



FACTS & FIGURES

The company HAINBUCH at a glance

4 NATIONAL MANUFACTURING LOCATIONS

INTERNATIONAL 14 SUBSIDIARIES

WORLDWIDE MORE THAN 850 EMPLOYEES

1000 SOLUTIONS PER YEAR

FOUNDED IN 1951

THIRD GENERATION FAMILY OWNED BUSINESS

INDUSTRY 4.0 DIGITAL FUTURE SOLUTIONS

45 DESIGNERS

SPANNTOP INVENTED IN 1977

CLAMPING DEVICES WITH INTELLIGENCE

CFRP LIGHTWEIGHT CLAMPING DEVICES MADE OF CARBON FIBER

MORE THAN 150 PATENTS

IMPRINT

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Businessman with a heart
60 years with HAINBUCH



Dear customers, dear employees, dear friends,

»Fits like a glove!« – your workpiece and our workholding; the result of our custom-made clamping solutions. Did you know we develop around 1,000 custom solutions a year? Take a look at how we solve such special cases and design clamping solutions to your taste. We also show some exciting creations with great results in this magazine.

But in addition to »Super-Special-Extra«, our standard products often fit so well that they do not require any special

production. Some customers from the gear industry have already been convinced that we are a good match. The possibilities are endless with our clamping devices for grinding. See how we can offer the optimum clamping solution for you.

It's no coincidence that we have spent the last few decades developing such clamping technology. Read the next few pages, and see how well you and HAINBUCH can mix. Then you will be able to write your own success stories.

Sincerely,
HAINBUCH Executive Board

Gerhard Rall

Hans-Michael Weller

Sylvia Rall



A special clamping device is like a good cocktail, it depends on the perfect blend of precision and simplicity.



Demand is increasing for clamping solutions individually tailored to the customer, which must be precise, process-optimized and flexible. Special clamping devices must meet growing production technologies, different markets and increasing mergers with the IT world, while still enabling customized production batch sizes down to 1.

Tailored to the customer? Absolutely, but it should be affordable. Our slogan is: "We tackle every challenge". Together with our Design Engineers and our R & D team.

we develop a tailor-made solution for the most specific requirements, at prices that pay off the investment in a short period of time.

From our own production, we know that workpiece clamping is a balancing act between high clamping forces and precision while covering as many workpiece variants as possible. Faced with an ever-changing range of parts, standard solutions are often not sufficient enough to achieve satisfactory and secure

clamping processes. Therefore, the development of special solutions is part of our daily business. Our own high standards and the processing of small batches, make us an expert. At HAINBUCH the average lot size is 3, with 60% of the cases even 1. Production organization, quick-change systems and creative special solutions are important factors to handle unproductive downtimes.

We gladly pass on our experience in these areas to you!

The origin of the word cocktail comes from cockfighting in America? The winner got the tail feathers of the loser. Hence you drank »on the cock's tail«. Around 1900, the cocktails also came to Europe. In Germany not only every club, but also every regiment had its own alcoholic drink. Over time, further modifications were made. Tastes are different, as they say. There are now hundreds of different cocktails or mocktails [non-alcoholic], even some more unusual creations. Diversity seems to be the solution to better meet customer tastes.

DID YOU

KNOW ...?



Custom-made cocktail

100 ml technical requirement, 50 ml state-of-the-art clamping technology, 2 slices of accuracy and a splash of HAINBUCH perfectionism.

