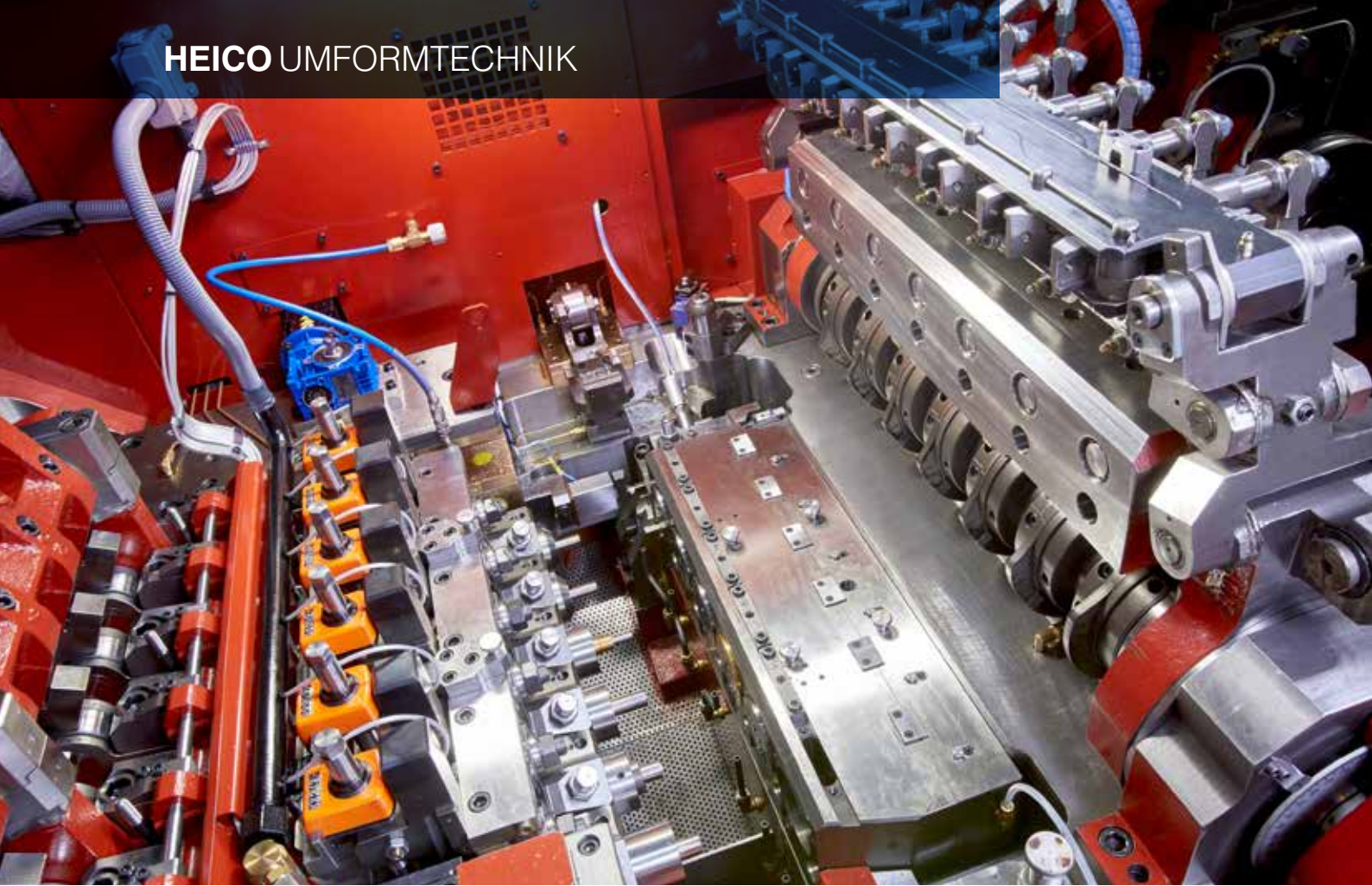




HEICO-FORM

COLD FORGED PARTS

HEICO-FORM

COLD FORGED PARTS OF HIGHEST QUALITY

A RELIABLE PARTNER BY YOUR SIDE

Since 1900, the HEICO Group has been offering its customers reliable and high-quality solutions in the field of fastening technology and can therefore draw on extensive expertise.

The product portfolio has expanded continuously over the last 120 years. At the start of the 1990's we began production of customised, drawing-based cold forged parts, most of which are supplied to the automotive industry with customers including Audi, VW, BMW and many others. With the handover of management to the fourth family generation in 2006, the product range was once again significantly expanded to include the HEICO-LOCK® and HEICO-TEC® product groups. Today, we are proud to supply a wide range of products to a variety of industries, always with the aim of meeting even the most demanding standards.

