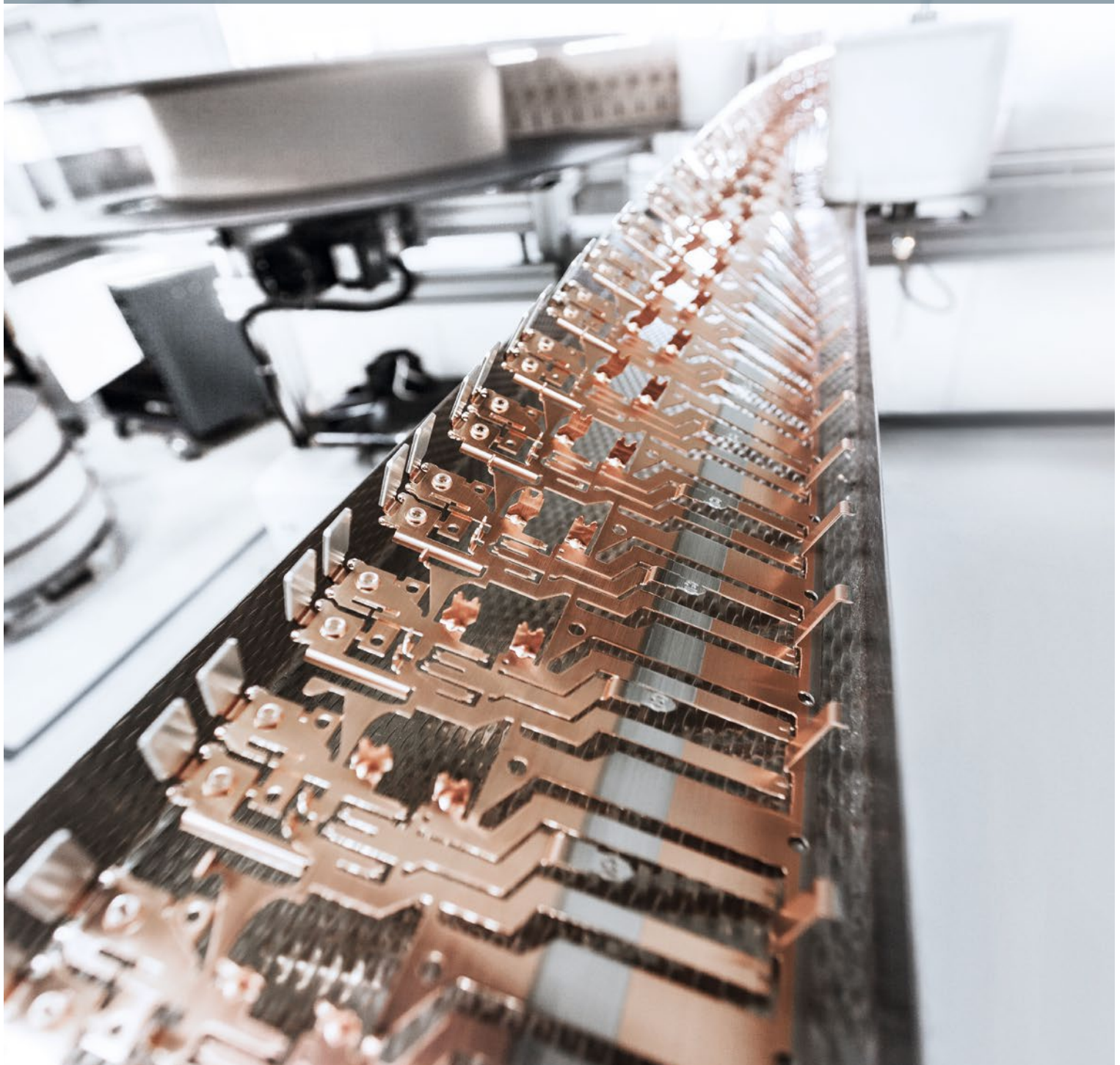


FORM

PRODUCTS FROM HÄRTER



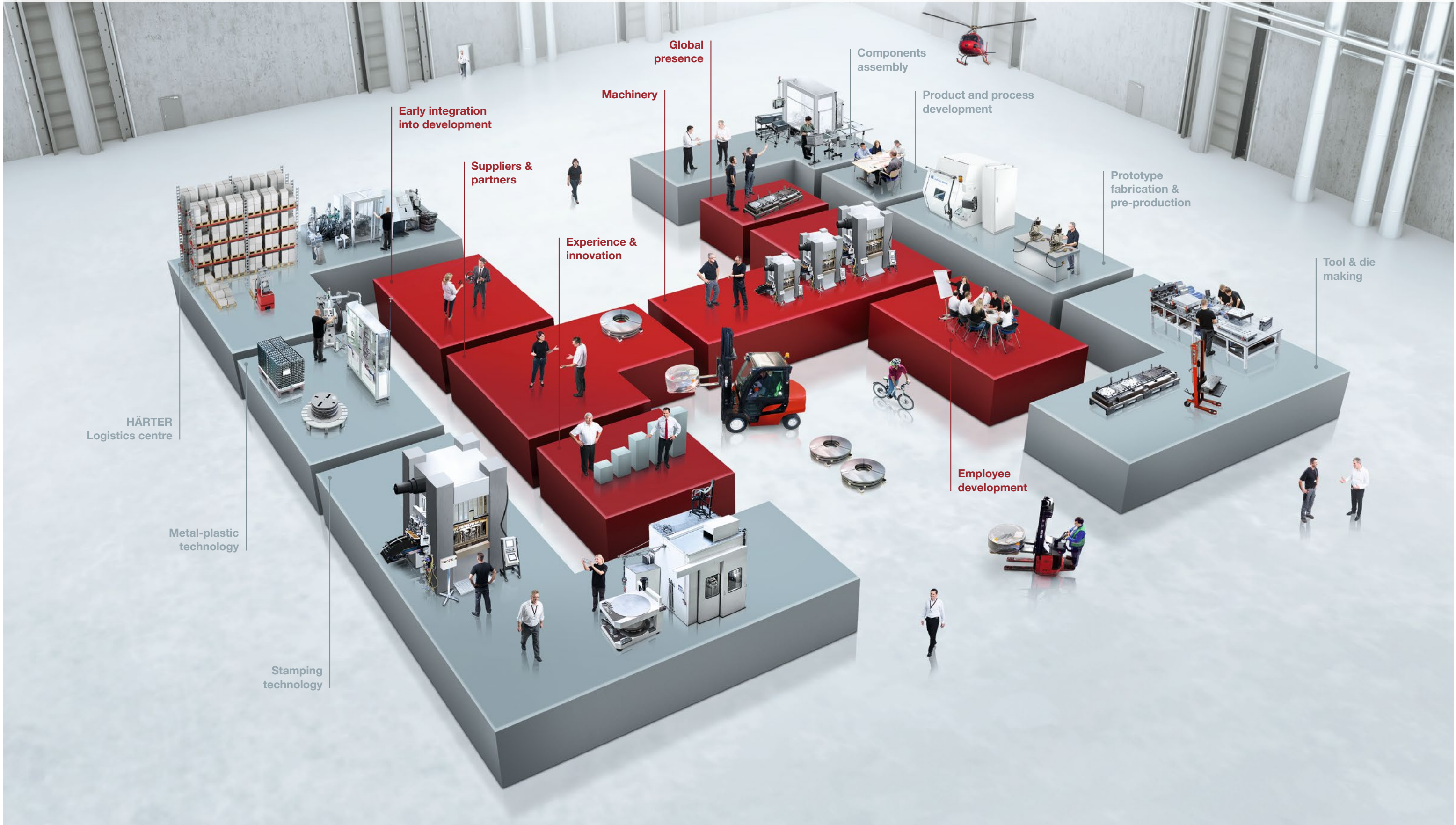
WE ARE NOT JUST A TOOL AND PARTS SUPPLIER.
WE SEE OURSELVES AS AN INTEGRATED SYSTEM
PARTNER THAT TAKES RESPONSIBILITY FOR THE
COMPLETE PROCESS.

MARTIN HÄRTER, CEO

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PART OF SUCCESS. THE HÄRTER PHILOSOPHY.

Härter is among the leading manufacturers of tools, stamping parts and metal-plastic components. As an international company, we see ourselves as an integrated partner throughout the entire project. And, with that, as part of our Customer's success. A philosophy that is reflected and lived by every individual employee.



HÄRTER
Logistics centre

Metal-plastic
technology

Stamping
technology

Early integration
into development

Suppliers &
partners

Experience &
innovation

Machinery

Global
presence

Components
assembly

Product and process
development

Prototype
fabrication &
pre-production

Tool & die
making

Employee
development

YOUR PARTNER ON THE WAY TO A SUCCESSFUL PRODUCT



Härter – Your success is our mission

Härter has been setting the standard for over 50 years in the automotive, industrial, medical and electronic markets. As a second-generation family-owned company, Härter combines experience with innovation and is considered an international center of expertise for complex solutions. For us, at the end of a project, only one thing counts: Your success.



From development through production: You can rely on a strong partner.

From development to efficient serial production: everything Härter does is focused on your success. The context of our strategic community of mutual success with customers enables us to not only optimize products but processes as well. Represented on three different continents, with our headquarters in Germany and locations in the USA, China and Poland, we can rapidly execute customer requests as well as guarantee optimum production conditions.



Early supplier involvement: You will benefit from our expertise.

Implement innovative ideas quickly and functionally reliable into your products: Härter assists you with your projects over the entire process chain – from the first hour to the final shipment. You can benefit in the development phase by integrating Härter specialists into your team. With their know-how in engineering as well as material selection, feasibility and process planning, our development engineers have valuable input – and always with an eye for the efficiency of the manufacturing processes.