CHALLENGE

Workpiece Clamping task

Machining

Stationary Chuck Milling and drilling

- Positioning < 0.02 mm must be guaranteed
- Accessible from both sides
- Large axial machining forces must be safely absorbed

SOLUTION

Horizontal stationary chuck

- Hydraulic actuated stationary chuck, suitable for 2-sided
- High positioning accuracy at the clamping diameter



RESULT & CUSTOMER BENEFITS

- Process-reliable production of both workpiece sides in one setup
- Position accuracy 0.01 mm achieved



CHALLENGE

Workpiece Eccentric shell **Clamping task** I.D. clamping **Machining** Turning

- Mandrel is eccentrically adjusted via the C axis
- Centric and eccentric machining
- Different workpieces with one mandrel



SOLUTION

Eccentric mandrel adjustable

- Internal mandrel for centric and eccentric machining
- Adjustment process by means of the C-axis of the machine



RESULT & CUSTOMER BENEFITS

- Adjustable eccentric mandrel with maximum eccentric dimension of 1 mm
- Complete machining of the workpiece within one machine

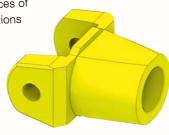


CHALLENGE

Fork-head Workpiece O.D. clamping Clamping task Turning Machining

■ Compensation of blank tolerances of 1,5 mm in both clamping directions

Interrupted cut during turning



SOLUTION

2x2 bolt chuck centric clamping

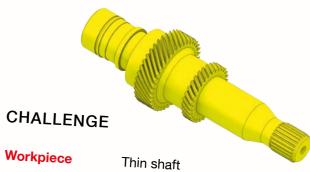
- Bolt chuck for raw part centering of a rectangular profile in both axes
- Chip-proof clamping device for mass production



RESULT & CUSTOMER BENEFITS

- Low-maintenance clamping device
- Stable and rigid clamping
- Different profiles can easily be equipped





Clamping task

With clamping head and between centers

Roughing and finishing in a single process

Finishing between centers

Machining

■ Highest concentricity between centers



SOLUTION

Shaft chuck

- Shafts are clamped extremely rigid with the clamping head during roughing
- Clamping between centers with the integrated face driver ensures a concentricity of < 5 mm during finishing

RESULT & CUSTOMER BENEFITS

- Higher speeds and feeds due to extremely rigid clamping
- Concentricity between centers are achieved reliably



SUPER-SPECIAL-EXTRA

If a special solution is required, Hannes Ludwig, Designer for special solutions at HAINBUCH, gets a shine in his eyes – like a toddler in a candy store. It was clear during high school that he wanted to become a designer, then moving on to complete his Bachelor's degree in engineering [specializing in Mechanical Engineering].

Every day we deal with new developments for individual customer requirements. The challenge of adapting to new customer requirements is what makes his job so special. Tinkering and creating new things is fun. The product portfolio at HAINBUCH is so versatile that boredom for Ludwig and his colleagues rarely occur.

Every day new and exciting challenges land on his table. Some workpieces or work steps are very time-consuming, but our experts think outside the box and go to work with passion, enthusiasm and ingenuity. The result: an individualized special solution in the usual HAINBUCH quality.



FROM THE IDEA TO THE CLAMPING SOLUTION

While manufacturing complex workpieces, individual clamping solutions are usually required. That's what the company Felsomat approached us with. Here's how an order in our special Design Department is handled.

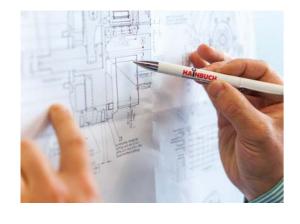
felsomat GmbH & Co. KG | www.felsomat.de



1.CLAMPING TASK

Upon request by Felsomat, the technical feasibility will be determined.

A concept sketch is created and then the project is started. The most important questions are clarified, and a technical offer is created. After the commitment from Felsomat is received, the design process begins.



The second secon

2. VISIT TO THE CUSTOMER

During the customer visit, Hannes Ludwig discusses further issues with Patricia Aubele, Head of Design Machine Tools at Felsomat. This is

followed by the presentation of the workpieces, the machining task and the planned process parameters such as speeds and feeds and the available space as well as loading and unloading of the workpieces by the handling system must be considered.

