year, the organisation awards the so-called 'Hermann-Schmidt-Preis', an award that recognises special achievements in selected areas of vocational education. Among the 14 applicants for this year's award under the heading 'securing and developing young talent through professional education', three best-practice applications were selected by the jury and one of them was HELLER's. In its application, the company had described how the 'HELLER Teaching & Learning Factory' and the integrated ProfiTrainer educational machine are excellent ways to tackle the imminent skills shortage by taking a pro-active approach.



**HELLER
PROFI
TRAINER**

Essentially, the holistic concept submitted consists of an experimental factory, enabling young people to experience and to recreate the entire process world in mechanical engineering. From the initial idea through to the manufacturing process, the HELLER ProfiTrainer provides a vital tool as it is practically a miniature edition of a large CNC-controlled machine. The educational machine helps to overcome inhibitions in terms of operation and programming and provides an opportunity to exercise the response to fault situations.

In the award winners brochure published by the friendly association, founded in Bielefeld in 1996 by the Federal Institute for Vocational Training (BIBB) in Bonn and the media company wbv Media, the jury recognises HELLER's concept with a full-page article. The goal of the association is to initiate and publicise innovative developments in vocational training. The award was named after Prof. Dr. Hermann Schmidt, who was President of the BIBB from 1977 to 1997. The main award 2018 went to Assmann Büromöbel GmbH & Co. KG in Melle.



**SUP
PLIER
OF THE
YEAR**

HELLER receives supplier award – for the second time running

As the only metal cutting machine tool company and for the second time running, HELLER received GM's prestigious 'Supplier of the Year Award' 2017 in the Category 'Indirect Material and Machinery'. With this award, GM honours outstanding suppliers that have distinguished themselves in terms of quality, innovation, delivery performance, safety, commercials and customer support. This year, HELLER belonged to more than 130 suppliers that were presented with awards within eleven different categories. For comparison: General Motors has over 20 000 suppliers worldwide.

The award was presented for the HELLER RFK and DRZ ranges of crankshaft machinery and for outstanding performance in 'Engineering and Applications'. The machines are being used by GM in many global manufacturing plants. Since their installation, GM has seen significant reductions in crankshaft production costs along with consistency of accuracy and reliability.

The presentation events took place at the Disney Yacht and Beach Club Resort in Orlando/Florida. The HELLER representatives attending said they were very happy to receive this award, expressing their thanks to their partners at GM for the good cooperation and the great honour of receiving the 'Supplier of Year Award' in two consecutive years.

HELLER Suppliers Day 2018

HELLER expressed its full commitment to the European suppliers, for the fifth time presenting the HELLER Supplier Award for 'Best Performance' at the Suppliers Day 2018 on 26 June 2018. With this award, the company wishes to highlight the importance of quality and having reliable partners in order to maintaining its market position. This year, the company HIWIN GmbH, Motion Control & Systems from Offenburg received the award for its high quality standards and delivery reliability.

Quality and delivery flexibility are elementary in order to be and remain fast responding and at the cutting edge of technology. HELLER achieves this quality level through a careful selection of delivery partners and therefore in 2013 initiated the S.T.E.P. (Strategic Together Evolution Partnership) development programme. Its goal is to help the company to remain competitive in the future in terms of Purchasing and Logistics. The main focus is on short lead times, adherence to delivery deadlines and a global positioning with efficient processes. This includes material provisioning at the global production locations and part availability for global service. The prerequisite is having reliable and cooperative partners who were honoured at the HELLER Suppliers Day. HELLER uses SAP as a basis for the evaluation of supplier performance. Product quality was weighted at 50 percent, adherence to deadlines at 37.5 percent and adherence to quantities at 12.5 percent. This year, the top 40 suppliers in the 'Best Performance' category were invited to Nürtingen. The prerequisite to qualify for this event is a minimum annual turnover with HELLER of 250,000 Euro and a delivery performance of at least 86 out of 100 points this year.