Basis for success: Toolmaking.

Toolmaking has been one of Härter's central competencies since the company was founded. We cover an enormous spectrum of technologies building about 250 tools annually. Because of the size of the toolmaking capabilities, we can also efficiently execute projects with high levels of tooling requirements. Additional advantages besides new tools, we also fabricate spare parts – and not just for our own production. That means we provide our customers with real 'complete solutions' as an integrated supplier – from development to production.



Fully equipped: Performance requires size.

Two billion stamping parts annually, 1,200 active customer products, 700 shipments per day: The prerequisite for this is a modern factory infrastructure and a correspondingly large-sized machinery. Härter also has more than 130 stamping presses covering press tonnages from 5 to 350 and 50 plastic injection molding machines. The same technology and quality standards apply internationally throughout Härter.



No compromises: Systematic quality management.

All production facilities at Härter have integrated, 100%-quality control available. The most up-to-date measurement and inspection equipment with 2D and 3D systems by brand name manufacturers are available for quality control throughout production. Härter is internationally certified according to ISO 9001, ISO TS 16949 and ISO 14001. In Germany the EN ISO 13458 and ISO 50001 certificates are also valid.

ENGINEERING / TOOL – DIE MAKING

From engineering to design through to efficient production process: You will find total competence with Härter.



PRODUCT AND PROCESS DEVELOPMENT



Highlights at a glance:

- Rapid response to customer inquiries
- Engineering according to the 'design to cost' principle
- High level of expertise in engineering development, tools and materials
- Efficient process planning
- Proprietary development, design and assembly
- AQP for program, product, and process optimization



Cross-functional analysis: RFQ evaluation and feasibility.