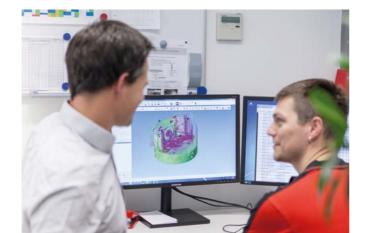


3. FINDING A SOLUTION

Sketches and drawings of the fixtures are created as a basis for discussion. Of course, the main focus, in addition to the function itself, is also the practicality and handling for the operator, who will later work with the equipment. Hannes Ludwig is in close contact with Felsomat during design and modeling and even delivery of 3D models to checking the collision contour.

4. APPROUAL

All required approval drawings have been prepared and the customer has checked and approved the different setups. Now the production drawings can be created. For complex parts, Hannes Ludwig consults with the responsible Planners, Production Managers or colleagues in CAM programming in order to find the ideal manufacturing methods for each individual part.



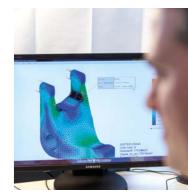
5. DETAIL ING

Production and assembly drawings, parts lists and specification of parts with dimensions are created. The selecting of the type of heat treatment and possibly coatings are done at this time as well.



B. MANDATURY

Technical documentations are always required. This is followed by strength calculations and proofs for moving components, hazard analyzes, brief description of the function and installation sequence.



»GROWING REQUIREMENTS CAUSED BY THE CONTINUOUS DEVELOPMENT OF MACHINES, TOOLS AND PROCESSES ALWAYS LEAD TO NEW SOLUTIONS.«



7. START OF PRODUCTION

Now we can start manufacturing. Again Hannes Ludwig is in the Production Department to clarify questions. Measurement logs of the first components are viewed together with the operators. A total of eight chucks are manufactured with special deflection technology.



9. NOW WE CAN BURNE

Our chuck is on the machine. Several tests follow, workpieces are processed, the handling system is programmed. Now the machine and chuck can be delivered together to the end customer.



8. ASSEMBLY

Support from the Designer is needed. In addition to the assembly of each chuck the most important features of the clamping device are now fine-tuned and adjusted, measured and documented. If everything fits perfectly during the function check, the acceptance log for the delivery is created and signed.

INDIVIDUAL CLAMPING SOLUTIONS

Do you have a unique challenge? We have a team of 45 design engineers as well as a team of R & D who can develop a tailor-made solution for you.

Your benefit:

- Optimally tailored requirements for your special solution
- Optimized processes for your production
- Innovative production possibilities through state-of-the-art clamping technology

Just call: +49.7144.907-333

Improved classics and a newcomer

With our new developments and optimized classics, savings and extras are guaranteed to help you work smarter.

hainBOX

Transparent protection

With our advanced storage system hainBOX, you can store and stack your clamping heads perfectly in drawers and cupboards. This protects your clamping heads from dirt and damage.

The new material makes the packaging more robust, stable and durable. If the hainBOX slips out of your hand with the clamping head, not only does it protect your foot, but it also prevents heads from rolling. The locking tabs and upper and lower parts are firmly connected.



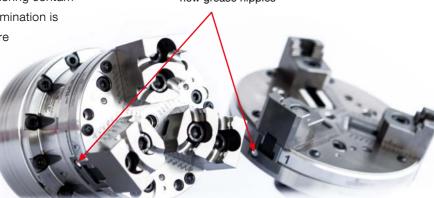
Since the lid is transparent the size of the clamping head is visible at a glance. For the time being the hainBOX is available for TOPlus and SPANNTOP clamping heads in size 65

Jaw module Lubrication is important

With our adaptation clamping device, you can quickly convert over from O.D. or I.D. clamping to jaw clamping. The new grease nipples on each base jaw ensure optimum lubrication and maximum clamping force is maintained. Why? The lubricant excess is filled in through the side spaces and can escape through the gaps, while removing adhering contaminants. In plain language: the degree of contamination is reduced and the maintenance intervals are extended. In addition, the operating key has been equipped with a locking mechanism for installation.