A high level of vertical integration through in-house toolmaking and mechanical engineering, in-house heat treatment and surface finishing as well as a continuous process control system have always characterised the HEICO Group's commitment to quality.



QUALITY FOR THE HIGHEST DEMANDS

All procedures and processes are subject to the highest standards. Quickly, flexibly and smoothly, the HEICO Group ensures the professional processing of customer orders – from on-site customer consultation to feasibility analyses, from tool development to the production process and individual packaging of the goods. Quality and continuous compliance with process specifications are HEICO's top priority. In addition to our highly qualified employees, a comprehensive range of state-of-the-art testing equipment and data monitoring systems ensure optimum quality of our cold forged parts.

By using optoelectronic and magneto-inductive testing systems, the HEICO Group can fulfil its customers' highest precision requirements. HEICO operates in accordance with the globally standardised and recognised IATF 16949 standard.

YOU CAN COUNT ON THAT

Optimised process sequences, modern systems, lower material usage and a higher cycle output create an attractive performance package, with the customer benefiting from the cost advantage. Our design department provides the know-how to be able to respond flexibly to complex part geometries. With the use of segment moulds and warm forming, cold extrusion parts are produced on modern multi-stage presses.



Drilling, threading and rolling processes as well as turning and milling operations are also possible. The durability of your product can be optimised by increasing the wear resistance through internal partial induction hardening. This makes process efficiency tangible for the customer in monetary terms.

HEICO-FORM PRODUCTION

In our production facility we process wire (steel, stainless steel, non-ferrous metals and special alloys) with a diameter from 3 mm to 24 mm into solid, semi-hollow or hollow parts. These special parts can have a length of up to 120 mm and a head / collar diameter of up to 34 mm.

MATERIALS AND QUALITIES

- Steel
- Tempered steel
- Stainless steel
- Brass
- Aluminium
- Copper
- Special materials
- Special alloys



HEICO-FORM PRODUCT OVERVIEW

SOLID AND SEMI-SOLID PARTS

The manufacture of solid and semi-hollow parts is based on customer-specific requirements. Depending on customer wishes, the head and bore geometries of the items are produced contrary to the usual DIN specifications.



SLEEVES / HOLLOW PARTS

Sleeves are manufactured in different head and shank geometries. Thanks to economical production on our multi-stage presses considerable cost savings can be made compared with conventional turned parts.



THREADED PARTS

Internal or external threads can be manufactured both mechanically and by machine-cutting in finishing. These operations are called thread rolling, thread moulding or thread cutting.



KNURLED PARTS

Machined parts can be manufactured with a radial or an axial knurl. These knurls are applied in the course of the pressing operation or in the downstream mechanical machining.



STEP PINS

Step pins are commonly used in hinge technology as moving link elements. In assemblies they act as spacers between the components.



BALL PINS

We manufacture ball pins with different part geometries (such as for example hexagon head or recessed drives in the ball head) for riveting, welding or screwing. This group of parts can be manufactured by machine-cutting or even ready finished with segment tools on our multi-stage presses. Special machining processes such as induction hardening of the ball or thread locking can be implemented at the customer's request.



METAL PLASTIC PARTS

The pressed cold-formed parts are fed by robot technology and form a keyed connection after plastic injection moulding.