As soon as we receive a request for quote (RFQ), the technical feasibility of a product becomes our focus. To deliver rapid, well-thought out and reliable feedback, every new project is evaluated by a cross-functional team. This includes analyzing factors such as project feasibility, production time and place as much as how a potential further development and optimization of the product or process might look.



Engineering expertise: Product development and optimization.

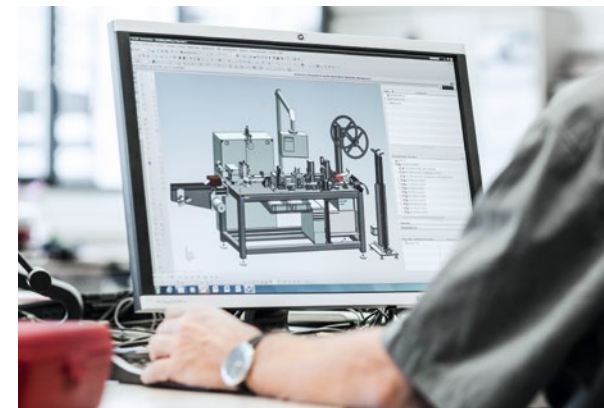
At Härter, experienced employees support the customer's development team in engineering and optimizing new products according to the principle of 'design to cost'. In addition to considering the product, the production method, material and coating we also take into consideration manufacturability in regards to future increasingly strict contamination requirements. The goal of our engineering team is to optimize the product as well as develop the best possible production processes in order to improve the quality of the product while also saving on manufacturing costs.



If you can see the overall picture, you can see the details as well: Efficient process planning.

You can only rely on your project being efficiently produced if the process steps are thought through beforehand. At Härter, that's why we assign a competent project team to every single process step:

- Selection of raw materials
- Definition of material use and combination
- Determination of the fabrication steps and layout of the production processes
- Definition of component-suited packaging and logistics planning



Complete program know-how from one source: Tool and plant design.

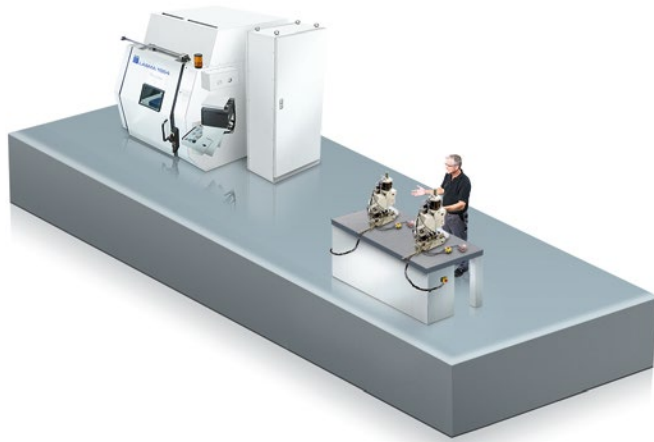
Geared to build on engineering and process planning, Härter has the expertise to develop and manufacture all tools and special machines. That means that you receive complete engineering services from one source and can be reassured that the best equipment for producing your project is available.



Even when we are finished, our work is still not done: Process optimization.

New technologies, new materials, new methods: technical development is essential in parts. In accordance with the Continuous Improvement Process (CIP), we permanently optimize our production processes. Naturally, our insights from CIP are integrated into our new developments – both in terms of process and technologies as well as in regards to AQP (Advance Quality Planning).

PROTOTYPE FABRICATION AND PRE-PRODUCTION



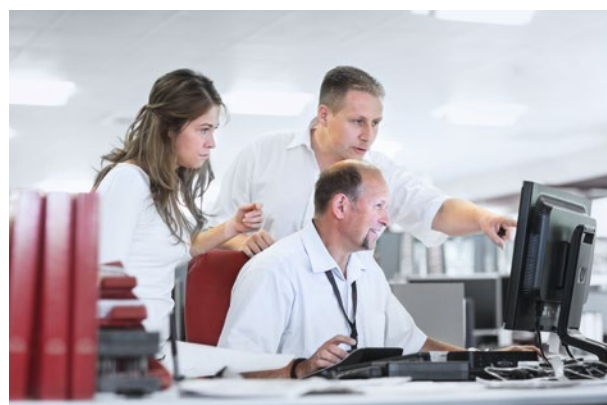
Highlights at a glance:

- Quick and safe: Process planning in prototype fabrication
- For efficient serial production: Development and construction of pre-production sample parts
- Use of standardized soft tools
- Manual presses from 1 to 40 t
- Quality standards the same as for serial production



So that everything fits in the end: Process planning for prototypes.

Mass-produced products are often produced in quantities of millions. All the more important that every process step is reviewed and defined beforehand. That's why we also plan the manufacturing process for the prototype fabrication, which also tests serial production manufacturability. Advanced quality planning as well as defining the necessary quality criteria are also part of this process at Härter.



Putting it to the test: Construction of the prototypes.

Constructing prototypes is an essential requirement for efficient and safe fabrication. Our development team of engineers and technicians create pre-production sample parts which will be manufactured through individual processes or semi-automatic almost like serial production within the shortest amount of time. The ideas and insights gained here are adopted into the serial production tools. This allows us to test and develop optimal solutions for our customers.



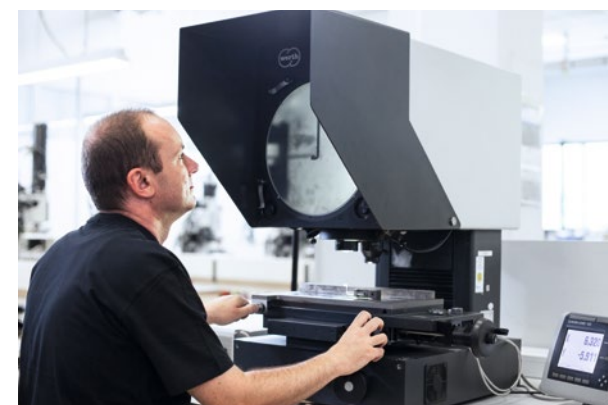
Quick, inexpensive and reliable: Special tools for prototypes.