It can only be removed when the jaw module is mounted correctly. And the 3 mounting screws were secured so that they stay in the bore during assembly and cannot fall out.

new grease nipples

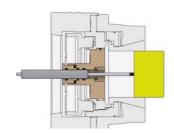


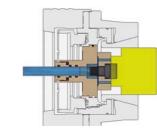


vario flex – pneumatic workpiece ejector

Small, cheap and effective

Clamping specialist HAINBUCH is now offering users of its mini-series, or the earlier TOPlus or SPANNTOP chucks, a clever accessory that saves time and costs. The vario part and vario quick end-stop systems, already in the product portfolio, are joined by a third variant: vario flex. The pneumatic workpiece ejector ejects the workpiece from the chuck automatically. This automated function increases process security and reduces cycle times. The vario flex workpiece ejector can also be used as a basic end stop for coolant wash or air flush. To do this the pneumatic spring is removed and a feed tube is attached. The optional workpiece-specific end-stop with holes for the wash and air flush can then be mounted directly on this flexible interface.





Gas pressure ejector

Air sensing control

TESTit – clamping force measuring device

An electronic unit with many possibilities

Measuring the clamping force on your clamping device ensures a safe, precise and productive process. This prevents production downtime and helps you to plan maintenance and service.

With TESTit you can measure the clamping force, whether with a stationary or rotating spindle, with external or internal clamping devices. With our two-part TESTit, consisting of an electronic unit and a force transducer, you now need only one unit and its' respective force transducer. With this new technology, the clamping force meter is better-rounded. Now you can also measure the pull-in forces of the tool holders and the tensile force on the mandrel.



CENTREX duo

Precise to the micron

Whether you need quick change of a clamping device or high-precision centering, CENTREX duo you always find the exact center within a micron. We have once again fine-tuned processes and optimized production to offer significantly more attractive prices. Ask for your individual offer and get creative; CENTREX duo can do it all!



THE PERFECT TOUCH



GRINDERS PAY ATTENTION

Our clamping solutions for the highest precision

Modern grinding production requires flexible and repeatable clamping devices. Each application has different demands on clamping technology. Gears are among the most important machine elements and are used in all sectors such as aerospace, automotive, machine tools, medical technology and the watch industry. We do not compromise on quality and reliability, especially in terms of precision all the way down to the μ . In order to achieve the required accuracy, one important factor is to avoid contamination [e. g. grinding sludge] in the clamping device. In addition to the quality requirements such as precision and durability, the pressure on the gear manufacturers is simultaneously increasing for process improvement and cost reduction. The consideration of the interference contour plays a major role in this regard.

Whether for gears, drives or other components in these areas, we develop and manufacture clamping systems that guarantee economical and process-reliable machining – for small and large series.

INTERVIEW with Antonio Corsico, Key Account Manager at HAINBUCH

How well did HAINBUCH resonate with customers during it's first appearance at GrindTec – the leading tradeshow for grinding technology in March?

A.C.: Very good! We were surprised by the positive feedback and the number of visitors. However, some visitors wondered what we were doing there. They did not know that we offered clamping devices for hard machining. So, what does that mean for us? We must push these clamping solutions further in the grinding industry and convince our customers that we hold the same high precision standards as they do. GrindTec has not seen the last of HAINBUCH.

Which products were particularly well received and what do the customers want?

A.C.: The customers were very impressed with our variety of mandrels, especially for gear cutting. What is very important to the customer are accuracies of less

than 2 μ . That's not a problem with our hexagonal MAXXOS mandrel. For the future, no matter if it's I.D. or O.D. clamping, we must assure accuracies of less than 2 μ . This will be a real challenge, but our experts will find a great solution.

More about gearing

Our current brochure can be found in the download section of our website. Feel free to contact us.

Just call +49.7144.907-333
or send an e-mail to sales@hainbuch.de





A FAIRYTALE ENDING!