This year, the award was presented to HIWIN GmbH, Motion Control & Systems from Offenburg. HIWIN develops and produces drive components tailored to the requirements of machine tools, e.g. the ball screw drives integrated into HELLER machining centres. According to HELLER's definition, quality means meeting the requirements of its customers with the resulting expectations on the suppliers. In this respect, HIWIN achieved the highest degree of compliance.

To Werner Mäurer, Managing Director of HIWIN GmbH, the award first of all is an appreciation of the services the company has provided to HELLER over many years: "Of course this award makes me feel proud because it confirms that we are doing things right. At the same time, it is an acknowledgement for all our employees involved in the process. Additionally, it is also important for us to know what we can learn from this for other customers. We supply a very large number of ball screw drives to HELLER. The company has been a major customer of ours for approximately 13 years now. The topic mentioned here today of communicating delivery reliability issues early is less of a problem for us. Whenever we confirm a deadline, we adhere to it, despite the enormous growth rates we are currently experiencing. "According to Mäurer, HIWIN achieves this through efficient planning and adds that the award was also a motivation for the company's employees and will be given a place of honour in Offenburg.



Successful certification upgrade

For companies it is important to regularly upgrade their quality management and environmental management systems, and HELLER USA is no exception. At the beginning of the year, several internal auditors helped to provide training for employees and conducted internal audits on various internal processes and the requirements and guidelines of the quality and environmental management system, taking appropriate measures to upgrade both systems. The upgrade of the certification in accordance with ISO 9001 and ISO 14001 was successfully concluded in April.

Imprint

HELLER the Magazine
Edition 3 | Circulation 11 064 copies

Published by

Gebr. Heller Maschinenfabrik GmbH

Project management

Marcus Kurringer / HELLER
Ute Naumann / echolot.GROUP

Concept, editing and design

Helge P. Ulrich, Franziska Hapke, Thomas Steigerwald / echolot.GROUP

Authors of this edition

Helmut Angeli, Dr. Rajat Chauhan, Franziska Hapke, Patricia Hubert,
Manfred Lerch, Tanja Liebmann-Décombe, Prof. Dr. Stephan Rammler,
Martin Ricchiuti, Chris Wright, Claudia Ziegler

Translations

Tanja Kreutz

Photography and graphics

Jürgen Altmann, David Arnesen, Jann Averwerser, Alexis Berg, Günter
E. Bergmann, Ian Corless, E-MOTIVE, FEV Consulting, Jens Gelowicz,
Julian Henschel, Tim Keweritsch, Elena Mattes, Priyanka Oberoi, Daniel
Petty, Erik Sampers, Siemens, Tina Trumpp, Nicolas Uphaus, UPslope
Productions, Chris Wright

© Gettyimages.de: tunart [Title, p. 6]; Pexels.com: Maurício Mascaro
[p. 7-8]; © Shutterstock.com: Stephan Guarch [p. 28-29], Max
Zalevsky [p. 44-45], GarryKillian [p. 44-47], fuyu liu [p. 74, 76],
Augenstern [p. 87], pointbreak [p. 87], Olga Danylenko [p. 88],
Belish [p. 89], Georgejmlittle [p. 89], GaudiLab [p. 89]; © Masterfile:
p. 84-85; Unsplash.com: Ye Fung Tchen [p. 9], Jon Tyson [p. 16],
inspirationfeed [p. 72]


Printed in Germany


Druckerei Mack GmbH

© 2018, HELLER the Magazine. All rights reserved.

HELLER online

 facebook.com/HELLERMachineTools

 youtube.com/HELLERMachineTools

 twitter.com/HELLER_Group_EN

 linkedin.com/company/heller-machine-tool

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

HELLER

The digital transformation suited to your realities

HF 3500



**Our solution makes your
manufacturing operations
more productive.**

**Giving me peace of mind
today and tomorrow.**

HELLER solutions: **Knowing how it's done.**