Special tools are used in prototype fabrication – also called manual insertion tools. It allows gaining important experience that is indispensable for seamless serial production. As a specialist in toolmaking, Härter has a large stock of prototype tools, which is why standard racks can often be used with only modification for the specific product. A competitive advantage in terms of costs and efficiency in prototype fabrication.



Fully equipped for pre-production as well.

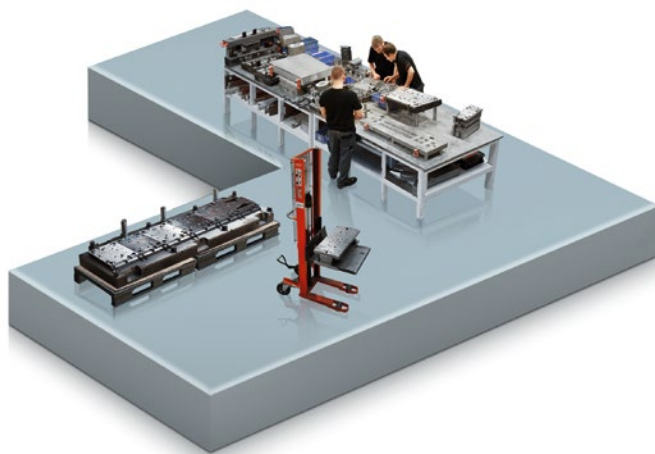
To manufacture our prototypes and pre-production parts, Härter has special equipment available. Manual presses from 1 to 40 t for stamping and plastic injection machines for complex components for prototype fabrication. Thirteen test presses are specially reserved for sample and pre-production products. In addition, 2D and 3D laser cutters supplement the pre-production fabrication equipment.



One thing is for certain: Quality inspection as if for series process.

From visual inspection to manual dimension testing to 3D measuring devices: Our entire serial production process inspection equipment are used just the same in prototype construction.

TOOL – DIE MAKING



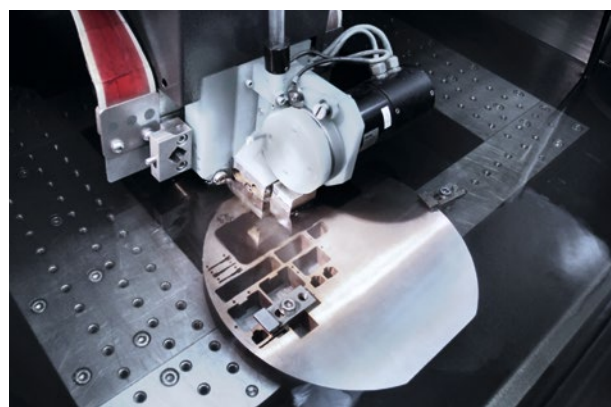
Highlights at a glance:

- Complete technology range from one source
- Fully equipped for every application: completely outfitted machinery
- 180 highly qualified employees
- Complete value added chain covered
- Highest quality and supplier performance



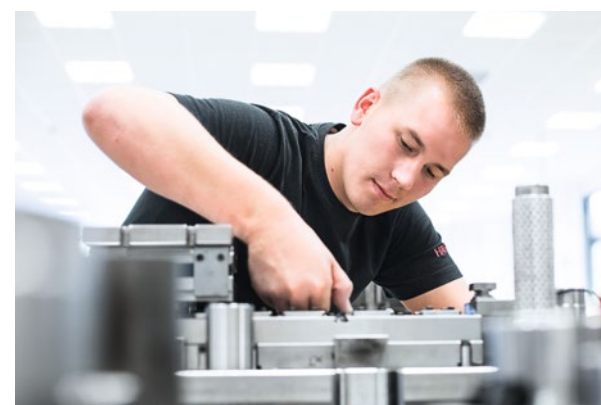
Detailed and yet with a view of the whole: Construction.

Direct engineering interface with toolmaking construction and special machines: We work with numerous software programs, such as Visi, SolidWorks and Unigraphics to ensure seamless communication. Highly qualified design engineers execute the tools step by step and prepare the CAD data which is then directly transferred to the CAM. At Härter, all the relevant technical departments are already involved at the design stage so that execution is rapid and our fabrication processes are optimal. Only in this way can all of the product requirements be implemented down to the last detail.



The entire process chain from one source: Single component production.

Based on a detailed work schedule, we define the individual fabrication components. Thanks to single component tracking across the entire ERP system, we know which component is where at which step in the assembly at any time. Our integrated process enables us to cover the entire process chain. The Härter machinery is arranged for all fabrication steps in both soft and hard metal processing of single components and plates. And our ERP system ensures accurate capacity planning and reliable, on-track scheduling of a project.



Detail work needs competence: Tool assembly.

Toolmaking is one of the core competencies at Härter. With 180 highly qualified employees, most of whom have been trained at Härter, have many years of experience. Depending on the complexity of the product, 500 to 1,000 individual components may be assembled based on CAD drawings. Matched to every detail and prepared for a seamless manufacturing process.



First testing, then serial production: Initial component production.

High-precision tools over the entire range, from one-module tools to progressive dies with lengths up to three meters: Härter has a fully capable machinery to manufacture almost any tool. This includes the adaption of multiple processes in the stamping tool, such as feeding of multiple strips, wires, rivets, bolts, pins and washers or thread shapes in the stamping process. Test presses of up to 500 tons of force are available for testing tools.



We give it to you in writing:

Quality documentation with ISTR and PPAP.