HAINBUCH is looking for gear manufacturers for tests



Hard work and first-class teamwork between the gear factory Hänel and HAINBUCH have paid off. The new mandrel MANDO G211 for gear manufacturers, suitable for gear hobbing, gear cutting and gear grinding, is now available as a standard mandrel from stock and can be used optimally on gear cutting machines.

Not only for HAINBUCH was this project a success, but also for Hänel. This enabled optimization of manufacturing processes, reduced set-up time and improved gear quality. Because the mandrel guarantees stable clamping and dampens vibrations.

When a new product, in this case the MANDO G211 mandrel, specifically for the production of gears, is to be launched on

the market, it must be tested thoroughly under real conditions. HAINBUCH was looking for a reliable partner for testing this prototype. One that is also open-minded about new things, places great value on precision and runs manufacturing processes on a high level. HAINBUCH approached the gear manufacturer Hänel GmbH & Co. KG from Bad Friedrichshall, Germany explained the situation and was well accepted.

Jürgen Renner, Production Manager, said: "We have already had positive experiences with HAINBUCH clamping devices. For us, the whole thing has sounded promising from the very beginning. We saw potential for improvements in our manufacturing and processes. That's why we agreed. I must add, that our Management is very open to such partnerships. If



▲ The automatic loading system with the gears on the Gleason Pfauter machine.

this results in rewarding optimization and keeps investments manageable, nothing stands in the way of such a project.«

Prototypes were ready for the series

Hänel initially received two prototypes of the MANDO G211 mandrel in sizes zero and two. The mandrels were tested on the Richardon R 400 manual loading machine and on the Gleason-Pfauter GP 200 hobbing machine with automatic loading to see if they would be compatible and work properly. Renner has to admit: "For our employees, this new clamping system was very strange. For 20 years, they worked with a clamping system from the machine manufacturer without radial clamping, which worked fine so far. For the first attempts, we had to make some adjustments to the machine. In addition, we did not reach our zero line on the Gleasen-Pfauter machine because the mandrel was too tall. As a result, adjustments to the machine and loading system were required. It also turned out that the mandrel had to be technically slightly optimized.

What followed were a few conversations and phone calls with Thomas Steiger, Product Manager and Hannes Ludwig, the responsible Designer, both at HAINBUCH. We have diligently tested and passed on all the information needed to further optimize the mandrel.« All design changes were implemented by HAINBUCH. Subsequently, the revised second prototypes were made available. After a lengthy field trial and a few minor adjustments to the machine, the stiff and slender mandrel could, thanks to the use of Hänel, go into series production and be produced for stock.

Wishes come true

At Hänel the batch sizes are between 30 and 1,000 pieces. Customers are buying their gears because of the precision. As a rule, these are hardened and ground gears in a very high quality. For this reason, the most important requirement for Renner was to save a single manufacturing step on this new mandrel, namely the rework. »With the current clamping system, we did not manage to achieve a good concentricity. The workpiece was pressed axially downwards. Now it is clamped with the mandrel from the inside, radially outwards. Thus, we have a higher stability within the clamping. This eliminates the reworking of certain components. For some of our orders, the old clamping system was good, because the concentricity was not so important. But basically, I must say, the better the concentricity, the easier it works later. With a normal hardened gear, the bore still needs to be reworked, but all the workpieces that are fully geared can now be reduced to one operation«, says Renner.

Further ratio effects

In addition, Hänel was hoping to speed up set-up by the use of the new mandrel. That is possible now. Hänel can summarize smaller orders, if the components are similar. Because with the MANDO G211 mandrel, only the segmented clamping bushing and not the entire clamping system have to be changed. It also eliminates the need to alignment, which of course saves time. Even if the mandrel and segmented clamping bushing have to be changed to a different size, this it is still faster.



▲ Andreas Hoffmann from Hänel and Thomas Steiger from HAINBUCH have perfected the MANDO G211 mandrel together from prototype to series [from left].