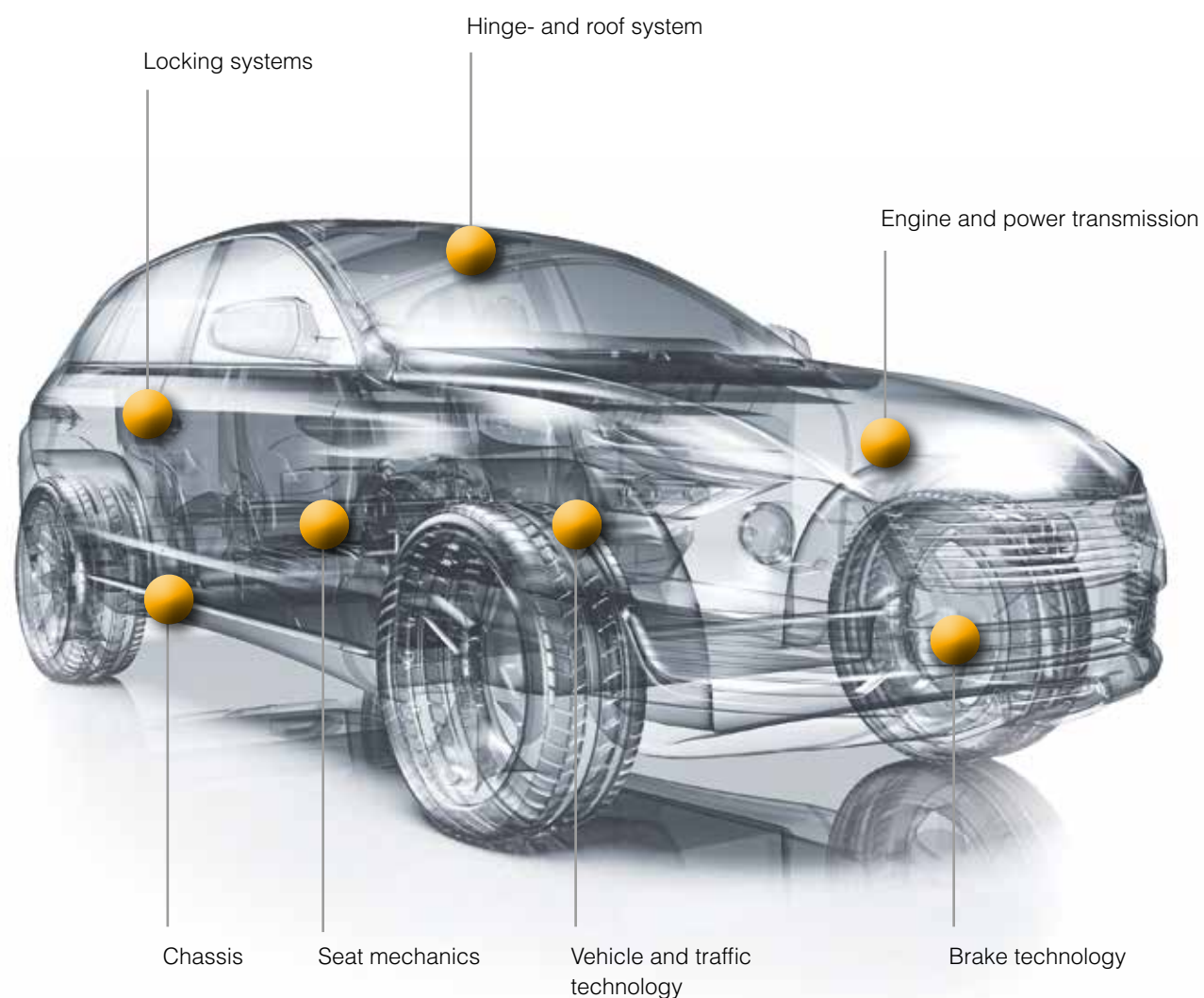
SPECIAL PARTS

We manufacture on our multi-stage presses project-specific special and development parts which are realised using cutting-edge tool technology. Special profile wires can be used here or even non-standard designs can be pressed.



FIELDS OF APPLICATION

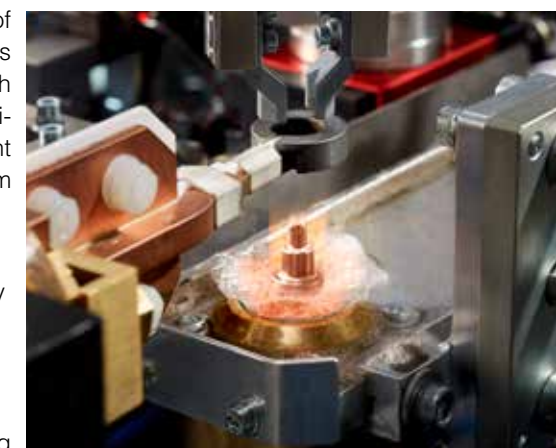
Customers in the automotive industry appreciate the quality, service and flexibility offered by the HEICO group. HEICO manufactures special cold-formed parts for the most diverse fields of automotive engineering: engines and brakes, drive technology and chassis, locking and roof systems, hinge mechanisms and control systems.



The HEICO Group offers state-of-the-art inductive hardening technology, especially for small mass-produced items. Thanks to in-house mechanical engineering and the advice of various specialists in the field of hardening technology, we have succeeded in developing machines with a high level of process control and a high output.

The induction hardening process involves the partial hardening of parts as required. With the help of this precise hardening process customers' demanding component requirements, particularly with regard to surface layer hardness, can be optimally fulfilled. Individual customer requirements with regard to unusual component geometries can be realised to the highest standards - and all from a single source!