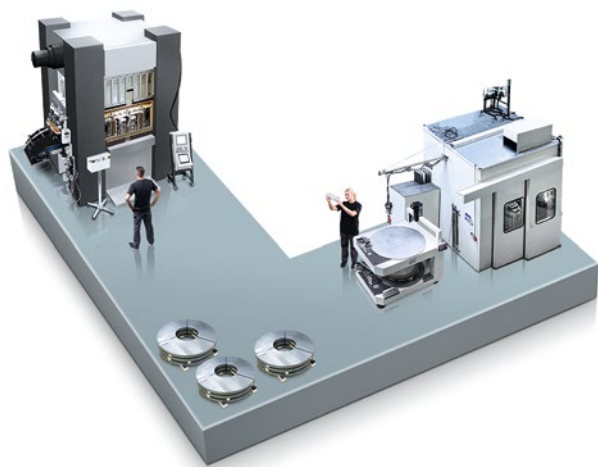
Once the first part has been produced, Härter prepares the ISTR (Initial Sample Test Report). This analysis report is standard quality documentation. And of course we also use the Production Part Approval Process (PPAP) along with the initial sample inspection. We use 2D and 3D measuring system internationally.

COMPONENT PRODUCTION

Härter is among the world-wide leading manufacturers of Progressive dies, precision stamping parts and metal-plastic components. We have been enriching the field with innovative ideas, new technologies and progressive impulses for over 50 years.

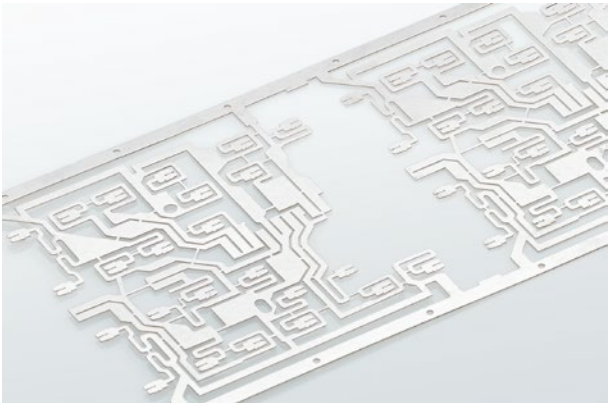


STAMPING

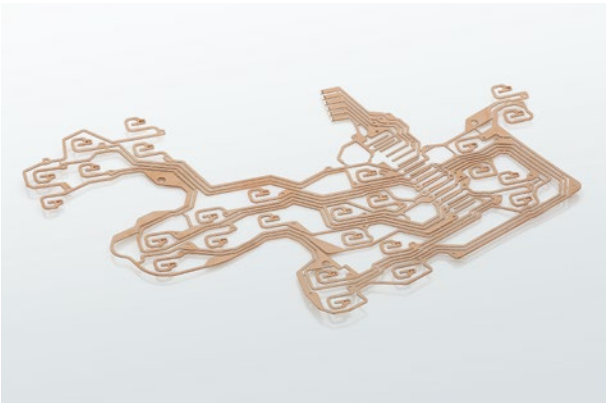


Highlights at a glance:

- Stamping and forming technology for high-precision stamping, formed and deep drawn parts
- Over 130 high-performance stamping machines with tonnages of 25 to 400 t
- Processing for all stampable materials with sheet thickness of 0.02 – 3 mm



Busbars on reel with ID contact



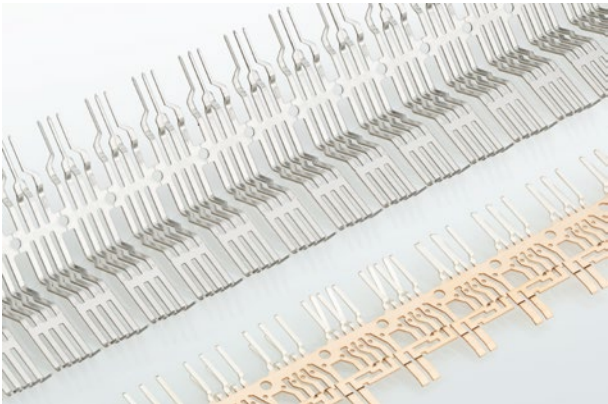
Lead frame / Busbars



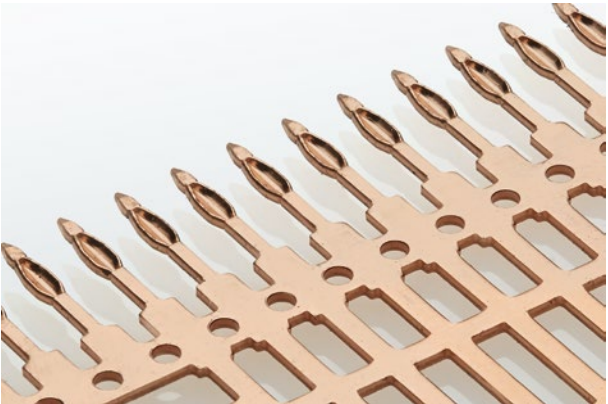
Stamped, drawn and formed parts



Housings and drawn parts



Busbars on reel with conducting paths



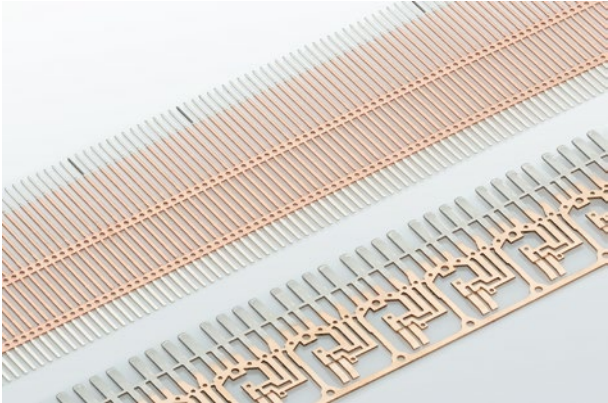
Press fit pins / Compliant pins



Stamped, drawn and formed parts



Housings and drawn parts

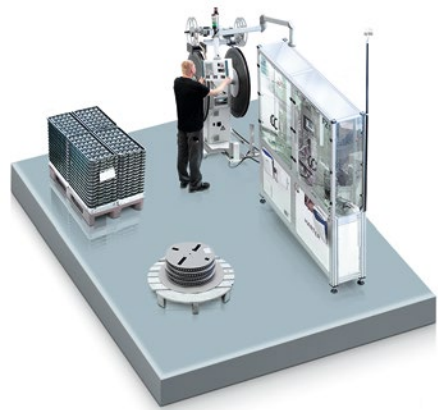


Electrical contacts



Connector with reinforcing spring

INJECTION MOLDING ASSEMBLY LINES



Highlights at a glance:

- Over 40 injection molding assembly production lines
- Injection part weight from 15 to 200 g
- Machine tonnage force from 15 to 160 t
- Processing of all common thermoplastics
- Assembly passive modules
- Laser identification with datamatrix code



Multi-way connector



Assembled components



Reel-to-reel molding (strip)



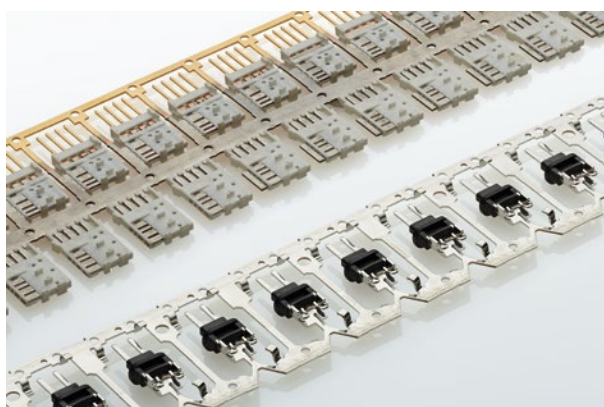
Molded lead frames / Busbars w / Press-fit zones



Bondable lead frames / Overmolded busbars



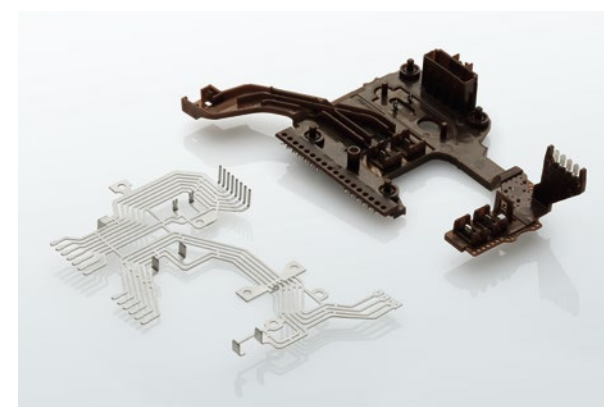
Assembled components



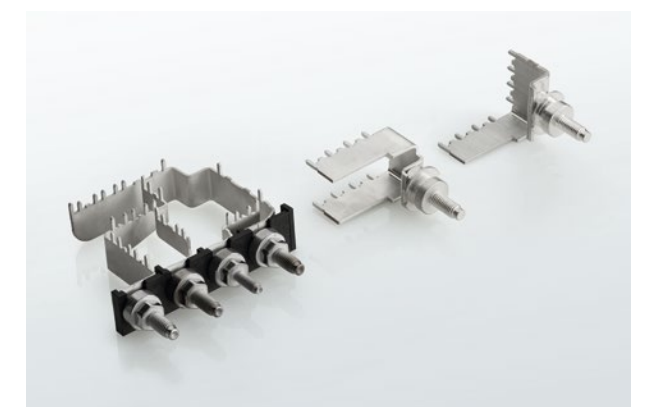
Reel-to-reel molding (strip)



Molded lead frames / Busbars w / Press-fit zones



Overmolded assemblies



Assembled components

ASSEMBLED- COMPONENTS



Highlights at a glance:

- Stamping parts and assemblies from one source
- Cost-oriented adaptation for project complexity
- Degree of automation is developed in relation to the parts volume



Quick and productive:

Fully automated components assembly.

For fully automated components assembly, Härter uses special assembly equipment. The equipment is individually outfitted so that performance is perfectly suited to the current project. The high part quality and effective fabrication based on the component requirements makes the full-automatic component assembly impressive. And the inline monitoring during production ensures the highest quality productivity.

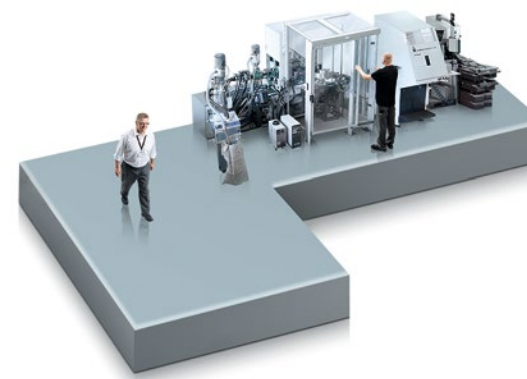


Focused on demand and cost effectiveness:

Semi-automated components assembly.

Specially for medium quantities, Härter offers semi-automatic assembly of components. This allows investment costs to be adjusted to the current project depending on demand and interest – without lowering quality.

PROCESS-INTEGRATED PACKAGING



Highlights at a glance:

- All common standard packaging
- Individually constructed packaging for practically any requirement
- Tape and reel procedure for further processing suitable to process



Automation-suited packaging: Tape and reel.