Facts workpiece

- Gearing parts, gears up to Ø 300 mm
- Lot size: between 30 and 1,000 pieces

Process

■ Gear hobbing

Facts MANDO G211 mandrel

- Standard segmented mandrel with slim interference contour
- Rigid radial clamping with pull-back effect
- Large clamping range and vibration dampening by vulcanized clamping elements
- Standard segmented clamping bushings can be used
- Three end-stop levels
- Integrated flushing channels

Benefits & savings

- Cost-effective: Mandrel and segmented clamping bushings available from stock
- Optimized production process: Rework of parts often not required
- Improved toothing quality
- Set-up reduction by 50%: Only changing the segmented clamping bushing, thus no alignment
- Higher feed rates due to better stability
- Less tool wear due to less vibration

NEWS from all over the world



USA Under new leadership

Tim Wachs joined our U.S. subsidiary HAINBUCH America as National Sales Manager in January and became the new President just half a year later. It quickly turned out that he brings a lot to the table. With more than 30 years of experience in the American machine tool industry, Wachs has the best prerequisites for the position.



AMB 2018 showcase



THAILAND Anniversary in Asia

as well

In September, our Thai subsidiary looks forward to its 10th birthday. The production site in Rayong, 140 km south of Bangkok, has developed greatly in recent years. In the beginning it was named PTT Precision Tools Thailand, until the name changed in 2014 to HAINBUCH Thailand. We have transferred the line to a true Asian connoisseur: Helmut Welzl has been living in Asia for decades and is thoroughly a HAINBUCHler. He is supported by Wasan Wenas, our new Sales and Purchasing Manager.

ENGLAND

10 year anniversary

October marks the 10th birthday of our British subsidiary HAINBUCH UK. While this will not attract as much attention as the Queen does when it's her birthday, it's still a reason for us to celebrate. With Nick Peter as the captain, we have an experienced professional on board who has been navigating safely through the industry for 35 years and knows the products inside out.





MEXICO In the fast lane

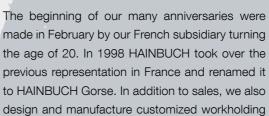
In the two years after founding our subsidiary in Mexico, it has been growing steadily. Nine employees are now plowing the market and exhibiting at various trade shows. It all started in February with Expo Manufactura, Mexico's leading trade show for the metal, plastics and manufacturing industries. This is already the second participation of HAINBUCH Mexico, and our increasing presence attracts attention in the industry.



FRANCE

A reason to celebrate

made in February by our French subsidiary turning the age of 20. In 1998 HAINBUCH took over the previous representation in France and renamed it to HAINBUCH Gorse. In addition to sales, we also design and manufacture customized workholding solutions for the local market. In 2006, the name changed to HAINBUCH France. Philippe Borne the company to this day.



became Managing Director in 2005 and manages

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60th anniversary of Gerhard Rall

RECORD HOLDER, VISIONARY & FULL-BLOODED ENTREPRENEUR

Can you imagine working for 60 years at the same company? Probably not! Most at the age of 67 would say, »phew ... done, finally I can retire«. Enjoying life, jet setting around the world, working at home and in the garden, but not so for Gerhard Rall.

He is fascinated by the daily bustle, enjoys new challenges and loves his job. Rall once said, »HAINBUCH is too exciting for me to sit at home. However, I no longer see myself as a conductor but more as an advisor to my daughter [Sylvia Rall, CEO & owner since 2011].«