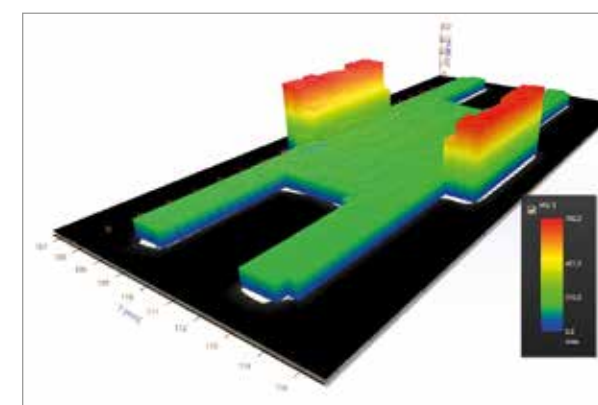
- Inductive hardening systems in the medium and high frequency range for Cold forged parts with complete process monitoring
- Tempering furnace with modern process monitoring
- 100% inspection by means of eddy current testing
- Inductive hardening systems and tempering furnaces according to CQI-9 standard



TECHNICAL SUPPORT IN OUR IN-HOUSE TEST LAB

Another plus point is the metallography and microstructure analyses that follow the inductive hardening process, carried out by trained specialists in the technologically state-of-the-art in-house test laboratory. The HEICO Group has a fully automatic hardness tester at its disposal, which is capable of testing loads ranging from 0.05 to 30 kg. HEICO's customers also have the option of receiving graphical test histories and/or individualised test reports so that they can see the quality of the hardening process for themselves.

HARDNESS MAPPING



For the inspection of partially hardened cold forged parts we have software up to the latest standards at our disposal. The so-called hardness mapping refers to the creation of an area-wide hardness curve in a sample or a specific area. By evenly distributing test points, the hardness curve can be determined and visualised as a hardness map, either in the form of a 2D colour representation or a 3D diagram. This method enables detailed analyses to be carried out, allowing precise statements to be made about the homogeneity of the sample or possible defects.

HEICO-FORM PRODUCTION PROCESS

HEICO-FORM PRODUCTION PROCESS

Process

- Feasibility assessment
- Finite elements
- Project Management
- FMEA
- Process-controlled production

Tool development and construction

- In-house development, design and manufacture of customised tool sets
- Use of segment tools

Mechanical engineering

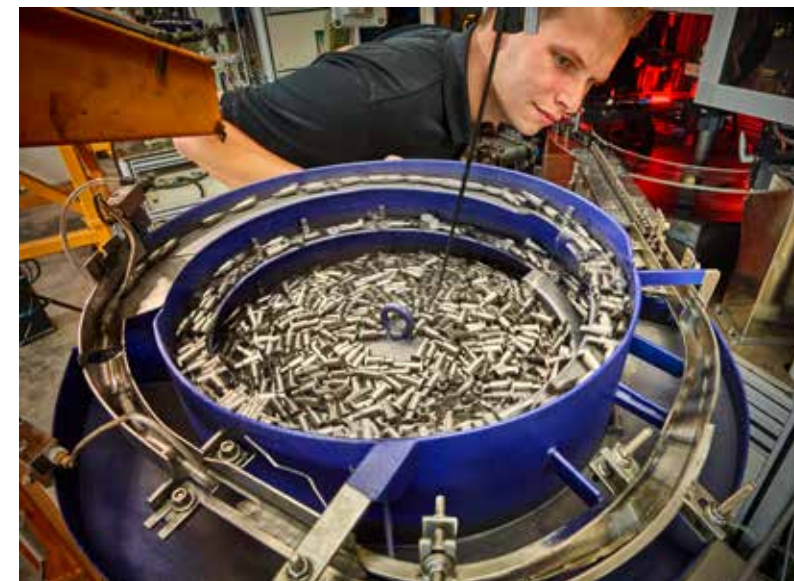
- In-house special machine construction for the development, construction and manufacture of special machines and systems

Heat treatment

- Internal:
 - Annealing
 - Inductive hardening
- External:
 - Case hardening
 - Tempering
 - Carbonitriding

Surface treatment

- Nickel plating
- Galvanising
- Brass plating
- Copper plating
- Zinc flake coating
- Zinc-nickel
- Phosphating
- Special surface coatings
- Thread locking
- Plastic overmoulding



Logistics

- Automatic processing of customer orders (EDI according to VDA/EDIFACT)
- Production-orientated detailed planning via ERP system
- Just-in-time dispatch of goods (E-Kanban; VMI)
- Supplier management for the selection of subcontractors
- ERP system-controlled primary material planning