Härter offers a complete range, from the common standard packagings through to specially developed solutions. One of our innovations is the tape and reel procedure. This packages the stamped parts so they are automatically fitted. The fully automated fitting makes the assembly handling significantly easier and guarantees that further processing is economical and highly efficient. The tapes are manufactured from static and anti-static plastic using the most modern equipment and visual camera control systems.



Perfectly tailored to the customer's specifications: Tray and blister packagings.

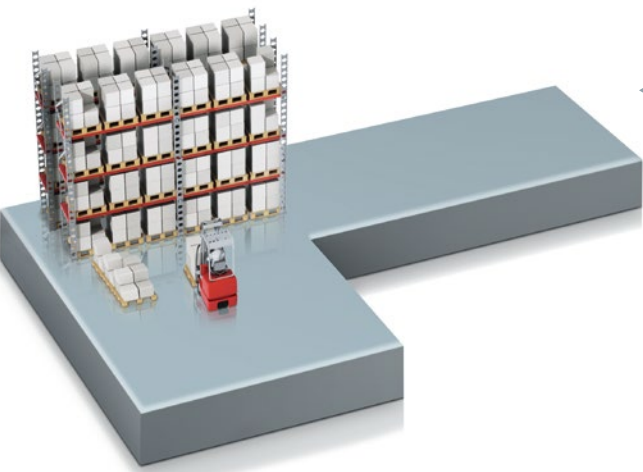
Härter can also integrate customer-provided packaging or one-way packaging into the fabrication process. The machinery and equipment are already defined according to the components and process in the planning project design phase. During production, the common requirements for cleanliness are continuously monitored.

LOGISTICS CENTRE

Tool making, stamping parts – and the new HÄRTER Logistics Centre. Get ready for promising prospects. State-of-the-art technology and the experience of our logistics experts await you.



HÄRTER LOGISTICS CENTRE AT A GLANCE



- Highlights at a glance:**
- Supply chain – based on state-of-the-art technology
 - Experience of our logistics experts
 - Modern bays with automation

Success for employees, customers and partner companies

HÄRTER has made a name for itself in stamping parts and tool making – regionally and internationally. With the new logistics centre, we are now creating a new core competence that completes our range of services. It ensures that our customers and partners have everything under one roof: from the product concept through to production and delivery.

In short, a complete economical solution for the supply chain – based on state-of-the-art technology and the experience of our logistics experts. What does that mean for HÄRTER? An even better position in the market, a lot of potential for further development and finally, a secure future for our employees. Logistics is logical to us.

HÄRTER Logistics Centre – our range of services:

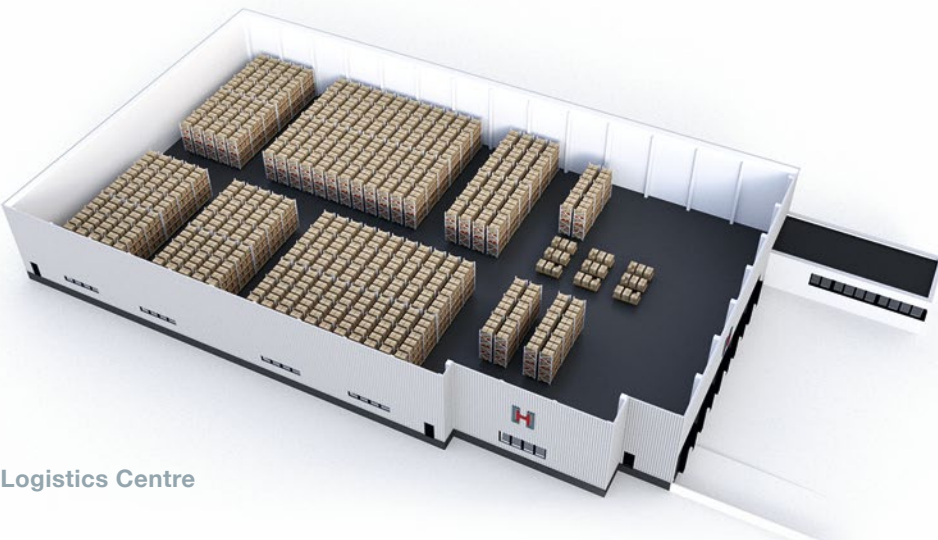
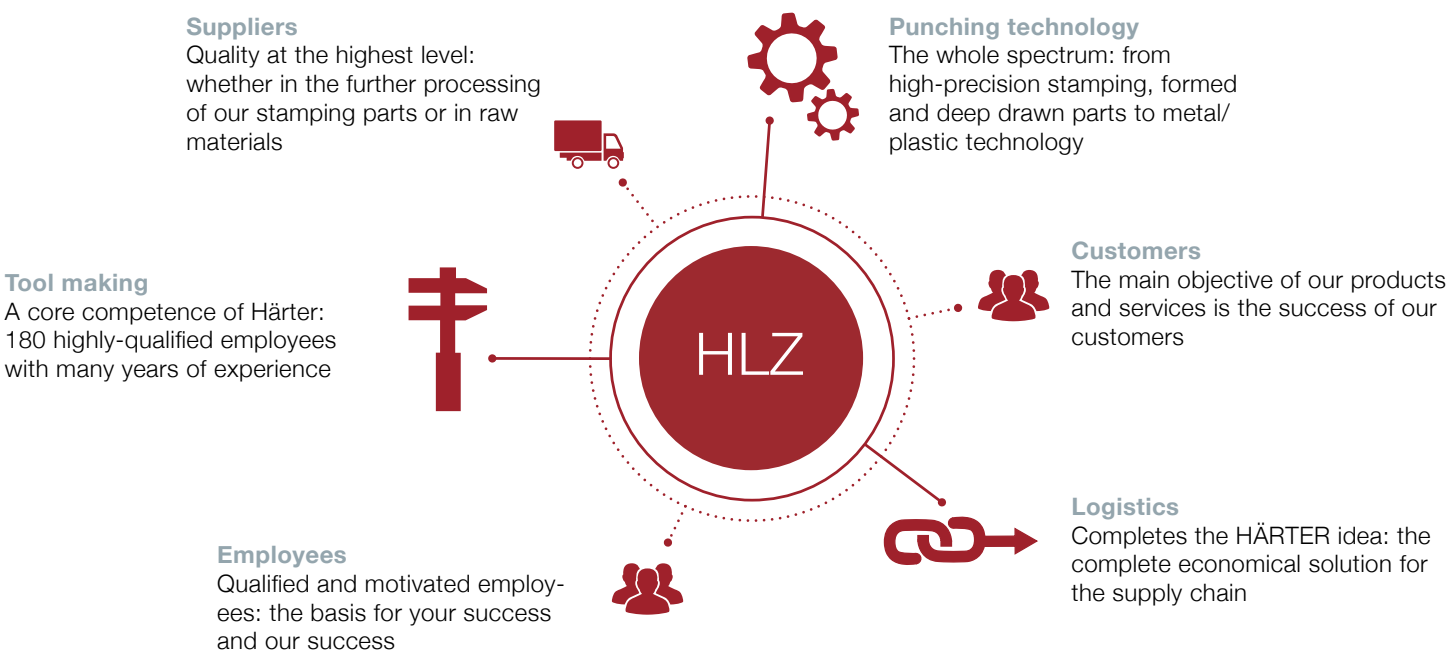
Storage:
Modern bays with high automation for customers and partner companies: for storage of raw material and stamping parts