To the then 15-year-old Gerhard, school was »not his thing«, he says today. Thus, he started on January 2, 1957 his career with a mechanics apprenticeship. He had a job interview at the company HAINBUCH, a start-up company of 5 years, so to say. His future father-in-law had only briefly assessed him and said, »He's tall and strong, and he can work.« However, it quickly became apparent that he didn't have the best handle for turning and milling, his abilities were elsewhere. He was a tinkerer with visions. His dream was to invent his own products and to have a company with maybe 80 employees - that turned out to be 850. After completing his apprenticeship, he completed a degree in Mechanical Engineering, became a Manager in 1966 and studied Business Administration a few years later. And in a particularly boring lecture in 1977 he invented the guickchange clamping system SPANNTOP. This invention really got the ball rolling. SPANNTOP is a standard in the industry today, it is HIS invention and HIS success. It was followed by many more ideas that were patented and brought the company forward. In 1974 he became the CEO and is still there today. It is not only the awards of the company

that make him proud, but also his personal ones. In 2010 his career was crowned by the appointment as Honorary Senator h. c. by the Economy Committee Germany and in 2012 he received the Economy Medal from the German state of Baden-Württemberg.



Plain and simple, Gerhard Rall is a visionary, and has made HAINBUCH what it is today. For his employees, he is a role model, a mentor and advisor. But one thing must also be said: Without great and loyal employees, such as Hans-Michael Weller, Technical Director since 2003, a strong family in the background and trusting business partners, a stony path is not possible to walk. Gerhard Rall's popularity is why some of his employees had so many touching words at his anniversary celebration.

There is only one word for what you have created the past 60 years: RESPECT!

Quotes from the employees

I will always remember you as you are a personal role model.

I am very impressed that you know every employee by name.

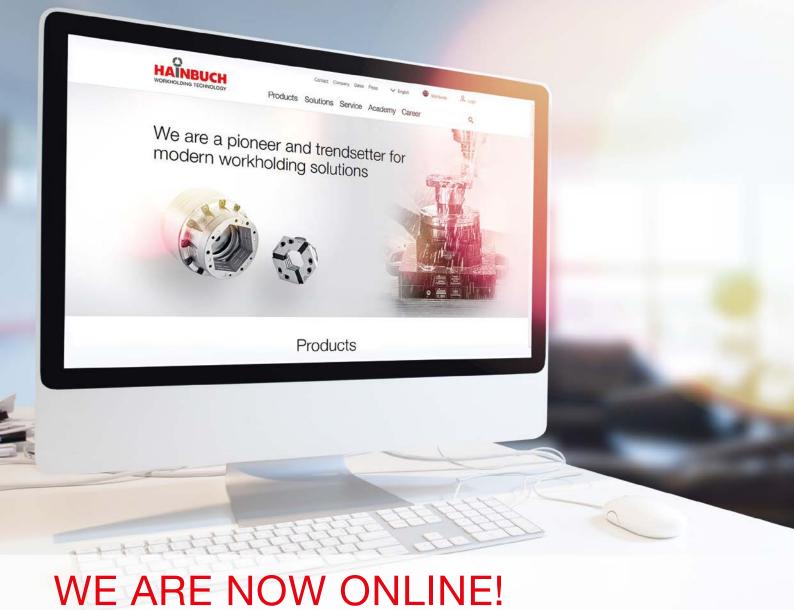
Thank you so much for lending me your car for my wedding.

You can have a good time with us

60 years of working within HAINBUCH is a record for us, no doubt about that and it will surely remain unbeaten forever. But nevertheless, we lately have celebrating two 50 year anniversaries as well as four 40 year anniversaries. And we have also celebrated a total of 69 employees who have been with us for 20 years, which really is no exception. We are very proud that the average time that our employees stay with us is currently 11 years, which we think speaks for itself

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Gerhard Rall and his invention SPANNTOP



Our new website - fresh and neat.

We have spruced up our website. Now everything is clearer and easier to find, with new features like our chat function. Give it a try. If you have a question and need an answer quickly – **chat** with our sales team.

Our new product range allows you to find everything at a glance: clamping solutions, technical information, CAD data, videos, application examples, suitable adaptations and accessories.

And best of all: Our site displays perfectly on all mobile devices such as smartphones or tablets.