Packaging

- KLT or cardboard packaging
- Customised customer containers
- Packaging in VCI bags for corrosion protection

1. CONSTRUCTION

2. PRODUCTION

3. FURTHER PROCESSING

4. CONTROLLING

5. LOGISTICS



Machinery

- Modern forming multi-stage presses (up to 6 stages)
- Wire diameter 3 - 24 mm
- Semi-hot forming presses
- Drilling machines
- Thread forming machines up to M12
- Thread rolling machines up to M16
- NC automatic lathes
- Disc indexing table machines (drilling and thread moulding tapping in one operation)

Process Controlling

- CAQ system from Böhme & Weihs
- Production data acquisition (PDA)
- Quality Data Acquisition (QDE)

Quality features

- CNC measuring projectors
- Contour testers
- Hardness testers
- Concentricity testers
- Metallographic analyses
- SPC (Statistical Process Control)
- Video measuring system from Mitutoyo
- Vibration test stands
- Friction coefficient testing
- Screwing laboratory

Camera sorting

- Optoelectronic
- Eddy current testing



SPECIAL PRODUCTS FOR SPECIAL APPLICATIONS



Special applications require special products. That is why, in addition to our standard cold forged parts, we also offer you special solutions in combination with our HEICO-LOCK® products - such as the HEICO-LOCK® Combi Bolt or HEICO-LOCK® Special Washers. This combination of HEICO-LOCK® products and cold forged parts enables us to respond to individual customer requirements and manufacture parts that are specially adapted to their application, with the combination providing you with the benefits of our tried and tested HEICO-LOCK® products, such as simple and safe installation and less assembly work.



- Combination of HEICO-LOCK® products and cold forged parts possible
- Products specially adapted to the customer's application
- Simple, safe and quick installation, even for non-specialist users
- Reusable multiple times
- Reduction of assembly time and effort



FIELDS OF APPLICATION



MECHANICAL ENGINEERING



RENEWABLES



OIL AND GAS

SUSTAINABILITY AND RESPONSIBILITY AT HEICO

HEICO has been a family-owned company, now in the fourth generation, since it was founded in 1900. Adaptations and changes have always been part of our 120-year history. That is why we are optimistic about the future and facing new challenges. The most important task of our time is to contribute to a more sustainable economy - not only for us, but above all for our future generations. But what does sustainability mean in concrete terms for the HEICO Group?

One of the cornerstones of our sustainability concept is the careful use of resources and the sustainable minimisation of our CO₂ footprint. However, our sustainability strategy is not limited to ecological aspects. We are also aware of our social responsibility and not only support local clubs and kindergartens, but also our employees with comprehensive health protection that goes beyond the legal standards and the opportunity for further training.

Certifications

- ISO 14001
- ISO 50001
- IATF 16949

Energy efficiency

- Use of local heating by means of a combined heat and power unit (CHP)
- Open-air cooler in the inductive hardening department, as a replacement for an air conditioning unit
- Utilisation of waste heat from a regenerative incineration plant
- Use of state-of-the-art building management systems
- PV system for power generation
- Compressed air reduction by means of leakage analysis and much more.

Social commitment

- Support for local associations and organisations
- Educational training opportunities for kindergartens and schools, e.g. in the HEICO animal paddock



Training and further education

- Attractive apprenticeships with the opportunity to work on your own projects
- Various practice-orientated further training opportunities for all employees

Occupational health and safety

- Comprehensive occupational health and safety beyond the legal requirements





A STRONG GROUP BEHIND STRONG PRODUCTS

The HEICO Group from Ense in Westphalia is a family business with a long tradition. The company has been passionately involved in fastening technology since 1900. With more than 430 employees at over a dozen company locations worldwide, the group offers the highest level of technical advice and customised testing options.

Find out more about us: www.heico-group.com



HEICO-LOCK® WEDGE LOCKING SYSTEMS AND HEICO-TEC® TENSIONING SYSTEMS

In addition to the HEICO-FORM Cold Forged Parts, the HEICO Group offers a broad portfolio of fastening solutions with HEICO-LOCK® Wedge Locking Systems and HEICO-TEC® Tensioning Systems.

With our HEICO-TEC® Tensioning Systems, large bolted joints can be easily pre-tensioned by hand – a simple torque wrench is all that is needed. In addition to the HEICO-TEC® Tensioning Systems, the HEICO-LOCK® Wedge Locking Systems offer a reliable solution against self-loosening in demanding bolted joints – especially under dynamic loads!

Further information can be found at www.heico-group.com



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