Logistics services
Economical and reliable: Packing, packaging development, assembly, order picking, labelling and global shipping.

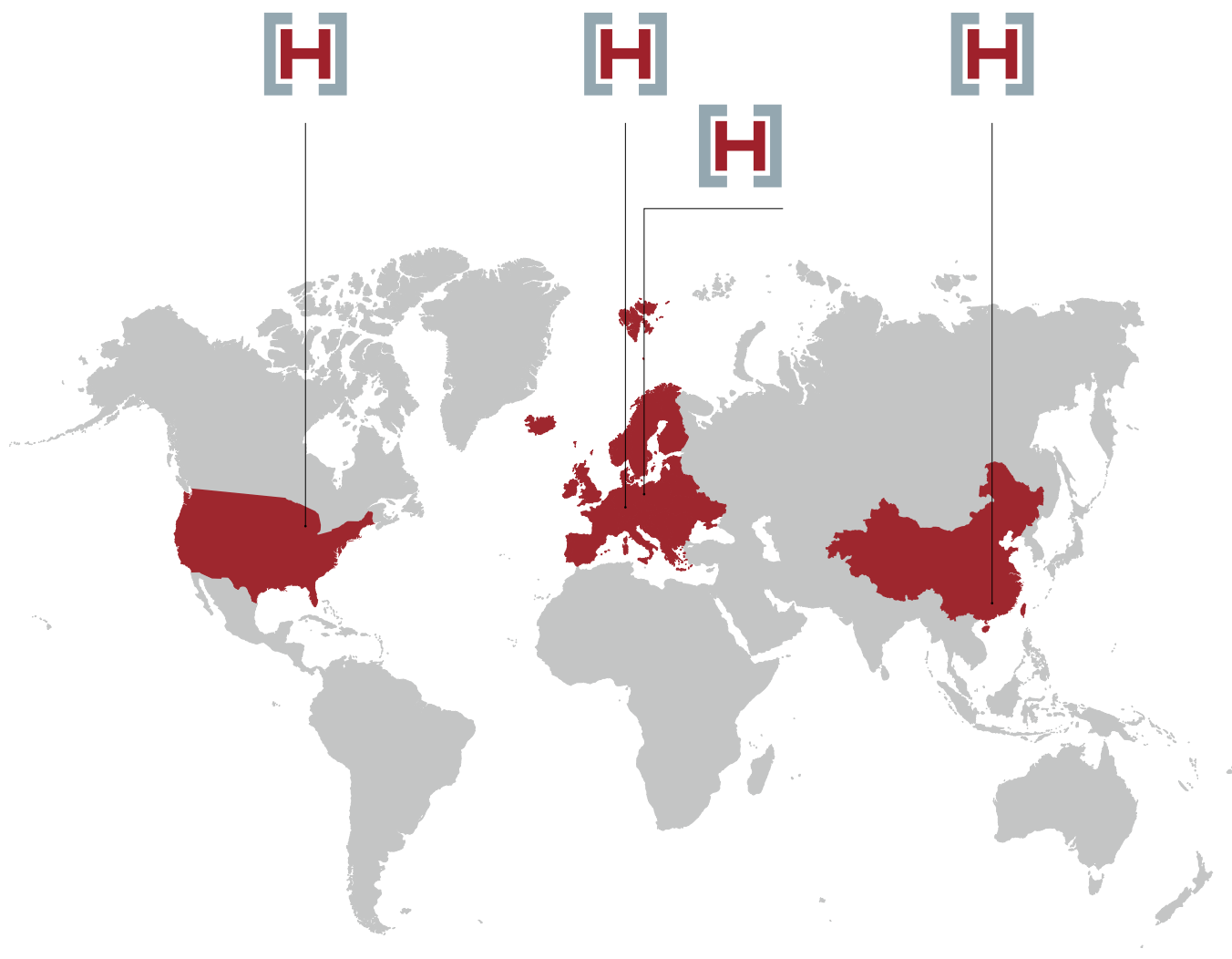
Consultation:
Modern bays with high automation for customers and partner companies: for storage of raw material and stamping parts

Supply chain management
Picking and provision of raw materials and stamping parts, just-in-time and just-in-sequence: as an integral part of the customer processes.

HÄRTER'S FORMULA FOR SUCCESS



The HÄRTER Logistics Centre at a glance:



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